CONTRA COSTA
CLEAN WATER
PROGRAM

**Thomas E. Dalziel**
**Program Manager**

September 16, 2013

Bruce H. Wolfe, Executive Officer
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Ms. Pamela Creedon, Executive Officer
California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive, #200
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Dear Mr. Wolfe and Ms. Creedon:

Enclosed is the Contra Costa Clean Water Program's (CCCWP's) *Fiscal Year 2012-2013 Volume I, Group Activities, Annual Report*. This report documents activities conducted collectively ("Group Activities") by Contra Costa Permittees in accordance with National Pollutant Discharge Elimination System (NPDES) Permit No. CAS612008 (Orders R2-2009-0074 and R2-2011-0083) issued by the San Francisco Bay Regional Water Quality Control Board (Water Board), and NPDES Permit No. CA0083313 (Order R5-2010-0102) issued by the Central Valley Water Board. This submittal includes by reference the following reports submitted separately by the Bay Area Stormwater Management Agencies Association (BASMAA) on behalf of Contra Costa Permittees:

- *"MRP Regional Supplement for Green Streets Pilot Projects Summary Reporting for FY 2012-2013"*
- *"MRP Regional Supplement for Training and Outreach Annual Reporting for FY 2012-2013"*
- *"Regional Pollutants of Concern Annual Report for FY 2012-2013"*

With the approval and direction from each duly authorized representative of each Permittee, I have been authorized to submit and certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting

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Program Participants: Antioch, Brentwood, Clayton, Concord, Danville, El Cerrito, Hercules, Lafayette, Martinez, Moraga, Oakley, Orinda, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon, Walnut Creek, Contra Costa County and Contra Costa County Flood Control & Water Conservation District

false information, including the possibly of fine and imprisonment for knowing violations.

Also provided with this submittal are the *Fiscal Year 2012-2013 Individual Municipal Annual Reports* compiled in Volume II.

Sincerely,

Thomas E. Dalziel, Program Manager
Contra Costa Clean Water Program

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Enclosures

# CONTRA COSTA
# CLEAN WATER PROGRAM

## FISCAL YEAR 2012-2013
## ANNUAL REPORT

## VOLUME 1:
## GROUP ACTIVITIES

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## VOLUME 1 – List of Acronyms

| Acronym | Term |
|---|---|
| ABAG | Association of Bay Area Governments |
| ARRA | American Recovery and Reinvestment Act |
| BASMAA | Bay Area Stormwater Management Agencies Association |
| BIP | Business Inspection Plan |
| BMP | Best Management Practice |
| CASQA | California Stormwater Quality Association |
| CCC | Contra Costa County |
| CCCAC | Contra Costa County Agricultural Commissioner |
| CCCWP | Contra Costa Clean Water Program |
| CCRs | California Code of Regulations |
| CCWF | Contra Costa Watershed Forum |
| CCCSD | Central Contra Costa Sanitary District |
| CPSC | California Product Stewardship Council |
| CWSGP | Community Watershed Stewardship Grant Program |
| DC | Development Committee |
| DDSD | Delta Diablo Sanitation District |
| DPR | Department of Pesticide Regulation |
| EBMUD | East Bay Municipal Utility District |
| EPA | Environmental Protection Agency |
| EPR | Extended Producer Responsibility |
| ERP | Enforcement Response Plan |
| FY | Fiscal Year |
| HHW | Household Hazardous Waste |
| HM | Hydromodification Management |
| HMP | Hydrograph Modification Management Plan |
| IDDE | Illicit Discharge Detection and Elimination |
| IMP | Integrated Monitoring Plan |
| IMPs | Integrated Management Practices |
| IPM | Integrated Pest Management |
| LID | Low Impact Development |
| MOC | Municipal Operations Committee |
| MRP | Municipal Regional Permit |
| MS4 | Municipal Separate Storm Sewer System |
| NPDES | National Pollutant Discharge Elimination System |
| OPP | Oil Payment Program |
| OWOW | Our Water, Our World |
| PAPA | Pesticide Applicators Professional Association |
| PBDEs | Polybrominated Diphenyl Ethers |
| PCBs | Polychlorinated Biphenyls |
| PIP | Public Information/Participation Committee |
| POC | Pollutants of Concern |

| Acronym | Term |
|---|---|
| POTW | Publicly Owned Treatment Works |
| RMC | Regional Monitoring Coalition |
| SOPs | Standard Operating Procedures |
| SWPPP | Stormwater Pollution Prevention Plan |
| TAPE | State of Washington, Department of Ecology's Technology Assessment Protocol-Ecology |
| UC | University of California |
| WCWD | West County Wastewater District |

## SECTION 1 – EXECUTIVE SUMMARY

### Introduction

The Contra Costa Clean Water Program (CCCWP) comprises Contra Costa County, its 19 incorporated cities/towns[1], and the Contra Costa County Flood Control & Water Conservation District (Flood Control District). These 21 public agencies are collectively referred to as Permittees. The Permittees are submitting their Fiscal Year (FY) 2012-2013 Annual Report to the San Francisco Bay and Central Valley Regional Water Quality Control Boards (Water Boards) as required by their Joint Municipal National Pollutant Discharge Elimination System (NPDES) Permits (discussed further below). The report documents permit compliance activities conducted during the previous fiscal year (July 1, 2012 to June 30, 2013). The FY 2012-2013 Annual Report consists of the following:

- **Volume I – Group Activities Annual Report**: This Volume I report documents permit compliance activities conducted collectively as a group by all twenty-one (21) Permittees.
- **Volume II – Individual Municipal Annual Reports**: Volume II is a compilation of the Permittees' individual Annual Reports, which document implementation of compliance activities conducted within each agency's jurisdiction.
- **BASMAA Regional Supplemental Reports**: These reports document compliance activities conducted regionally (Bay Area-wide) in coordination with the Bay Area Stormwater Management Agencies Association (BASMAA)[2]. On behalf of the

[1] Cities of Antioch, Brentwood, Clayton, Concord, El Cerrito, Hercules, Lafayette, Martinez, Oakley, Orinda, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon, and Walnut Creek, and Towns of Danville and Moraga.

[2] BASMAA is a consortium of municipal stormwater programs representing over 90 agencies, including 79 cities and 6 counties. BASMAA was started by local governments in the Bay Area to share information and combine resources to develop products and programs that would be more cost-effective if done regionally. In FY 2008-2009, BASMAA reorganized as a 501(c)(3) non-profit organization. This allows BASMAA to enter into contracts and seek grant funds on behalf of its members. BASMAA is focused on regional challenges and opportunities to improving the quality of stormwater that flows to our local creeks, San Francisco Bay and Delta, and the Ocean.

Contra Costa Permittees, BASMAA submitted separately the following regional supplemental reports directly to the Water Boards:

1. *MRP* [Municipal Regional Permit] *Regional Supplement for Green Streets Pilot Projects Summary Reporting for FY 2012-2013*
2. *MRP Regional Supplement for Training and Outreach Annual Reporting for FY 2012-2013*
3. *Regional Pollutants of Concern Report for FY 2012-2013*

**Joint Municipal NPDES Permits**

The San Francisco Bay Water Board issued a *Municipal Regional Stormwater NPDES Permit* to 76 Phase I[3] municipalities within the San Francisco Bay Region on October 14, 2009 (NPDES Permit No. CAS612008, Order No. R2-2009-0074). This permit was amended on November 30, 2011 (NPDES Permit No. CAS612008, Order No. R2-2011-0083). The October 2009 permit and its November 2011 amendment are hereinafter referred to as the "Municipal Regional Permit" or "MRP". The MRP excludes the cities of Antioch, Brentwood, and Oakley, and the eastern portions of Contra Costa County and Contra Costa County Flood Control District. These agencies and agency areas are within the jurisdiction of the Central Valley Water Board and were issued a separate Joint Municipal NPDES Permit ("East Contra Costa Municipal Storm Water Permit") on September 23, 2010 (NPDES Permit No. CAS083313, Order No. R5-2010-0102). Most provisions of this permit are substantively identical to those in the MRP. Unless specified otherwise, hereinafter all group activities reported below will reference activities conducted by all Contra Costa Permittees in accordance with the MRP. Copies of both permits can be downloaded from the CCCWP website at: http://www.cccleanwater.org/permits.html.

[3] Phase I regulations were promulgated in 1990 and requires medium and large cities or certain counties with populations of 100,000 or more to obtain NPDES permit coverage for their stormwater discharges.

The MRP is in effect for five years ending on November 30, 2014. This Annual Report documents activities conducted under the fourth year of the five-year MRP. MRP Permittees include all Phase I Municipal Stormwater Programs[4] in the San Francisco Bay Region. Each Permittee is individually responsible for complying with the permit mandates; however, the MRP allows, and in some cases encourages, Permittees to collaborate in the design, development, and/or implementation of certain mandates collectively – either countywide and/or region-wide. Activities conducted collectively are referred to as "group activities" and are documented in this Volume I report and in BASMAA's regional supplemental reports.

**Program Structure**

The CCCWP operates under a "Program Agreement", which was first entered into in 1991 and has been updated several times since. The roles and responsibilities of CCCWP staff and its 21 Permittees are outlined in the Program Agreement (2010-2025), which was adopted by all 21 Permittees in 2010. During most of FY 2012-2013, CCCWP staffing was limited to two (2) full-time employees and one (1) part-time employee. This reduction in staffing resulted from the resignation of one Watershed Management Planning Specialist and the temporary leave of the other Watershed Management Planning Specialist. To ensure uninterrupted implementation of group activities, the CCCWP increased its consultant support services beginning in August 2012 through June 30, 2013.

The Management Committee, which consists of one designated representative from each of the 21 Permittees, is the decision-making body of the CCCWP. The Management Committee meets monthly and directs and monitors the implementation of all group activities. Five (5) subcommittees review, research and make

[4] Phase I Municipal Stormwater Programs include: 17 public agencies comprising the Alameda Countywide Clean Water Program (ACCWP); 18 of the 21 public agencies comprising the CCCWP; 15 public agencies comprising the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP); 22 public agencies comprising the San Mateo Countywide Stormwater Pollution Prevention Program (STOPPP); the cities of Fairfield and Suisun City comprising the Fairfield-Suisun Urban Runoff Management Program (FSURMP); and, the City of Vallejo and the Vallejo Sanitation and Flood Control District.

recommendations to the Management Committee. Program staff and designated municipal representatives also participate on similar BASMAA subcommittees, which are focused on the implementation of regional tasks and projects. Attachments 1.1 and 1.2 outline the CCCWP's organizational structure and representation, and management, respectively. Attachment 1.3 shows Contra Costa Permittee participation and attendance on the CCCWP's Management Committee and five (5) subcommittees. In accordance with the Program Agreement, municipal representatives with voting rights are expected to attend at least 80% of the CCCWP's regularly scheduled meetings.

**Highlights of Group Activities for FY 2012-2013**

Keeping Trash Out of Our Local Creeks, the Delta and Bay

Throughout FY 2012-2013, CCCWP staff and consultants, and staff from the Cities of Walnut Creek and Richmond, participated actively in a regional process to revise the trash load reduction planning process from what the San Francisco Bay Water Board mandated in the 2009 MRP. Following receipt of the Baseline Trash Load and Trash Load Reduction Method developed regionally through BASMAA, and the individual Municipal Short Term Trash Loading Reduction Plans submitted in February 2012, San Francisco Bay Water Board staff decided the methodology mandated in the 2009 MRP was not likely to achieve the stated goals. Between August and November 2012, BASMAA representatives consisting of Stormwater Program staff and municipal representatives worked collaboratively with Water Board staff representatives to develop the following trash load reduction planning process:

- August 2012 – BASMAA representatives and San Francisco Bay Water Board Executive Officer Bruce Wolfe reached a tentative agreement that BASMAA's February 1, 2012 methodology should be revised; however, the updated methodology would apply to long-term trash reduction plans, allowing the Permittees to continue their work on implementing their short-term plans.

- October 2012 – In follow-up meetings, it was agreed to de-emphasize or eliminate the baseline load estimates, and with that, the quantitative methods and procedures for estimating trash reductions. It was also suggested that municipalities delineate, in the Long-Term Trash Reduction Plans due February 1, 2014, areas that do not contribute significant amounts of trash. This includes most areas where single-family residences predominate. Municipalities would instead focus their trash reduction efforts on higher-trash-generating areas.
- November 2012 - An 8-point framework for Long-Term Trash Reduction Plans was developed and discussed. It was agreed that measures of effectiveness would need to include some combination of Best Management Practices (BMPs) implementation measures combined with measurement of outcomes (i.e., a reduction in the amount of trash observable on streets or in creeks).
- December 2012 - City of Walnut Creek Clean Water Program Manager Rinta Perkins presented an example approach for long-term trash management planning applicable to an area within Walnut Creek's downtown. A similar approach, with somewhat different emphasis, was presented by the City of Sunnyvale's Stormwater Program Manager.
- February 2013 - BASMAA representatives and Water Board staff reached a general agreement on a set of recommendations that defined, in considerable detail, steps to be followed in developing long-term trash management plans. In addition, Permittees agreed to show, in their FY 2012-2013 Annual Reports, progress toward development of their long-term trash management plans. In particular, it was agreed that individual municipalities' FY 2012-2013 Annual Reports would include maps delineating low, medium, high, and very high trash generation areas. To the extent possible, the FY 2012-2013 Annual Reports will also include maps delineating trash management areas with a corresponding tabulation of BMPs (pre- and post-MRP) implemented, or to be implemented within each area, including locations of full-trash-capture devices and where possible, the drainage areas tributary to those devices. It was acknowledged that municipalities will vary with regard to their capability to generate so much

information in so short a time, and that some submittals will be partial and in draft form.

- March – June 2013 - CCCWP staff coordinated a consultant contract with EOA Inc. to assist Contra Costa Permittees with development of their long-term trash load reduction plans.

These priority efforts required a significant amount of Permittee staff time and resources. Further details regarding development of the municipal Long Term Trash Load Reduction Plans, and the other actions being taken to keep trash out of our local creeks, the delta and bay, are outlined in Section 10 of this Volume I report, and in the Individual Municipal Annual Reports compiled in Volume II of this Annual Report.

Updated Model Stormwater Ordinance

Contra Costa Permittees first adopted stormwater ordinances in the early 1990s, based on a model ordinance prepared at that time by a group of municipal attorneys. In 2004, the model ordinance was updated to incorporate the Provision C.3 New Development requirements. All Contra Costa Permittees adopted the 2004 model ordinance with minor changes to reflect local conditions. In February 2013, the CCCWP's Management Committee approved an updated model ordinance to be more consistent with the MRP. A detailed review of changes made to the model ordinance is provided in Section 3 of this report.

Continuous Improvement of Municipal IPM Programs

In December 2012, an IPM Ad-Hoc (Pesticide) Workgroup of the MOC comprising stormwater coordinators from the Cities of El Cerrito and San Pablo, the Contra Costa County's full-time IPM Coordinator, and the CCCWP's consultant was convened. The Pesticide Workgroup was formed in response to concerns that:

- Permittee staff needs short (1-2 pp.), simple guidance for each of their pest control activities
- The Permittees' overarching IPM policies need to be credible to Water Board staff and have defensible purpose, objectives, and definitions

After conducting a survey of Contra Costa Permittees, the Pesticide Workgroup developed a plan to produce:

1. An updated Model IPM Policy that is general enough for municipalities to easily adapt (and adopt),
2. A simple model IPM Implementation Program,
3. Expert resources that can be accessed by municipal staff, and
4. Model Standard Operating Procedures to address pest and weed problems most commonly encountered by Contra Costa municipalities.

The Pesticide Workgroup met monthly through the remainder of FY 2012-2013. The Workgroup drafted an updated model IPM policy, adapted from a model policy produced by the San Mateo Stormwater Pollution Prevention Program, and a model IPM program, final versions of which were delivered to the CCCWP Management Committee on June 19, 2013. In FY 2013-2014, the Pesticide Workgroup will be working to produce model Standard Operating Procedures (SOPs) for pest management. Further details regarding the updated Model IPM Policy are provided in Section 9 of this report.

<u>Hydromodification Management Model Calibration and Validation Monitoring</u>

Provision C.3.g. references hydromodification management (HM) standards contained in MRP attachments. Standards for Permittees within the CCCWP are in Attachment C to the MRP. Land development projects in Contra Costa may comply with HM standards by implementing Integrated Management Practices (IMPs). Design criteria for the IMPs are incorporated in the CCCWP *Stormwater C.3 Guidebook*

*http://www.cccleanwater.org/stormwater-c-3-guidebook/*. The IMPs include bioretention and variations incorporating bioretention with upstream or downstream storage.

Factors used to size the IMPs were developed using a continuous-simulation hydrologic model. MRP Attachment C states that the Contra Costa Permittees shall monitor flow from IMPs to determine the accuracy of the inputs and assumptions used in the model; and, that monitoring shall be conducted at a minimum of five locations, for a minimum of two years, with the aim of evaluating flow control effectiveness of the IMPs. CCCWP conducted monitoring at three IMP locations in Pittsburg, and at two IMP locations in Walnut Creek, during the 2011-2012 and 2012-2013 water years.

The IMP Monitoring Report included with this 2012-2013 Annual Report (see Attachment 3.1) presents the results of this monitoring, and documents calibration and verification of the model using the monitoring data. As shown in the IMP Monitoring Report, the IMPs are considerably more effective than originally estimated. In FY 2013/2014, the CCCWP will be taking a closer look at the IMP designs and sizing factors and will use the model to optimize them for compliance with Water Board standards.

Pesticide Advertising Campaign

The CCCWP's Pesticide Advertising Campaign was initiated in August 2012 with the selection of S. Groner Associates (SGA) Inc. Nearly one hundred (100) firms were contacted to determine their interest in assisting the CCCWP with its public education and outreach activities, which include, but are not limited to, development of an urban pesticide campaign and youth outreach. Of this number, nineteen firms expressed interest, and were invited to respond to the CCCWP's Request for Proposal. Six (6) firms submitted proposals.

Working closely with members of the CCCWP's Public Information / Participation (PIP) Committee, SGA Inc. set out with the goal to significantly change behavior regarding the

use, and overuse, of harmful pesticides. Whereas litter, the subject of the CCCWP's previous advertising campaign, is an issue with one clear focus (getting people to stop littering) pesticide reduction is a more varied topic (e.g., people use different pesticides for different reasons). The first step was to carry-out foundational research, which included:

1. Literature Review,
2. Pre-Campaign Phone Surveys, and
3. Live Focus Groups

With the data collected from this foundational research, the comprehensive CCCWP Outreach Plan was created. Perhaps the single most important finding of the foundational research was in the general perception related to pesticides, namely, people don't like them. From the literature review to the phone survey to the focus group, no one talked about pesticides and "chemicals" as positive things. While very few people discussed them as water quality issues (most assigned their negative value to public health problems), the critical finding was that people *already do not like pesticides*. This shapes the type of campaigns designed as none have to make the case to the audience that pesticides are harmful or something to be aware of in the first place. Instead, the campaigns are able to move forward in three different realms.

1. Buy Less Toxic
2. Try Non Toxic
3. Hire Eco Certified

The CCCWP Outreach Plan analyzes the data gained during the research process and outlines the parameters for pesticide outreach over the coming years. Its value is both in the establishing of Pre-Campaign attitudes, behaviors, and other baselines as well as in holding together the efforts of the many municipalities involved in any effort as widespread as regional outreach. While its major findings were to focus on three geo-targeted sub audiences as well as to use the pre-existing public perception against

pesticides, dozens of actionable items of research are also outlined in it. These findings have already, and will continue to, provide benefit to members of the CCCWP beyond those directly involved in outreach. For further details regarding the CCCWP Pesticide Advertising Campaign and the CCCWP Outreach Plan, see Attachment 7.1 of this Volume 1 report.

Continuous Improvement of Municipal Land Development Requirements, Policies and Guidance

In addition to the considerable accomplishments outlined above, CCCWP staff, consultants and Permittees were also focused on development and implementation of the following land development requirements, policies and guidance:

**Technical Criteria for Non-LID Facilities** - MRP Provision C.3.e.ii.(1) provides that, for "Special Projects"[5], a specified portion of the impervious surfaces created or replaced may be treated with "one or a combination of the following two types of non-LID treatment systems:

- Tree-box-type high-flowrate biofilters
- Vault-based high-flowrate media filters"

With regard to reporting requirements, MRP Provision C.3.e.vi.(3)(i) states:

> *"List of non-LID Stormwater Treatment Systems: List all non-LID stormwater treatment systems approved. For each type of non-LID treatment system, indicate: (1) the percentage of the total amount of runoff identified in Provision C.3.d. for the Special Project's drainage area, and (2) whether the treatment system either meets minimum design criteria*

[5] See Provision C.3.e.ii in the MRP for a detailed description of "Special Projects". In summary, "Special Projects" are land development projects characterized as smart growth, high density, or transit-oriented developments that can either reduce existing impervious surfaces, or create less "accessory" impervious areas and automobile-related pollutant impacts. In some of these types of projects, implementation of LID treatment controls may be difficult to incorporate into a project whereby implementation of a non-LID treatment facilities may be justified.

*published by a government agency or received certification issued by a government agency, and reference the applicable criteria or certification."*

CCCWP published its own minimum criteria to which municipalities (in Contra Costa or elsewhere) may refer in their Special Projects reports. Drafts of the CCCWP criteria were sent to manufacturer representatives of the most commonly used vault-based, high-flowrate media filters, and high-flowrate tree-box-type biofilters for comment. CCCWP Development Committee (DC) members suggested that the criteria be accompanied by example calculations, which have been included in the criteria and incorporated as an addendum to the Stormwater C.3 Guidebook.

**Facilitation of BASMAA's Green Streets Pilot Project Report** - CCCWP staff and municipal representatives contributed to BASMAA's Green Streets Pilot Project Summary Report (Green Streets Report), which is required to be submitted with this Annual Report in accordance with MRP Provision C.3.b.v.(2)(c). The Green Streets Report contains all of the required elements listed in Provision C.3.b.v.(2)(c) for all green street projects completed by January 1, 2013, as well as information on projects not yet completed. CCCWP contributions to the Green Streets Report included, but were not limited to, the following:

- In 2010, the CCCWP's consultant drafted the scope of work for the report, and CCCWP staff and municipal staff representatives to BASMAA participated in the consultant selection process.
- David Swartz of Contra Costa County staff, who was also the CCCWP representative to the BASMAA Development Committee, acted as BASMAA's Project Officer and worked closely with the consultant to solicit information from municipalities about the Green Streets projects.
- CCCWP staff and consultants, and municipal representatives to BASMAA reviewed and commented on drafts of the report.

The Green Streets Report documents green streets projects in the cities of El Cerrito and Richmond. The *Green Streets Pilot Projects Summary Report* is being submitted by BASMAA on behalf of the MRP Permittees.

**Guidance for Required Site Design Measures for Small Projects and Detached Single-Family Home Projects** - MRP Provision C.3.i. states Permittees must require development projects that create or replace between 2,500 and 10,000 square feet of impervious surface, and detached single-family home projects that create 2,500 square feet or more of impervious surface, to install one or more of six specified site design measures. Provision C.3.i. also required Permittees to develop and submit by December 1, 2012 "standard specifications" for lot-scale site design and treatment measures as a resource for single-family homes and small development projects.

With assistance from CCCWP staff and consultants, the CCCWP's DC prepared guidance, "Preparing a Stormwater Control Plan for a Small Development Project" that was made an addendum to the CCCWP Stormwater C.3 Guidebook. As the Guidebook is referenced in every Permittee's stormwater ordinance, this addendum ensures all municipalities have explicit legal authority to condition issuance of building permits on implementation of the C.3.i. requirement. The addendum also helps ensure consistency of design requirements (e.g., for pervious pavements or dispersal of runoff to landscape) for "small projects" and "Regulated Projects".

Further details regarding the above land development requirements, policies, and guidance are provided in Section 3 of this report.

**A Summary of Other Group Program Activities for FY 2012-2013**

In addition to the highlighted activities and programs summarized above, CCCWP Permittees collectively conducted a broad range of other activities and programs designed to reduce or eliminate the discharge of pollutants (i.e., anything other than

stormwater) into and from municipal storm drain systems. This Volume I report documents the other activities conducted or coordinated collectively as follows:

| Program Component | Section |
|---|---|
| **Municipal Operations** – Controls to reduce non-stormwater discharges and polluted stormwater to storm drains and watercourses during operation, inspection, and routine repair and maintenance activities of municipal facilities and infrastructure. | 2 |
| **Industrial and Commercial Site Controls** – Inspections and enforcement of stormwater regulations at businesses to prevent pollutant exposure and discharges into the municipal storm drain systems. | 4 |
| **Illicit Discharge Detection and Elimination** – Surveillance, spill and complaint response, control of mobile sources, and enforcement and case follow-up. | 5 |
| **Construction Site Controls** – Inspections and enforcement of stormwater regulations at construction sites to prevent pollutant discharges into the municipal storm drain systems. | 6 |
| **Public Information and Outreach** – Outreach to increase the knowledge of target audiences regarding the impacts of stormwater pollution through advertising campaigns, use of free media, public outreach events, citizen involvement events, etc… | 7 |
| **Pesticide Toxicity Control** – Actions to prevent impairment of urban streams by pesticide-related toxicity, including implementation of Integrated Pest Management (IPM), outreach and training to municipal employees and pest control operators, and outreach to consumers on less-toxic methods of pest prevention and control. | 9 |

## SECTION 2 – PROVISION C.2 MUNICIPAL OPERATIONS

### Introduction

CCCWP staff, consultants and municipal staff participate on the Municipal Operations Committee (MOC), which assists in the review and preparation of guidance and training for municipal staff for Provisions C.2 (Municipal Operations), C.4 (Industrial Commercial Site Controls), C.5 (Illicit Discharge Detection and Elimination), C.9 (Pesticide Toxicity Control), C.10 (Trash Load Reduction), and C.15 (Exempted and Conditionally Exempted Discharges). CCCWP staff and designated representatives of the MOC also participate in the Bay Area Stormwater Management Agencies Association (BASMAA) MOC, which coordinates related regional activities. This section of the Annual Report will focus on municipal operation activities (Provision C.2). Reporting related to Provisions C.4, C.5, C.9, C.10 and C.15 are covered in the following sections of this Annual Report.

In FY 2012-2013, Jeff Cowling (City of Brentwood) and Steven Spedowfski (City of San Ramon, served as Chair and Vice Chair of the CCCWP MOC, respectively. Rinta Perkins (City of Walnut Creek), Lynne Scarpa (City of Richmond), and Dan Cloak (CCCWP Consultant) represented the CCCWP at BASMAA's MOC and on the Regional Trash Load Reduction Workgroup, which is discussed in Section 10 of this Annual Report. For a listing of Contra Costa municipal representatives on the CCCWP MOC and BASMAA MOC, see Attachments 1.3 and 1.1, respectively. The MOC met in July and September 2012 and in March 2013. Summary minutes of these meetings are available on the CCCWP website at http://www.cccleanwater.org/meetings/.

### Accomplishments

Two ongoing municipal maintenance activities reviewed by the CCCWP MOC and coordinated through the BASMAA MOC during FY 2012/2013 involved development of

guidance related to municipal stormwater pump station monitoring, and expansion of the mobile surface cleaner program. A brief description of each is provided below.

*Municipal Stormwater Pump Station Monitoring*

The BASMAA MOC discussed development of guidance for determining when specific municipal stormwater pump stations do not need to be monitored based on pump station performance and the exemption provided in Provision C.2.d. During FY 2012-2013, it was determined that criteria would be difficult to develop because of the variability in pump station characteristics. Instead, Permittees will request, in their individual annual reports, consideration of removing certain stations from the inspection and/or monitoring requirements.

*BMPs for Mobile Cleaning Operations*

For many years, BASMAA has maintained and implemented a training and certification program for mobile surface cleaners. Contra Costa Permittees hire BASMAA-certified mobile surface cleaners—or use their own trained staff—for surface pavement washing of public facilities. Permittees also require private businesses to implement the BMPs in BASMAA's Mobile Surface Cleaner Program. BASMAA's mobile surface cleaner training and certification program is consistent with Provision C.2.b., "Sidewalk/Plaza Maintenance and Pavement Washing".

Since its inception, BASMAA's surface cleaning certification program addressed the cleaning of pavement (e.g., parking lots, plazas, and sidewalks). With review and input from the CCCWP and BASMAA MOCs, BASMAA is expanding its mobile surface cleaner program to include additional mobile operations such as carpet cleaners, mobile auto detailers and auto body workers, mobile pet cleaners, mobile food providers, and other mobile businesses in accordance with Provision C.5.d. "Control of Mobile Sources". During FY 2012-2013, BASMAA selected and retained a consultant to expand the program and to produce new segments of the mobile surface cleaner online

certification test and BMP training video. This effort is scheduled to be completed in FY 2013-2014.

**FY 2013-2014 Activities**

In FY 2013-2014, the CCCWP MOC will continue to review and provide assistance to municipal operations staff where necessary to ensure consistent and effective BMPs are implemented to control and reduce non-stormwater discharges and polluted stormwater to storm drains and watercourses during the operation, inspection, and routine repair and maintenance activities of municipal facilities and infrastructure. This includes, but is not limited to: graffiti removal; implementation of Corporation Yard Stormwater Pollution Prevention Plans (SWPPPs); municipal stormwater pump station inspection, operation, maintenance, and monitoring; implementation of appropriate BMPs during road, parking lot and bridge repair and maintenance work; and, complying with the reporting requirements in Provision C.2. The CCCWP MOC will also be assisting in the identification and development of priority municipal operation BMPs for implementation in the next reissued Municipal Regional Permit scheduled for late 2014.

## SECTION 3 – C.3 NEW DEVELOPMENT AND REDEVELOPMENT

### Introduction

During FY 2012-2013, the CCCWP continued to develop and implement its Low Impact Development (LID)-based approach to stormwater controls for new development and redevelopment projects. CCCWP staff and consultants assisted municipal staff and land development professionals to apply the principles and criteria in the CCCWP's *Stormwater C.3 Guidebook.* The 6th Edition of the *Guidebook*, published in early 2012, incorporates Contra Costa Permittees' eight years of experience implementing LID. The *Guidebook* has been referenced and emulated by stormwater programs throughout California.

With oversight and contributions from CCCWP's Development Committee (DC), CCCWP staff and consultants wrapped up some remaining tasks and deliverables required by MRP Provision C.3., and found ways to integrate these requirements into the *Guidebook's* LID approach. The CCCWP's DC also discussed extensively the goals and objectives for Provision C.3 in the MRP reissuance scheduled for 2014. In FY 2012-13, Michael Hawthorne (City of Walnut Creek) and David Swartz (Contra Costa County) served as Chair and Vice Chair of the CCCWP DC. David Swartz and Frank Kennedy (City of Concord) represented the CCCWP at BASMAA's DC. For a listing of Contra Costa municipal representatives on the CCCWP DC and BASMAA DC, see Attachments 1.3 and 1.1, respectively.

The CCCWP also completed two years of monitoring the hydrologic performance of LID facilities.

### Review of FY 2012-2013 Objectives

The CCCWP FY 2012-2013 C.3 Work Plan was guided by the following objectives:

- Facilitate member agencies' compliance with MRP Provision C.3.
- Facilitate implementation of permanent controls on new developments in Contra Costa County.
- Organize and implement all required C.3 group activities and submittals.
- Integrate MRP requirements and BASMAA MRP submittals into existing training and guidance.
- Negotiate permit requirements and interpretations that protect water quality and are implementable and cost-effective.
- Continuously improve Program outreach and guidance on new development controls.
- Continue CCCWP's regional and statewide role as an exemplar and leader in implementation of new development controls.

**Review of FY 2012-2013 Accomplishments**

The CCCWP's DC, assisted by staff and consultants, facilitated implementation of new MRP requirements. Major accomplishments included:

- Completion of an updated model stormwater ordinance
- Preparation of a *Stormwater C.3 Guidebook* supplement for single-family homes and small development projects subject to Provision C.3.i.
- Training for new municipal staff/refresher training in C.3 implementation
- Continued work on the HMP Model Calibration and Validation Plan (i.e., completion of a second season of IMP monitoring and further work on an IMP Monitoring Report, which was completed in September 2013 and submitted with this Annual Report)
- Preparation of technical criteria for non-LID treatment facilities on "Special Projects"
- Facilitation of BASMAA's Green Streets Pilot Project Summary Report

Additional detail on each of these major accomplishments follows:

Updated Model Stormwater Ordinance

Contra Costa Permittees first adopted stormwater ordinances in the early 1990s, based on a model ordinance prepared at that time by a group of municipal attorneys. In 2004, the model ordinance was updated to incorporate Provision C.3 New Development requirements. All Contra Costa Permittees adopted the 2004 model ordinance with minor changes to reflect local conditions.

Beginning in 2011, CCCWP staff convened a work group comprising municipal attorneys, planners, and engineers, along with CCCWP staff and consultants. Nearly all the members had been involved in drafting the 2004 model ordinance. Because of staff shortages and pressing deadlines for implementing other MRP requirements, completion of the model ordinance was delayed until early 2013.

The 2013 updated model stormwater ordinance:

- Retains a requirement that applications for permits or other development approvals for projects subject to Provision C.3 requirements submit a Stormwater Control Plan that meets the criteria in the most recent version of the *Stormwater C.3. Guidebook.*
- Omits outdated thresholds (square feet of impervious area) in the 2004 model ordinance and references the (lower) thresholds in the MRP for which new development projects must implement runoff requirements.
- Updates the definition of “stormwater management facility” to reflect the mandate to use Low Impact Development to manage and treat runoff.
- Updates the list of exempted discharges to coincide with those in the MRP.
- References the need to use BMPs to minimize release of pesticides, fertilizers, and herbicides in runoff.
- Omits a section that allowed property owners to obtain inspections of their on-site treatment facilities from authorized inspection companies. Under the MRP, such inspections must be conducted by municipal staff or by a municipal contractor.

- Makes clear that city staff may require property owners to install structural devices, such as trash capture devices, to avoid the discharge of pollutants to municipal storm drains.
- Updates the enforcement provisions per the recommendations of the municipal attorneys.

The updated model ordinance is available on the CCCWP website at http://www.cccleanwater.org/guidance-to-municipalities/.

Guidance for Required Site Design Measures for Small Projects and Detached Single-Family Home Projects (Provision C.3.i.)

MRP Provision C.3.i. states Permittees must require development projects that create or replace between 2,500 and 10,000 square feet of impervious surface, and detached single-family home projects that create 2,500 square feet or more of impervious surface, to install one or more of six specified site design measures. Provision C.3.i. also required Permittees to develop and submit by December 1, 2012 "standard specifications" for lot-scale site design and treatment measures as a resource for single-family homes and small development projects. BASMAA contracted with Geosyntec to adapt fact sheets that the firm originally developed for the City of Los Angeles. These fact sheets represent the "standard specifications" for MRP Permittees outside of Contra Costa County.

With assistance from CCCWP staff and consultants, the CCCWP's DC prepared guidance, "*Preparing a Stormwater Control Plan for a Small Development Project*" that was made an addendum to the CCCWP *Stormwater C.3 Guidebook*. As the Guidebook is referenced in every Permittee's stormwater ordinance, this addendum ensures all municipalities have explicit legal authority to condition issuance of building permits on implementation of the C.3.i. requirement. The addendum also helps ensure consistency of design requirements (e.g., for pervious pavements or dispersal of runoff to landscape) for "small projects" and "Regulated Projects".

The addendum is available on the CCCWP website at http://www.cccleanwater.org/stormwater-c-3-guidebook/. The CCCWP DC discussed the potential need for staff training related to implementation of Provision C.3.i. It was decided that training was not a priority as the addendum is easy to follow. Basic requirements were subsequently covered in the June 11, 2013 half-day training for municipal staff (see below).

At the direction of the DC, CCCWP's consultant prepared a 2-page "*Stormwater C.3 Update*" that can be used as a handout at permit counters. The "*Stormwater C.3 Update*" summarizes LID requirements for small projects and larger projects and also includes a table of thresholds and corresponding requirements. It can be found on the CCCWP website at http://www.cccleanwater.org/new-development-c-3/.

Training for New Municipal Staff/Refresher Training in C.3 Implementation

The CCCWP sponsored a half-day training in C.3 implementation on June 11, 2013. In a departure from recent years, invitees were limited to municipal staff. The following topics were covered:

- New Development Requirements Overview
- Applicability of Requirements to Development Projects
- Low Impact Development Conceptual Design
- Delineating Drainage Management Areas
- Reviewing Stormwater Control Plans
- Bioretention Design and Construction
- Facility Operation and Maintenance Verification

Time was provided for discussion and information-sharing among municipal staff participants. Presentation slides used in the training are available on the CCCWP website at http://www.cccleanwater.org/c3-workshops-and-conferences/.

HMP Model Calibration and Validation Project

Provision C.3.g. references hydromodification management (HM) standards contained in MRP attachments. The standards are different for Permittees in different counties. Standards for Permittees within the CCCWP are in Attachment C to the MRP.

Land development projects in Contra Costa may comply with HM standards by implementing Integrated Management Practices (IMPs). Design criteria for the IMPs are incorporated in the CCCWP *Stormwater C.3 Guidebook.* The IMPs include bioretention and variations incorporating bioretention and upstream or downstream storage.

Factors used to size the IMPs were developed using a continuous-simulation hydrologic model. MRP Attachment C states that the Contra Costa Permittees shall monitor flow from IMPs to determine the accuracy of the inputs and assumptions used in the model; and, that monitoring shall be conducted at a minimum of five locations, for a minimum of two years, with the aim of evaluating flow control effectiveness of the IMPs. CCCWP conducted monitoring at three IMP locations in Pittsburg, and at two IMP locations in Walnut Creek, during the 2011-2012 and 2012-2013 water years.

The IMP Monitoring Report included with this 2012-2013 Annual Report (see Attachment 3.1) presents the results of this monitoring, and documents calibration and verification of the model using the monitoring data. The IMP Monitoring Report may also be found on the CCCWP website. As shown in the IMP Monitoring Report, the IMPs are considerably more effective than originally estimated.

Technical Criteria for Non-LID Facilities

MRP Provision C.3.e.ii.(1) provides that, for Special Projects, a specified portion of the impervious surfaces created or replaced may be treated with “one or a combination of the following two types of non-LID treatment systems:

- Tree-box-type high-flowrate biofilters
- Vault-based high-flowrate media filters”

With regard to reporting requirements, MRP Provision C.3.e.vi.(3)(i) states:

> *"List of non-LID Stormwater Treatment Systems: List all non-LID stormwater treatment systems approved. For each type of non-LID treatment system, indicate: (1) the percentage of the total amount of runoff identified in Provision C.3.d. for the Special Project's drainage area, and (2) whether the treatment system either meets minimum design criteria published by a government agency or received certification issued by a government agency, and reference the applicable criteria or certification."*

Other Bay Area countywide programs elected to adopt the State of Washington Department of Ecology's Technology Assessment Protocol – Ecology (TAPE) certifications. However, participants in the CCCWP DC noted that interpretation and use of the TAPE criteria is complicated, and TAPE's multiple use levels and treatment requirements leave room for shading and misrepresentation.

Further, to facilitate preparation and review of facility sizing, the guidance needs to specify how the design criteria work with the hydraulic sizing criteria in Provision C.3.d. of the permit. To address these issues, CCCWP published its own minimum criteria to which municipalities (in Contra Costa or elsewhere) may refer in their Special Projects reports. The CCCWP minimum criteria are generally in line with the TAPE criteria, similar criteria published by the New Jersey Department of Environmental Protection, and, in the case of tree-box filters, criteria published by the Sacramento Stormwater Quality Partnership. Drafts of the CCCWP criteria were sent to manufacturer representatives of the most commonly used vault-based, high-flowrate media filters and high-flowrate, tree-box-type biofilters for comment. CCCWP DC members suggested that the criteria be accompanied by example calculations, and these were included in the criteria as incorporated in the addendum to the *Stormwater C.3 Guidebook.*

<u>Facilitation of BASMAA's Green Streets Pilot Project Report</u>

CCCWP contributed to BASMAA's Green Streets Pilot Project Summary Report (Green Streets Report), which is required to be submitted with this Annual Report in accordance with MRP Provision C.3.b.v.(2)(c). The Green Streets Report is being submitted by BASMAA, on behalf of the MRP Permittees, in BASMAA's *MRP FY 2012-2013 Regional Supplement – New Development and Redevelopment*. The Green Streets Report contains all of the required elements listed in Provision C.3.b.v.(2)(c) for all green street projects completed by January 1, 2013, as well as information on projects not yet completed. CCCWP contributions to the Green Streets Report included, but were not limited to, the following:

- In 2010, the CCCWP's consultant drafted the scope of work for the report, and CCCWP staff and municipal staff representatives to BASMAA participated in the consultant selection process.
- David Swartz of Contra Costa County staff, who was also the CCCWP representative to the BASMAA Development Committee, acted as BASMAA's Project Officer and worked closely with the consultant to solicit information from municipalities about the Green Streets projects.
- CCCWP staff and consultants, and municipal representatives to BASMAA reviewed and commented on drafts of the report.

The Green Streets Report documents green streets projects in the cities of El Cerrito and Richmond.

In addition to the major accomplishments described above, CCCWP staff and consultants also:

- Assisted municipal staff through discussions in CCCWP DC meetings and assisted municipal staff and land development professionals with C.3 compliance on specific projects
- Tracked regulatory activity related to stormwater new development requirements throughout California and the US

- In consultation with the CCCWP DC, identified priorities for negotiation of C.3 requirements in the next reissuance of the MRP, scheduled for late 2014
- Facilitated Permittee preparation of the March 15, 2013 Special Projects reports required by Provision C.3.e., and compiled and submitted the reports
- Facilitated inclusion of green streets projects in the Green Streets status report due December 1, 2013
- Contributed to a BASMAA report, due December 1, 2013, on region-wide implementation of LID feasibility requirements

**FY 2013-2014 Goals**

The goals and objectives in the FY 2013-2014 work plan are the same as in the previous year.

## SECTION 4 – PROVISION C.4 INDUSTRIAL AND COMMERCIAL SITE CONTROLS

### Introduction

During FY 2012-2013, CCCWP municipalities implemented their business inspection programs as follows:

- Antioch, Clayton, Concord, El Cerrito, Hercules, Lafayette, Martinez, Orinda, Pittsburg, Pleasant Hill, Richmond, San Ramon, and Walnut Creek and the Towns of Danville and Moraga contract for industrial commercial inspection services with local sanitary district inspectors (or Publicly Owned Treatment Works (POTW) inspectors). This institutional arrangement of using local POTW inspectors to conduct municipal stormwater inspections was initiated soon after the CCCWP was issued its first Joint Municipal NPDES Permit in 1993. This arrangement has been praised by staff of the San Francisco Bay Water Board and has served as a model for other municipalities throughout California. Business inspections conducted by POTW inspectors are referred to in this Annual Report collectively as the "Group Inspection Program". The CCCWP provides administrative support to the Group Inspection Program. This includes management of the contracts, agreements, invoices and reporting; and, assistance in review and development of annual inspection lists, plans, and goals.
- The cities of Brentwood, Oakley, Pinole, and San Pablo and Contra Costa County currently conduct their own business inspection programs.

### Accomplishments

During FY 2012-2013, CCCWP staff and the CCCWP's MOC assisted Permittees with implementation of Provision C.4 by:

1. Administering the CCCWP's Group Inspection Program, and reviewing and updating model tools to support Permittee's business inspection and enforcement response plans;
2. Hosting an Industrial Commercial Inspector Training workshop;
3. Supporting and participating in the Contra Costa Green Business Program; and,
4. Providing outreach to the business community.

The following is a detailed account of each activity listed above:

Administering the CCCWP's Group Inspection Program, and Providing Guidance for Municipal Business Inspection and Enforcement Response Plans

CCCWP staff administers and manages the inspection agreements necessary for the fifteen (15) municipalities involved in the "Group Inspection Program" and three local POTWs - Central Contra Costa Sanitary District (CCCSD), Delta Diablo Sanitary District (DDSD), and East Bay Municipal Utility District (EBMUD). Management of the Group Inspection Program includes coordinating the review of amendments and revisions to the inspection agreements when necessary; receipt and payment of invoices by the POTWs on behalf of the fifteen (15) municipalities; assistance to the Permittees and POTW staff in developing inspection goals; ensuring MRP compliance concerns are integrated into business inspections (e.g., identification and proper management of pollutants of concern such as PCBs); training of inspectors to ensure consistent inspection services countywide; and, field support to inspectors and municipal staff when needed. CCCWP staff meets with the participating municipalities and POTW staff annually to assess the services provided, to set goals for the upcoming fiscal year, to distribute documentation needed for preparation of municipal annual reports; and, to review any special issues or enforcement problems that have occurred.

In FY 2012-2013, Program staff initiated a review of the model Enforcement Response Plan (ERP) and Model Business Inspection Plan (BIP). Due to a temporary leave of absence by the CCCWP staff member assigned this task and due to competing permit

compliance priorities, this task has not yet been completed. Newly retained CCCWP staff will complete this effort during FY 2013/2014 and provide a newly revised Model ERP and BIP to Permittees for their use as may be appropriate.

Inspector Training Workshop

The CCCWP hosted a Commercial/Industrial Stormwater Inspection Training Workshop on May 16, 2013. Workshop topics included a review by CCCWP staff of the business inspection and enforcement response mandates; Department of Fish and Game representative's review of what you can do and cannot do in creeks; State Water Board representative's update on reissuance of the State's General Industrial Permit; and a PG&E representative's review of how they are managing oil filled (i.e., PCBs) electrical equipment. The workshop also included a site visit and tour of a large waterpark (i.e., Waterworld Concord). The tour included a review of the stormwater pollution-prevention methods applied to the waterpark's food service, entertainment, parking, and rental facilities. The workshop was well attended and received. The workshop agenda and presentation materials are available on the CCCWP website at http://www.cccleanwater.org/workshops-and-conferences/.

Green Business Program

During FY 2012-2013, the CCCWP provided $9,000 to support the Green Business Program. The CCCWP is the largest partner and contributor of funds to the Green Business Program in Contra Costa County. The Green Business Program is designed to publicly recognize private businesses and public agencies that take extra steps, beyond baseline compliance with environmental regulations, to prevent pollution and save resources (e.g., conserve water and energy, reduce waste through reuse and recycling, prevent stormwater pollution through good housekeeping practices, etc.). This program encourages and facilitates business managers and inspectors to strengthen and sustain the quality of the environment in Contra Costa County through a collaborative partnership.

To date, 530 businesses have been certified as Green Businesses in Contra Costa County. Currently, 373 businesses are certified including a large number of auto repair shops, landscapers, printers, grocery and hardware stores, solar panel installers, and home remodelers. Numerous public agencies have also been certified. Municipal stormwater and POTW inspectors assist the Green Business program by encouraging potential Green Business candidates. CCCWP staff serves on the Green Business Program's "Partners Committee" and actively engages in development of the Green Business checklist (i.e., the stormwater pollution prevention section that each business needs to complete before becoming certified as a green business).

Providing Outreach and Resources to Businesses

With CCCWP MOC input and direction, CCCWP staff develops and/or updates a variety of business outreach materials including BMP brochures and posters, a website, and a hotline. Stormwater inspectors promote these resources during their inspections. During FY 2012-2013, CCCWP staff assisted the BASMAA MOC in the development of a Fire Sprinkler brochure and initiated development of an update to a restaurant poster containing stormwater pollution prevention BMPs for restaurant employees. The restaurant poster will be completed during FY 2013-2014 and be available in English, Spanish and Chinese.

Throughout the year, CCCWP staff responds to businesses requesting copies of such outreach materials. Business owners use the website to find information on stormwater pollution prevention practices and how they can make their stormwater inspections as easy as possible at http://www.cccleanwater.org/business/. Businesses also use the Program's 1-800-No-Dumping hotline to report illegal dumping in their area to help their business community prosper from a cleaner environment for their customers. A growing awareness of stormwater BMPs has stemmed from use of these resources. Many direct discharges of pollution have been eliminated by educating businesses in proper stormwater BMPs.

**FY 2013-2014 Goals**

For over sixteen years the CCCWP and local POTWs have consistently maintained a strong Group Program Inspection Program. Many of the MRP requirements were already part of Permittees' existing business inspection programs. To promote continuous improvement of the municipal inspection programs, the CCCWP MOC established the following goals for FY 2013-2014:

- Conduct an annual training workshop for industrial commercial stormwater inspectors,
- Complete development of the updated model BIP and ERP,
- Complete development of the restaurant brochure in English, Spanish and Chinese,
- Provide follow-up training on POC source identification and management,
- Prepare guidance for updating the inventory of businesses to inspect,
- Maintain the CCCWP's telephone hotline and website for businesses, and continue to participate in and support the Green Business Program.

# SECTION 5 – PROVISION C.5 ILLICIT DISCHARGE DETECTION AND ELIMINATION

## Introduction

The majority of MRP requirements related to municipal operations are being addressed directly by Permittees. The CCCWP MOC oversees Illicit Discharge Detection and Elimination (IDDE) group activities.

## Accomplishments

The following IDDE group activities were initiated or ongoing during FY 2012-2013:

1. Managed the 1-800-No-Dumping Hotline and Hazmat Incident Reports;
2. Expansion of BASMAA's Mobile Surface Cleaner Program; and,
3. Continued promotion and offering of stormwater pollution prevention car washing kits for charity car washing events.

Provided below is a brief summary of each activity listed above:

<u>1-800-NO-DUMPING Hotline and Hazmat Incident Reports</u>

The CCCWP continues to operate the 1-800-NO-DUMPING hotline. The hotline is used by the public to report illegal dumping and to obtain stormwater information. All hotline calls are referred to the appropriate municipality for follow-up and, if necessary, enforcement**.** Calls have been logged since FY 2004-2005. Calls to the hotline are combined with calls that come directly to municipalities and Contra Costa County Hazardous Materials (Hazmat) Division and are tracked and documented annually in the municipal annual reports. CCCWP staff tracks the 1-800-NO-DUMPING calls separately.

Of the 191 hotline calls received during FY 2012-2013, the overwhelming majority were to report an illegal dumping incident. The most common materials reported included garbage, mattresses, furniture, sofas, building materials, TVs/computers, and yard waste. Other reported dumped materials included tires, household goods and other debris. Each Permittee uses the information from the hotline to identify problem areas needing to be addressed.

The CCCWP continues to collaborate with the Contra Costa County Hazmat Division. Hazmat's countywide 24-hour spill response is a vital component of municipalities' IDDE programs. Each month, the CCCWP disseminates the Hazmat spill response or "Incident Reports" to Permittees. These reports inform each municipality of Hazmat incident responses within their jurisdiction. Municipalities use this information to track the type and locations of spills and dumping incidents, and to conduct appropriate follow-up. More information on each municipality's IDDE program is provided in the individual municipal annual reports compiled in Volume II of this report.

Expansion of BASMAA's Mobile Surface Cleaner Program

BASMAA's Mobile Surface Cleaner Program is a training and certification program for mobile surface cleaners (also discussed in Section 2 above). This effort will be completed in FY 2013-2014. For additional details, see BASMAA's "*MRP Regional Supplement: Training and Outreach Annual Reporting for Fiscal Year 2012-2013.*"

Charity Car Wash Kits

During FY 2007-2008, the CCCWP created a charity car wash pilot campaign to assist charity car wash sponsors to avoid illegal discharges of wash waters to storm drains. The charity car washing campaign included the creation of a brochure and several car washing kits each containing: one (1) submersible pump; one (1) 50' electrical extension cord; one (1) 3' X 4' rubber mat; one (1) 50' garden hose; one (1) metal spray nozzle; three (3) collapsible safety cones, and tape. The brochure instructs

charity car wash organizers how to conduct a car washing event without discharging wash water into the storm drain system. The brochure instructs organizations to: 1) contact the CCCWP; 2) make sure that charity car washes are legal within their municipality; and, 3) use the car washing kit in accordance with the instructions provided. In FY 2012-2013, three (3) organizations requested and successfully used the CCCWP's charity car wash kits. The kits were used a total of nine (9) times. The CCCWP will continue to promote and track the use of these charity car wash kits in FY 2013-2014.

**FY 2013-2014 Activities**

The CCCWP will continue to support the 1-800-No-Dumping hotline and distribution of the Contra Costa County Hazmat Division's incident response reports to the Permittees. The CCCWP's MOC will review and assist in the development of guidance and training, as may be requested, to help improve municipal IDDE programs. The CCCWP's MOC will review potential IDDE topics to be incorporated in the Annual Commercial/Industrial Stormwater Inspector Training Workshop, and will continue to provide input and support for BASMAA's expanded mobile surface cleaners program.

## SECTION 6 – PROVISION C.6 CONSTRUCTION SITE CONTROLS

### Introduction

The CCCWP's DC is responsible for reviewing, researching and making recommendations to the CCCWP's Management Committee with respect to Group Program Activities designed to support Permittees' compliance with the Provision C.6 (Construction Site Control) requirements. Details regarding Permittee representation on the CCCWP's DC is provided in Section C.3 above.

### FY 2012-2013 Activities

During FY 2012-2013, in meetings of the CCCWP's Development Committee, participants discussed Water Board staff audits and Notices of Deficiency/Notices of Violation related to Provision C.6 reporting. In general, Permittee staff has found the reporting requirements, and Water Board staff enforcement actions, to be confusing and not supportive of local efforts to control construction site erosion, sedimentation, and discharge of pollutants.

The CCCWP DC discussed goals and objectives for Provision C.6 in the MRP reissuance scheduled for late 2014. Permittee staff seeks to bring Provision C.6 reporting requirements more closely into line with the objective of protecting water quality through erosion and sedimentation control and stormwater pollution prevention.

### FY 2013-2014 Activities

The CCCWP sponsors a Construction-Site Inspector Training Workshop biannually. The last training was held May 2, 2012. The next training is scheduled for FY 2013-2014.

## SECTION 7 – PROVISION C.7 PUBLIC INFORMATION AND OUTREACH

### Introduction

The CCCWP Public Information/Participation (PIP) Committee, with assistance from CCCWP staff and consultants, is responsible for development of materials and products, information dissemination, marketing and public outreach in accordance with the MRP. Most of the public information and outreach requirements in the MRP are contained in Provision C.7; however, additional outreach activities are required or encouraged in other MRP provisions. The PIP Committee works to identify and coordinate these public information and outreach mandates conducted as a group, or conducted regionally through BASMAA's Public Information/Participation Committee. Attachments 1.3 and 1.1, respectively, provide a list of CCCWP representatives to BASMAA's PIP Committee and participation and attendance at CCCWP PIP Committee meetings, respectively. In FY 2012-2013, Dan Jordan, Contra Costa County Flood Control and Water Conservation District, and Laura Wright, City of Pittsburg, served as Chair and Vice-Chair, respectively, of the CCCWP PIP Committee.

The CCCWP's public information and outreach budget for FY 2012-2013 was $244,500. This was supplemented by the CalRecycle Oil Payment Program (OPP-3) Grant totaling approximately $74,000 for a combined budget of approximately $318,500.

In FY 2012-2013, the CCCWP continued to improve the CCCWP website, which is used to help educate the public on the CCCWP and watershed protection and encourage participation in community events.

The CCCWP, through BASMAA, provided regional media relations outreach and CCCWP representatives attended and supported BASMAA's PIP meetings and outreach efforts. CCCWP representatives continued participation in the Regional Behavior Change Campaign supporting the efforts to come up with a regional brand. See BASMAA's "MRP Regional Supplement for Training and Outreach Annual Report for FY 2012-2013" which was submitted separately by BASMAA on behalf of Contra Costa Permittees for further details.

The remainder of the section documents public education and outreach activities conducted collectively in Contra Costa County.

**Accomplishments**

C.7.b – Advertising Campaign

Foundational Research

Whereas litter, the subject of a previously required campaign, is an issue with one clear focus (getting people to stop littering) pesticide reduction is a more varied topic; after all, different people use different pesticides for different reasons. The CCCWP's first goal then, in lining out the work to significantly change behavior regarding the use, and overuse, of especially harmful pesticides was in developing the foundational research which will steer the ultimate campaigns.

Essentially the foundational research was three different efforts combined into a single final document. These three efforts are briefly described below:

4. Literature Review

   In an effort to get the most out of the previously described survey, research was conducted in the form of a literature review intended to better inform the survey. The literature review was used to lay the groundwork for honing in on Best Management Practices (BMP) and audience segments that the CCCWP may target in the coming years. Literature reviewed included census data, annual reports, reports from similar Bay Area programs, and several research studies based on past campaigns. The findings from the review were critical then in the designing of the phone survey, focus groups, and in writing the strategic plan. Fifteen stormwater pollutants were identified and ranked, as they relate to Contra Costa County.

5. Pre-Campaign Phone Surveys

   A countywide pre-campaign, statistically significant, phone survey was conducted yielding 502 completed responses. The survey was approximately 8 minutes long and asked a variety of questions of respondents related not only to pesticides

and the pesticide campaign, but also questions related to their preferred methods of communications, attitudes and behaviors related to other pollutants of concern, and other important information. The pre-campaign survey was an opportunity to gain vital information that will shape not only pesticide campaign outreach but also other Permit driven outreach over the coming years.

The survey asked respondents what they did to manage pests in their lawn/garden. A number of actionable results were found including what will be described below as the central approach to the CCCWP pesticide outreach. The approach to be used is to create three distinct campaigns tailored around the regional differences inside of Contra Costa County.

6. Live Focus Groups

In an effort to gain the most optimum pre-campaign information, live focus groups were conducted. A total of 10 respondents per County region were recruited. The week of the scheduled focus groups, all 40 participants were called to confirm their intent to participate, provided additional instruction, and offered the opportunity to address any questions. For each region, 6-8 respondents were confirmed.

In February 2013, a total of 4 focus groups were conducted. One group was conducted in each region of the County, so facilities differed. However, all were conducted inside of public buildings (two City Halls, a library, and a community recreation center). The time for focus groups came after work hours on two weekdays, and then a morning and afternoon on a weekend day. A pair of trained focus group facilitators greeted participants and signed them in. Participants sat in chairs around a table for the duration of each group discussion.

The facilitators began by introducing themselves and the broad purpose of the project. To avoid response bias, the explanation of purpose focused on “experiences with lawn and garden care” rather than specifically concentrating on pesticides. Permission to record audio was obtained, and a digital recording was

started. The facilitator then outlined the ground rules for the group, and began with an icebreaker to get people comfortable. One facilitator asked content questions, lead the discussion, and moderated fairness in sharing, while the other facilitator took notes and searched for underlying themes and non-verbal communications. At the end, facilitators summarized the discussion for the group and revealed their true identities. Audio recordings were later transcribed verbatim.

Planning

Because data collection was so robust, and pre-campaign surveying yielded such quality information, the comprehensive CCCWP Outreach Plan was created. This plan will hold together all future outreach efforts.

Perhaps the single most important finding was in the general perception related to pesticides, namely, people don't like them. From the literature review to the phone survey to the focus group, no one talked about pesticides and "chemicals" as positive things. While very few people discussed them as water quality issues (most assigned their negative value to public health problems) the critical finding was that people *already do not like pesticides*. This shapes the type of campaigns designed as none have to make the case to the audience that pesticides are harmful or something to be aware of in the first place. Instead, the campaigns are able to move forward in three different realms.

The major strategies outlined in the plan are those related to the three pronged Pesticides campaign. They are briefly described here:

4. Buy Less Toxic

   Residents of West and South County were found to be especially active when it came to purchasing and using at-home pesticides. In an effort to best focus messaging on a target audience, the first campaign focuses on persuading residents of West and South County to buy less toxic pesticides. As per the results from the focus groups, messaging will hinge on the protection of children and pets from the perceived harmful chemicals of more toxic pesticides. The Our

Water Our World (OWOW) Program will be used as a source for alternative pesticides. Preliminary campaign designs were developed and will be finalized in early FY 2013-2014.

5. Try Non Toxic

   Residents of Central, East, and West counties all expressed a lot of interest in so called “home remedies” during focus groups. These home remedies included everything from baking soda to egg shells, and were considered especially interesting to the group for a variety of reasons. These reasons included cost efficiency, a desire to take ownership of all aspects of home gardening and care, as well as protecting children and pets. The subsequent campaign will encourage residents to try and share a number of these tips through online forums, social media, as well as live groups.

6. Hire Eco Certified

   Finally, in the phone survey, residents of South, Central, and East counties all expressed the highest rate of hiring pesticide companies. An unfortunate pairing to this finding was a complete lack of understanding or knowledge as to what these hired companies were spraying and the necessary frequency of their activities. The final campaign of the trio will hinge on educating residents of these areas on the important things to ask when hiring pesticide providers.

Objective Setting

An additional segment of work related to the Foundational Plan was in the setting of strong, numeric objectives to assess the effectiveness of the campaigns. The desire is to tie clear, hard numbers related to the question “What does ‘significantly change behavior’ actually mean?” These goals are tied to census data as well as information gained from the literature review. Below is a table outlining the various numeric goals tied to each of the three campaigns as well as more general outreach efforts:

| ACTION CAMPAIGN: e.g. Desired Behavior | | Try a non-toxic alternative (e.g. home remedy) | Buy a less-toxic pesticide / herbicide alternative | Hire an eco-certified pest controller |
|---|---|---|---|---|
| **POLLUTANT:** | | ***Pesticides*** | ***Pesticides*** | ***Pesticides*** |
| **AUDIENCE TYPE:** | | ***Do it Yourself*** | ***Do it Yourself*** | ***Outsourced*** |
| **OBJECTIVES** *(in order from top to bottom: least to most difficult to influence)* | ***Engagement*** | Across all Action Campaign**s**, the program will seek to engage audiences, aiming for 134,000 people total[i]. Engagement is defined as any two-way interaction e.g. workshop participation, becoming a Facebook fan, etc. | | |
| | ***Knowledge*** | Relative to the control group (people who do not participate in the program), 26%[ii] more people (in a group of campaign participants of equal sample size) know about one of the 6-8 end-state behaviors *(awareness increase)* | Relative to the control group (people who do not participate in the program), 26% more people (in a group of campaign participants of equal sample size) rate less toxic pesticides/herbicides as more effective in treating pests/weeds (*attitudinal shift)* | Relative to the control group (people who do not participate in the program), 26% more people (in a group of campaign participants of equal sample size) rate eco certified pest controllers as more effective in treating pests (*attitudinal shift)* |
| | ***Interpersonal Communication (Normative)*** | A minimum of 9,720 incidences of people discussing the use of a non-toxic alternative for pest and/or Weed control | A minimum of 3,240 incidences of people discussing the use of a less toxic product for pest and/or Weed control | A minimum of 3,240 incidences of people discussing eco certified pest controllers |
| | ***Willingness*** | People who engage with the campaign Were more willing[iii] to try a non-toxic alternative relative to people who Were not exposed | People who engage with the campaign have more than a 7.63 mean willingness score to purchase eco-friendly pesticides | N/A |
| | ***Behavior Change*** | Relative to the control group (people who do not participate in the program), 13%[iv] more people (in a group of campaign participants of equal sample size) practice a non-toxic alternative | N/A | N/A |

Largely, the 300 page CCCWP Outreach Plan analyzes the data gained during the research process and outlines the parameters for pesticide outreach over the coming years. Its value is both in the establishing of Pre-Campaign attitudes, behaviors, and other baselines as well as in holding together the efforts of the many municipalities involved in any effort as widespread as regional outreach. While its major findings were to focus on three geo-targeted sub audiences as well as to use the pre-existing public perception against pesticides, dozens of actionable items of research are also outlined in it. These findings have already, and will continue to, provide benefit to other members of the CCCWP beyond those directly involved in outreach. For further detail see Attachment 7.1 of this Volume 1 report.

Section C.7.c – Media Relations – Use of Free Media

The CCCWP was supported through BASMAA's regional efforts in conducting of 7 media pitches during FY 2012-2013. See additional detail in BASMAA's *"MRP Regional Supplement for Training and Outreach Annual Reporting for FY 2012-2013",* which was submitted separately by BASMAA on behalf of Contra Costa Permittees.

C.7.d – Stormwater Point of Contact

The CCCWP's website provides a phone number and email contact information for each municipality's designated stormwater representative at www.cccleanwater.org/municipality-contact-list. CCCWP staff updates the Contacts page when notified of a change of representative. The CCCWP website is also accessible from the "Links" page on the BASMAA website.

In addition, the CCCWP provides a "1-800-No Dumping" hotline where people can call and report illegal dumping, which is forwarded to the appropriate Permittee for follow-up as appropriate.

C.7.e – Public Outreach Events

**Bringing Back the Natives Garden Tour** - The CCCWP sponsored the Ninth Annual Bringing Back the Natives Garden Tour, which took place on Sunday, May 5, 2013, showcasing 43 gardens located in 15 cities and unincorporated areas of Alameda and

Contra Costa counties. For summary information and a detailed report about the Bringing Back the Natives Garden Tour, see Attachment 7.2 of this Volume 1 report.

**Our Water Our World** – As in past years, the CCCWP partnered with the Our Water Our World (OWOW) Program to help raise awareness of the connection between pesticide use and water quality, and to provide information to consumers at the point-of-purchase about IPM and less toxic alternatives that do not cause water quality problems. Eighteen stores participated. Over 100 store staff members were trained. Six (6) outreach/tabling events were held in stores reaching over 275 people. There was participation in eight (8) additional outreach/community events reaching over 3500 people. For more information, see Section 9 of this Volume 1 report.

C.7.f – Watershed Stewardship Collaborative Events

**Pesticide Applicators Professional Association –** During FY 2012-2013, CCCWP promoted a Pesticide Applicators Professional Association (PAPA) training held in San Ramon during August of 2012. For additional information, see Section 9 of this Volume 1 report.

**California Products Stewardship Council (CPSC)** – The CCCWP continued to support CPSC through its annual membership fees. The advocacy of the CPSC is to try to make producers responsible for their own waste is an important step toward reducing trash and mass consumption. Product stewardship creates incentives for producers to "design it green and take it back," thereby reducing the environmental impact of product waste. By diverting products from the waste stream, we conserve resources and ultimately reduce the demand for landfills. CPSC's goal is to align public and private sectors through information, advocacy and legislation to ensure ongoing product responsibility. For more details regarding CPSC activities and accomplishments, see Section 10 of this Volume 1 report.

**Green Business Program** – The CCCWP has annually provided staff support and financial contributions to the Green Business Program to assist with their outreach activities to the business community. The CCCWP continues to be the highest

contributor to this effort. Strategic meetings are held quarterly. For more details on the Green Business Program, see Section 4 of this Volume 1 report.

**Contra Costa Watershed Forum** – CCCWP staff attends and participate in Contra Costa Watershed Forum (CCWF) meetings, an open committee of some fifty organizations, including state and local agencies, local non-profit environmental and education organizations, community volunteer groups, and private citizens. The CCWF operates on the premise that actions in a watershed are inter-related and, therefore, that broad participation and cooperation is needed to affect change. Members of the CCWF work together in an effort to find common approaches to making our water resources healthy, functional, attractive and safe community assets.

The CCWF impacts the community, environment and decision makers in Contra Costa. Concerned with urban, suburban, and rural areas in the San Francisco Bay Delta area, the CCWF facilitates local agency and citizen collaboration, fosters innovative strategies for stewardship and protection of watershed resources, and encourages regional capacity building in Contra Costa and neighboring areas.

**CCCWP Community Calendar** – The CCCWP website now has a community calendar that is used to promote watershed related events, activities and volunteer opportunities. Municipalities, creek groups and other organizations are regularly invited to promote their events on the calendar. The goal is use this website feature to increase traffic to the CCCWP website and therefore increase awareness of stormwater quality and pollutant prevention.

**Community Car Wash Kits** – As reported in detail in Section 5 of this Volume I report, the CCCWP provides community car wash kits to various groups and organizations for charity car washing events. The kit allows a group to hold a charity car wash event, and also teaches them how to protect local creeks and become stewards of their watershed.

C.7.g – Citizen Involvement Events

**Community Watershed Stewardship Grant Program (CWSGP) –** The CCCWP continued to provide financial and staff support the CWSGP. The purpose of this grant

program is to distribute funds to local creek and watershed stewardship groups with projects that further the watershed protection mission and facilitate citizen involvement. A total of 12 grants were awarded totaling $100,000 (see Attachment 7.3 for the list of projects).

C.7.h – School Age Children

**Oil Payment Program (OPP-3) Grant/Mr. Funnelhead** – Several Permittees within the CCCWP provided their allocation of grant funds to the CCCWP so a countywide comprehensive effort could be instituted. Approximately $74,000 was budgeted for this activity in FY 2012-2013.

The OPP strives to reach across all age groups, but places particular emphasis on the youth because they are our most forceful environmental stewards. CCCWP staff believes nothing will motivate an adult to change behavior more than being corrected by a child.

There are several components of the OPP including: certifying and recertifying used-oil recycling centers throughout Contra Costa County; providing and educational program targeted to elementary schools throughout Contra Costa County; providing outreach at public events countywide; providing programming to educate and entertain people; and, outreach through a cable advertising component. A "Mr. Funnelhead" website exists as an additional outreach tool. See http://www.funnelhead.com/.

**Oil Collection Center Certification** - A total of 10 oil collection centers were certified, 1 was lost, for a net gain of 9. There are now a total of 125 certified oil collection sites.

**Mr. Funnelhead** - Matt Bolender is CCCWP's OPP-3 Grant consultant, using the "Mr. Funnelhead" character to provide educational outreach.

Mr. Funnelhead made appearances at 16 community events in the cities/towns of Antioch, Brentwood, Clayton, Concord, Danville, Moraga, Orinda, San Ramon, and Walnut Creek, providing a broad outreach to all demographics. A popular draw at the outreach events is a diorama used to educate children and adults on proper disposal of used oil and oil filters.

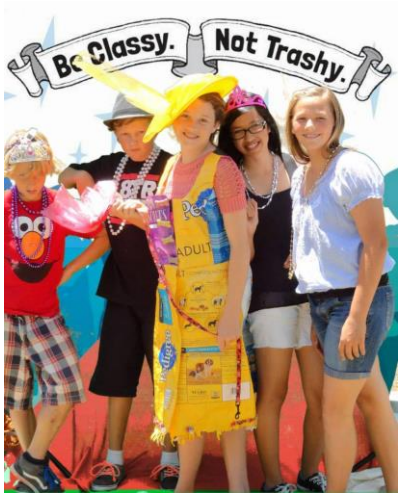
Mr. Funnelhead's educational and entertaining assemblies were held at 21 elementary schools in the cities/towns/unincorporated areas of Antioch, Bay Point, Concord, Danville, El Sobrante, Hercules, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon and Walnut Creek, educating 5680 students about recycling used motor oil and its harmful effects on stormwater. These appearances continue to have a long lasting effect on the children who recount their experience years later when they see Mr. Funnelhead at community events.

Mr. Funnelhead also holds an annual art contest where children incorporate Mr. Funnelhead into their own message about recycling used oil. Prizes are given to the top three artists with the winners appearing in a Mr. Funnelhead Oil Buster Public Service Announcement, which airs on premium cable television.

**"Be Classy Not Trashy" -** The CCCWP Public Information/Participation Committee (PIP) activities for the Fiscal Year centered around the development of a new Youth Outreach approach designed to carry the outreach forward for the foreseeable future.

Particularly with the explosion of social media, effective Youth Outreach must involve a pathway to social media integration and the development of ongoing engagement rather than one time, one way information distribution.

A new approach to Youth Outreach was designed around the implementation of a green screen and user generated photographic content. Large green screen components are set up at an event and then attendees are invited to take pictures in front of the green screen. Because most people, particularly young people between the ages of 12 and 18, are aware of how green screen technology works, they are eager to have their picture taken and the backdrop transposed.



A youthful concept was designed called “Be Classy Not Trashy” to play with the idea of people posing in front of clean environments rather than trashy ones. Not only does this provide an opportunity to begin talking with picture subjects regarding trash issues, it provides municipalities with digitally uploaded pictures of youth “doing the right thing.” These pictures are then shared across multiple platforms, most notably Facebook, in an effort to develop a perceived social norm, that is, the perception that the majority of people are participating in a clean, non-littered environment. In terms of the youth audience today, no single type of media is more important to put use to in the development of that social norm than social media.

While the majority of the year was spent in development of both the green-screen concept and design of what would ultimately become “Be Classy Not Trashy,” the kickoff event occurred June 6th at the Antioch Charter Academy I and II End of Year Celebration. This event yielded 39 pictures which were uploaded to the Eco Antioch Facebook page. Those pictures were then “Liked” by 59 Facebook members, commented by 1, and shared by 1 (a parent of a photographed student.) Due to the nature of Facebook then, these 59 likes, 1 comment, and 1 share alone produced more than 1300 viral views of the pictures from other members of Facebook who are friends with the people who interacted with the pictures.

In terms of value extending beyond the numeric achievements, research has indicated that messages are much more effective in sticking when they are delivered by members of the intended audience’s peer group rather than by an official entity or company. Thus, there is confidence in saying that not only will this Youth Outreach protocol achieve results with the people who attend the events and interact with the green screen, but with their networks and ultimately, the greater Contra Costa community.

For further detail on how the green screen outreach works see Attachment 7.4 – *Contra Costa Clean Water Program Youth Outreach Implementation Protocol.*

**CCCWP Watershed Diorama** – The CCCWP’s Watershed Diorama is used by stakeholder organizations and municipalities for youth-education programs and various public outreach events. The watershed diorama shows how rain becomes stormwater

runoff and then picks up and carries with it dirt, garbage, and any other pollutants into our storm drainage systems, which flow untreated to local creeks, the Delta and Bay. In FY 2012-2013, the diorama was used 12 times as follows:

| Diorama Use Tracking Sheet | | |
|---|---|---|
| **Use Dates** | **Representing** | **Target/Event** |
| | | |
| July 3/4/5, 2012 | City of El Cerrito | July 4th celebration |
| 9/22, 9/23/2012 | Contra Costa Resource Conservation District | Creek clean ups - Pleasant Hill (9/22), Lafayette (9/23) |
| 10/19/12 | Contra Costa Resource Conservation District | Ag in the Classroom |
| 3/9/13 | Contra Costa Resource Conservation District | Ag in the Classroom |
| 4/20/13 | Town of Danville | Earth Day 2013 |
| 5/21/13 | City of Brentwood | Public Works Open House |
| 5/30/13 | City of El Cerrito | 3 Prospect Sierra School Kindergarten Classes |

## FY 2013-2014 Activities

The CCCWP PIP Committee and staff look forward to continuing to establish itself as the local environmental steward the public can trust, respect and depend on to enhance our water quality and environment. CCCWP goals for FY 2013-2014 include:

- Implementation of three Contra Costa region specific urban pesticide campaigns;
- Reaching out to youth with the watershed protection message through the “Be Class Not Trashy” campaign;
- Enhancement of the CCCWP Facebook page and continued enhancement of the CCCWP website so it can be kept fresh and become a place that site visitors want to keep coming back to for more information.

## SECTION 8 – PROVISION C.8 WATER QUALITY MONITORING

Reporting on implementation of the Provision C.8 Water Quality Monitoring requirements was provided in the Urban Creeks Monitoring Report submitted by BASMAA on March 15, 2013. Copies of this report will be made available upon request.

## SECTION 9 – PROVISION C.9 PESTICIDES TOXICITY CONTROLS

### Introduction

BASMAA and CCCWP staff, consultants and MOC members provided the following assistance to Contra Costa Permittees' efforts to reduce pesticide toxicity in local creeks during FY 2012-2013:

- Tools and guidance for implementing and improving Integrated Pesticide Management (IPM) programs;
- Tracking and participating in pesticide regulatory initiatives;
- Promoting opportunities for training events for municipal employees and contractors on IPM;
- Providing outreach to residents and the general public on less-toxic pesticides, and proper pesticide use and disposal; and,
- Coordinating with and reporting to the Contra Costa County Agricultural Commissioner (CCCAC) on improper pesticide use.

### Accomplishments

BASMAA and the CCCWP's MOC provides a forum for Permittees to share information, common issues and lessons learned related to reducing pesticide toxicity in our urban creeks. A summary review of specific topics and activities coordinated through the BASMAA MOC are provided in BASMAA's "MRP Regional Supplement for Training and Outreach Annual Reporting for FY 2012-2013". CCCWP staff chaired BASMAA's MOC in FY 2012-2013. A summary review of specific topics and activities coordinated through the CCCWP's MOC are discussed below.

<u>C.9.b. - Continuous Improvement to Municipal IPM Programs</u>

In December 2012, an IPM Ad-Hoc (Pesticide) Workgroup of the MOC comprising stormwater coordinators from the Cities of El Cerrito and San Pablo—both of whom have some knowledge of IPM—and Contra Costa County's full-time IPM Coordinator was convened. The Pesticide Workgroup was formed in response to concerns that:

- Permittee staff needs short (1-2 pp.), simple guidance for each of their pest control activities
- The Permittees' overarching IPM policies need to be credible to Water Board staff and have defensible purpose, objectives, and definitions

After conducting a survey of Contra Costa Permittees, the Pesticide Workgroup developed a plan to produce the following four work products:

5. An updated Model IPM Policy that is general enough for municipalities to easily adapt (and adopt). This will include:
    - A description of IPM philosophy and implementation hierarchy, based on language developed by UC-Davis
    - Relevance to surface water quality and stormwater NPDES compliance
    - A reference to DPR regulations
    - A reference to having a single point of responsibility within the agency for IPM implementation and program evaluation
    - Reference to the need for accurate record-keeping
    - Reference to the need for training.
6. A simple model IPM Implementation Program that emphasizes:
    - Management effectiveness
    - Single point of responsibility
    - Optional role of review committees

- Record-keeping and reporting
- Training for staff
- Distribution and maintenance of standard operating procedures
- Language for contracts
- Possible reference to/coordination with the Healthy Schools Act
- Following SOPs
- A protocol for when pest problems not addressable by SOPs… either complete IPM form or consult expert

7. Expert resources that can be accessed by municipal staff.
8. Model Standard Operating Procedures to address pest and weed problems most commonly encountered by Contra Costa municipalities.

The Pesticide Workgroup met monthly through the remainder of FY 2012-2013. The Workgroup drafted an updated model IPM policy, adapted from a model policy produced by the San Mateo Stormwater Pollution Prevention Program, and a model IPM program, final versions of which were delivered to the CCCWP Management Committee on June 19, 2013. During FY 2013-2014, the Pesticide Workgroup will be producing model Standard Operating Procedures (SOPs) for pest management.

C.9.c. – Train Municipal Employees

During FY 2012-2013, the CCCWP promoted the Pesticide Applicators Professional Association (PAPA) training workshop held in San Ramon in August of 2012. The CCCWP sent a letter promoting the workshop to over 100 pesticide applicator businesses licensed in Contra Costa, and also promoted the workshop to Permittee staff. In FY 2013-2014, the Program will conduct a one-day training event specifically for municipal employees and contractors on structural IPM and landscaping IPM.

C.9.e – Track and Participate in Relevant Regulatory Processes

In recent fiscal years CCCWP, along with other BASMAA members and stormwater programs statewide, invested considerable effort in advocating for new actions by the Department of Pesticide Regulation (DPR) to reduce the amount of toxic pesticides reaching urban waterways. Advocacy focused on the use of pyrethroids in structural pesticide applications, as these pesticides and mode of use appeared to have the strongest link to toxicity in urban streams (and particularly in urban stream sediments). Because of these efforts, in part, DPR added Sections 6970 and 6972 ("Surface Water Protection Regulations") to the California Code of Regulations (CCRs). These sections became effective on July 19, 2012.

Contra Costa County Deputy Agricultural Commissioner Larry Yost addressed the CCCWP MOC on June 28, 2012 to discuss implementation of the Surface Water Protection Regulations. With regard to ongoing implementation of Provision C.9.e., CCCWP is waiting, as are other stormwater agencies around the state, for expected evidence of reduced pyrethroid toxicity in urban creeks to become apparent in future years.

C.9.f – Interface with Contra Costa County Agricultural Commissioner (CCCAC)

During FY 2012-2013, CCCWP staff spoke with Deputy CCCAC, Larry Yost, regarding any improper pesticide usage reported to the CCCAC. During FY 2012-2013, there were no reports of any improper pesticide usage.

C.9.g – Evaluate Implementation of Source Control Actions Relating to Pesticides

Pesticide toxicity source control actions implemented at the local and/or countywide level include, but are not limited to: adoption and implementation of IPM programs to minimize pesticide use; training of municipal employees of adopted IPM practices and policies; public outreach to consumers at the point-of-purchase of less toxic methods of pest prevention and control; advertising campaign focused on increasing awareness of

pesticide use impacts on local waterways and promoting changes in behavior related to pesticide use: and outreach to pest control operators and landscapers promoting IPM certification and training.

In addition to these local and countywide pesticide source control actions, the CCCWP through BASMAA and the California Stormwater Quality Association (CASQA) are tracking and participating in relevant regulatory processes. This includes tracking USEPA and the California Department of Pesticide Regulation's activities related to evaluation, re-evaluation, registration, re-registration and other actions related to pesticides of concern for water quality.

Provision C.9.g requires Permittees to evaluate the effectiveness of the source control measures implemented, evaluate attainment of pesticide concentration and toxicity targets for water and sediment from monitoring data (Provision C.8.), and to identify improvements to existing control measures and/or additional control measures, if needed, to attain targets with an implementation time schedule. Additionally, Permittees shall report the evaluation results in the 2013 Annual Reports, and if needed, submit a plan to implement improved and/or new control measures. This evaluation, discussed below, was conducted by the CCCWP on behalf of Contra Costa Permittees.

Monitoring data collected in compliance with Provision C.8 help to evaluate attainment of pesticide concentration and toxicity targets. As reported in the Urban Creeks Monitoring Report submitted by BASMAA on March 15, 2013, there were no instances of toxicity to water fleas (Daphnia magna) observed in Contra Costa County, and very few observed regionally. This is evidence of the effectiveness of re-registration of organphosphorus pesticides (diazinon and chlorpyrifos), limiting their use to professional applicators.

In contrast, toxicity to amphipods (Hyalella azteca) was observed in water and sediment in several locations in Contra Costa County during wet and dry periods. This is thought

to be caused by pyrethroid pesticides. CCCWP has elected to conduct stressor source ID studies to confirm this working hypothesis, in compliance with Provision C.8.d.i. If pyrethroids are confirmed to be the cause of toxicity to H. azteca, the responsive action would follow a similar trajectory as previous statewide efforts to address organophosphorus pesticides – pollution prevention through product re-registration.

C.9.h.i – Public Outreach: Point of Purchase

*Our Water Our World* - The CCCWP funds and participates in the "Our Water Our World" (OWOW) Program, which provides educational outreach directly to the consumer/user at the point of purchase (i.e., in the store). The OWOW Program is implemented both regionally and locally. Further details regarding the OWOW Program implementation regionally are provided in the BASMAA's "*MRP Regional Supplement for Training and Outreach Annual Reporting for FY 2012-2013*".

Locally, the CCCWP distributes OWOW educational literature to schools and at community events in addition to the general public when requested. CCCWP staff promotes OWOW through its website and direct interactions with citizens, schools, and businesses. A total of 18 Contra Costa stores participated in the OWOW Program in Contra Costa County in FY 2012-2013. Three (3) new stores were added to this year's contract: Home Depot in Concord, Ace Hardware in Brentwood, and Orchard Supply Hardware in Pinole. All 18 were set up with literature racks, fact sheets, and shelf talkers. Training on the OWOW Program was provided to staff from 10 stores in FY 2012-2013.

Trainings include information on:

- The tie between pesticides, run-off and water quality,
- Identification of beneficial insects in the landscape as well as common and new pests/diseases and invasive plants,
- Techniques for managing specific pest problems,

- Tips and techniques for using/selling the less-toxic products, and
- Correct disposal of toxic materials

Each training participant receives a packet of information and resources including background on the OWOW program and IPM techniques, information on how products work and how to read a pesticide label, laminated bug guides, a chart for identifying pest damage, pest fact sheets, *The 10 Most Wanted Bugs in Your Garden* brochure, and a list of resources and helpful websites. Stores that participated in trainings were also given a laminated poster on identifying good bugs to post in the store, laminated suggestions for rat/mouse management to post, a copy of *Landscape Pest Identification Cards*, and a laminated set of cards to help customers on identifying pests, diseases and beneficial insects.

This year, the OWOW Program was supported in part by an EPA grant called "Greener Pesticides for Cleaner Waterways." This grant paid for IPM advocates to offer OWOW program services to a small number of stores. Two of these stores are part of the Contra Costa OWOW Program (i.e., Orchard Supply Hardware in San Ramon and Ace Hardware in Concord). The EPA grant allowed CCCWP funding to be used toward more time spent mentoring the other Contra Costa stores in the OWOW Program with repeat visits and additional outreach events. For additional information see Attachment 9.1.

C.9.h.iii – Public Outreach: Pest Control Operators (PCOs)

*Bay-friendly Landscape and Gardening (BFL) Coalition* – The CCCWP continues to be a major supporter of the BFL Coalition, which is an organization that provides IPM training and certification to public employees and private sector landscape professionals. As a member of the BFL Coalition, the CCCWP pays dues to support BFL activities and sponsors and coordinates BFL training events in Contra Costa County. No workshops were held in Contra Costa during FY 2012-2013; however, it is possible the one day landscaping and structural pesticide applicator's workshop for

municipal employees in FY 2013-2014 will be coordinated with the Bay Friendly Coalition. The CCCWP will continue to be a member and support the BFL Coalition in FY 2013-2014.

**FY 2013-2014 Goals**

CCCWP goals for FY 2013-2014 include providing a one-day training workshop specifically for municipal employees and contractors on structural IPM and landscape IPM; supporting a Bay Friendly Landscaping Certification and Training Workshop for landscape businesses and municipal staff; continuing to support BASMAA and CCCWP's OWOW Programs; continuing to track and participate in relevant pesticide-related regulatory processes and initiatives through BASMAAA and the California Stormwater Quality Association (CASQA); conducting a regional advertising campaign targeting a broad audience on reducing the impact of urban pesticide use on water quality; and, producing model Standard Operating Procedures (SOPs) for municipal IPM programs.

# SECTION 10 – PROVISION C.10 TRASH LOAD REDUCTION

## Introduction

FY 2012-2013 saw a major shift in direction for trash load reduction and a new consensus among San Francisco Bay Water Board staff and Permittee staff on how to move forward toward the objective of “no visual impact” due to trash in Bay Area waterways.

## Process to Redirect Trash Reduction Planning

During 2012-2013, CCCWP staff and consultants, and staff from the Cities of Walnut Creek and Richmond, participated actively in a regional process to revise the trash reduction planning process from what the San Francisco Bay Water Board mandated in the 2009 MRP. MRP Provision C.10 required Permittees to submit a Baseline Trash Load and Trash Load Reduction Tracking Method by February 1, 2012. These were prepared by EOA, Inc., under contract to BASMAA. MRP Permittees, including Contra Costa Permittees, used these documents and an associated Excel spreadsheet to prepare municipality-specific Short Term Trash Load Reduction Plans. The plans, which were also due February 1, 2012, include additional trash control measures and BMPs designed to attain a 40% trash load reduction from Municipal Separate Storm Sewers (MS4s) by July 1, 2014.

Provision C.10 also requires Permittees to submit Long-Term Trash Load Reduction Plans by February 1, 2014. The plans are to include control measures and BMPs designed to attain a 70% trash load reduction by July 1, 2017 and 100% reduction by July 1, 2022.

Following receipt of the Baseline Trash Load and Trash Load Reduction Method, and the individual Short Term Trash Loading Reduction Plans from each MRP Permittee, San Francisco Bay Water Board staff decided the methodology mandated in the 2009

MRP was not likely to achieve the stated goals. An August 15, 2012 meeting between BASMAA representatives and San Francisco Bay Water Board Executive Officer Bruce Wolfe produced tentative agreement that the methodology should be revised; however, the updated methodology would apply to long-term trash reduction plans, allowing the Permittees to continue their work on implementing the short-term plans.

There were follow-up meetings on October 1 and October 19, 2012. It was agreed to de-emphasize or eliminate the baseline load estimates, and with that, the current quantitative methods and procedures for estimating trash reductions. It was also suggested that municipalities delineate, in the Long-Term Trash Reduction Plans, areas that do not contribute significant amounts of trash. This includes most areas where single-family residences predominate. Municipalities would focus their trash reduction efforts on higher-trash-generating areas.

In November, an 8-point framework for Long-Term Trash Reduction Plans was developed and discussed. It was agreed that measures of effectiveness would need to include some combination of BMP implementation measures combined with measurement of outcomes (i.e., a reduction in the amount of trash observable on streets or in creeks).

In December 2012, City of Walnut Creek stormwater coordinator Rinta Perkins presented an example approach for long-term trash management planning applicable to an area within Walnut Creek's downtown. A similar approach, with somewhat different emphasis, was presented by the City of Sunnyvale's stormwater coordinator.

BASMAA representatives and Water Board staff subsequently reached general agreement on a February 26, 2013 set of recommendations which define, in considerable detail, steps to be followed in developing long-term trash management plans. In addition, BASMAA proposed a strategy to demonstrate progress toward trash-reduction goals.

Consequent to these recommendations, and in response to Water Board staff requests, BASMAA Permittees agreed to show, in their FY 2012-2013 Annual Reports, progress toward long-term trash management plans. In particular, it was agreed that individual municipalities' FY 2012-2013 Annual Reports would include maps delineating low, medium, high, and very high trash generation areas within their jurisdiction. To the extent possible, the FY 2012-2013 Annual Reports will also include maps delineating trash management areas with a corresponding tabulation of BMPs (pre- and post-MRP) implemented, or to be implemented within each area, including locations of full-trash-capture devices and where possible, the drainage areas of those devices. It was noted that municipalities will vary with regard to their capability to generate so much information in so short a time, and that some submittals will be partial and in draft form.

**Ongoing Implementation**

During FY 2012-2013, the CCCWP staff and consultants provided support to Contra Costa municipalities in the selection and installation of full trash capture devices as part of the Bay Area Trash Capture Demonstration Project and in redirecting municipal trash load reduction efforts focused on development of the Long Term Trash Load Reduction Plans. These efforts and other ongoing efforts to reduce trash sources and discharges from Municipal Separate Storm Sewers (MS4s) are discussed below.

<u>Selection and Installation of Full Trash Capture Devices</u>

During FY 2012-2013, CCCWP staff coordinated with the San Francisco Estuary Partnership in providing assistance and information to municipalities for the selection and installation of trash capture devices purchased with funds from an American Recovery and Reinvestment Act (ARRA) grant awarded to the Association of Bay Area Governments (ABAG). Installation of the devices was to be completed in November 2012; however, this date was extended to March 2013 due to difficulties with some vendor's ability to fulfill orders as contracted.

Trash Load Reduction Plan Implementation

CCCWP staff coordinated a consultant contract with EOA Inc. to assist Contra Costa Permittees with development of their long-term trash load reduction plans. This effort required a significant amount of Permittee staff time and resources and involved:

- Permittee review and verification of consultant's updated land use maps;
- Consultant development of revised draft trash generation maps delineating trash generation rate categories assigned to specific land areas via trash generation modeling;
- Permittee review and refinement of revised draft trash general maps and sources through a variety of assessment methods (e.g., on-land visual assessments, querying knowledgeable municipal staff or members of the public, reviewing municipal operations information such as street sweeping and catch basin cleaning activities, and viewing trash conditions via Google Maps – Street View);
- Consultant preparation of a draft final trash generation maps
- Permittee delineation and prioritization of trash management areas, selection of trash management actions for specific management areas, defining type of assessment to demonstrate progress towards trash reduction goals, and the location of full trash capture devices and the associated treatment areas; and,
- Consultant preparation of draft trash management area maps.

CCCWP staff and consultants provided assisted, and will continue to provide assistance in FY 2013-2014, to Permittees with each of the steps outlined above for development of the Long Term Trash Load Reduction Plans due February 1, 2014. Progress in implementing the above steps varies among Permittees due to many factors, some of which include the size and distribution of jurisdictional areas, the extent of very high and high trash generation areas within a community, staff resources, etc. San Francisco Bay Water Board staff has also been supportive of Permittee efforts to implement this redirected strategy that focuses resources on high trash generation areas. San Francisco Bay Water Board staff attended the CCCWP Management Committee

meeting on May 15, 2013 to review Water Board staff's expectations for Permittees reporting on progress in the FY 2012-2013 Municipal Annual Reports, and to answer questions and convey support for the new approach to development of the Long Term Trash Load Reduction Plans due February 1, 2014. CCCWP staff and consultants also provided several opportunities for Contra Costa Permittees to ask questions and share information including; but not limited to, a May 20, 2012 Trash Workshop, a May 2, 2012 conference call to discuss questions related to review of the land use maps, and at each Management Committee meeting held the third Wednesday of the month.

*Trash Source Control Initiatives*

*California Product Stewardship Council* - The CCCWP is a member of the California Product Stewardship Council (CPSC). Its mission to promote Extended Producer Responsibility (EPR), which is based upon shifting California's product waste management system from one focused on government funded and ratepayer financed waste diversion to one that relies on producer responsibility in order to reduce public costs and drive improvements in product design that promote environmental sustainability. The CPSC's position is that the producers should have the primary responsibility to establish, fund, and manage end of life systems for their products. The CCCWP supports the CPSC financially through membership fees equaling $2,500 a year and through direct participation in their associate meetings. CPSC has an impressive record of accomplishments over the last year including, but not limited to:

- Presented at the Contra Costa Safe Medicine Disposal Forum (which the CCCWP promoted to its Permittees);
- Supported Alameda County in adopting the nation's first pharmaceutical EPR ordinance;
- Achieved national and statewide press coverage by being featured in the press including NPR Radio, Waste Age Magazine, Waste and Recycling News, Diabetes Health magazine, Sacramento Bee, Go Green National Radio, and the Sacramento News & Review;

- Supported the roll-out of the Paint Stewardship Program, which now has over 390 collection locations statewide. California local governments are expected to save an estimated $20 million annually once the program is fully implemented;
- Harmonized EPR principles nationally;
- Organized a very successful legislative staff briefing at the Capitol and provided an update on EPR laws and implementation to over 35 legislators and their staff;
- Hosted and facilitated eight free public webinars: Four on the paint stewardship law; one on battery stewardship; two co-hosted by EPA Region 9 on sharps and mercury lamps; and one webinar on how to utilize social media to our collective advantage to get the word out on EPR;
- Presented the Third Annual Arrow Awards to recognize the efforts of companies who are leaders in product stewardship in California;
- Worked with industry leaders on how to increase take-back of their products, including Dell Computers, Interface Flooring, and Armstrong Floor and Ceiling Tile;
- Advocated for passage of AB1442 (Wieckowski), which allows pharmacies to use their existing pharmaceutical collection service to take back medications from the public, greatly reducing costs to collect this waste stream;
- Facilitated adoption of more EPR resolutions, now totaling 133 statewide and representing 63% of the state's population; and
- Added two for-profit businesses to the CPSC board of directors to broaden their partnerships with private sector partners and chambers.

The CCCWP will continue to support and participate in the CPSC's mission and efforts in FY 2013-2014.

**FY 2013-2014 Activities**

In FY 2013-2014, CCCWP staff and consultants will continue to coordinate and support Contra Costa Permittees work to prepare their Long-Term Trash Reduction Plans due February 1, 2014. Once this milestone is achieved, CCCWP staff and consultant will continue to work with San Francisco Bay Water Board staff, stakeholders and

Permittees in further development and refinement of effective trash management actions and assessment methods used to demonstrate progress towards achieving trash load reduction goals.

## SECTION 11 – PROVISION C.11 MERCURY CONTROLS

### Introduction

The majority of MRP requirements related to mercury are being addressed regionally through BASMAA and the Regional Monitoring Coalition (RMC). Reporting on these elements of the MRP, for which there were deadlines in FY 2012/13, can be found in the BASMAA's "*Regional Annual Report Supplement for POCs and Monitoring"* and in the *Urban Creeks Monitoring Report* submitted by BASMAA on March 15, 2013. However, additional details about actions taken directly by the CCCWP in implementing these regional projects are described below under the section titled "CCCWP Role in the Regionally Coordinated Projects".

### CCCWP Role in the Regionally Coordinated Projects

The CCCWP coordinated with Permittees and local household hazardous waste (HHW) collection facilities to implement Provisions C.11.a.i and C.11.a.ii.

*C.11.a.i – Mercury Recycling Efforts*

Provision C.11.a.i requires that: "The Permittees shall promote, facilitate, and/or participate in collection and recycling of mercury containing devices and equipment at the consumer level (e.g., thermometers, thermostats, switches, bulbs)."

The Program's Permittees collect HHW at 3 regional facilities throughout the county: Central Contra Costa Sanitary District (CCCSD), Delta Diablo Sanitation District (DDSD), and West County Wastewater District (WCWD). CCCSD serves the communities of Concord, Clayton, Martinez, Pleasant Hill, Orinda, Lafayette, Moraga, Walnut Creek, Danville, San Ramon and unincorporated county. DDSD serves Pittsburg, Antioch and Bay Point. WCWD serves Richmond, Pinole, El Sobrante and San Pablo.

*C.11.a.ii – Mercury Collection*

Provision C.11.a.ii requires that "The Permittees shall report on these efforts in their Annual Report, including an estimate of the mass of mercury collected." The following tables summarize the estimates of mercury mass collected by each HHW collection facility. The total estimated amount of mercury collected in FY 2012-2013 was 2.07 kg.

**Table 11-1: Summary of Mercury Mass Collected by CCCSD FY 2012 – 2013**

| Mercury Containing Device/Equipment | Total Amount of Devices Collected | Estimated Mass of Mercury Collected (kg) |
|---|---|---|
| #1: Fluorescent Lamps (linear feet) | 263016 | 0.55 |
| #2: CFLs (each) | 16946 | 0.08 |
| #3: Thermostats (each) | 0 | 0 |
| #4: Thermostats (lbs) | 0 | 0 |
| #5: Thermometers (each) | 925 | 0.56 |
| #6: Switches (each) | 156 | 0.45 |
| **Total Mass of Mercury Collected During FY 2012-2013:** | | **1.63** |

**Table 11-2: Summary of Mercury Mass Collected by DDSD FY 2012 – 2013**

| Mercury Containing Device/Equipment | Total Amount of Devices Collected | Estimated Mass of Mercury Collected (kg) |
|---|---|---|
| #1: Fluorescent Lamps (linear feet) | 83800 | 0.17 |
| #2: CFLs (each) | 5592 | 0.03 |
| #3: Thermostats (each) | 0 | 0 |
| #4: Thermostats (lbs) | 0 | 0 |
| #5: Thermometers (each) | 0 | 0 |
| #6: Switches (each) | 0 | 0 |
| **Total Mass of Mercury Collected During FY 2012-2013:** | | **0.20** |

## Table 11-3: Summary of Mercury Mass Collected by WCWD FY 2012 – 2013

| Mercury Containing Device/Equipment | Total Amount of Devices Collected | Estimated Mass of Mercury Collected (kg) |
|---|---|---|
| #1: Fluorescent Lamps (linear feet) | 76940 | 0.16 |
| #2: CFLs (each) | 18245 | 0.08 |
| #3: Thermostats (each) | 0 | 0 |
| #4: Thermostats (lbs) | 0 | 0 |
| #5: Thermometers (each) | 0 | 0 |
| #6: Switches (each) | 0 | 0 |
| **Total Mass of Mercury Collected During FY 2012-2013:** | | **0.24** |

## SECTION 12 – PROVISION C.12 PCB CONTROLS

Reporting on implementation of the monitoring provisions of Provision C.12 PCB Controls was provided in the Urban Creeks Monitoring Report submitted by BASMAA on March 15, 2013. Reporting on other requirements of Provision C.12 PCB Controls was provided in the *"Regional Annual Report Supplement for POCs and Monitoring"* and in the Urban Creeks Monitoring Report submitted by BASMAA on March 15, 2013. Copies of those reports will be made available upon request.

## SECTION 13 – PROVISION C.13 COPPER CONTROLS

MRP requirements related to Copper Controls not implemented at the local-level and reported in the Individual Municipal Annual Reports (see Volume II of this Annual Report) are being addressed regionally through BASMAA. Reporting on implementation of the monitoring requirements of Provision C.13 Copper Controls was provided in the Urban Creeks Monitoring Report submitted by BASMAA on March 15, 2013. Reporting on other requirements of Provision C.13 Copper Controls was provided in the *"Regional Annual Report Supplement for POCs and Monitoring"* and in the Urban Creeks Monitoring Report submitted by BASMAA on March 15, 2013. Copies of those reports will be made available upon request.

## SECTION 14 – PROVISION C.14 PBDE, LEGACY PESTICIDES AND SELENIUM CONTROLS

Reporting on implementation of the monitoring requirements of Provision C.14 PBDE, Legacy Pesticides, and Selenium Controls was provided in the Urban Creeks Monitoring Report submitted by BASMAA on March 15, 2013. Reporting on other requirements of Provision C.14 PBDE, Legacy Pesticides, and Selenium Controls was provided in the *"Regional Annual Report Supplement for POCs and Monitoring"* and in the Urban Creeks Monitoring Report submitted by BASMAA on March 15, 2013. Copies of those reports will be made available upon request.

## SECTION 15 – PROVISION C.15 EXEMPTED AND CONDITIONALLY EXEMPTED DISCHARGES

### Introduction

As outlined in Section 2 above, the CCCWP MOC is tasked with the review, development and coordination of any countywide and/or regional tasks conducted to assist Permittees with implementation of the mandates in Provision C.15. However, due to temporary reductions in CCCWP staffing, redirection of effort in meeting the Trash Load Reduction mandates in Provision C.10, and development of updated pest control guidance and model IPM policies, no specific Group Program actions related to Provision C.15 were conducted in FY 2012-2013.

### Accomplishments

Though the CCCWP's MOC did not conduct any specific group activities to assist Permittees with compliance with Provision C.15, CCCWP staff did participate and help BASMAA develop a 'Fire Sprinkler' brochure. The brochure is designed to educate property owners of the need to protect storm drain systems from discharges resulting from testing fire sprinkler systems. This BASMAA brochure will be distributed by Permittee industrial/commercial stormwater inspectors to applicable businesses.

### FY 2013-2014 Activities

In FY 2013-2014, anticipated Group Program activities related to Provision C.15 include review and input on proposed revisions to the reissuance MRP scheduled for late 2014, and providing a forum (e.g., CCCWP MOC) for Permittees to discuss Provision C.15 implementation issues.

# CONTRA COSTA CLEAN WATER PROGRAM
# ORGANIZATIONAL STRUCTURE AND REPRESENTATION

Attachment 1.1

**Participants -- Antioch, Brentwood, Clayton, Concord, Danville, El Cerrito, Hercules, Lafayette, Martinez, Moraga, Oakley, Orinda, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon, Walnut Creek, Contra Costa County, and Contra Costa County Flood Control & Water Conservation District**

## ADMINISTRATIVE COMMITTEE

**DUTIES**

- Administration
- Strategic Planning
- Personnel
- Budget
- Conflict Resolution

## MANAGEMENT COMMITTEE

**DUTIES**

- Decision Making Body
- Strategic Planning
- Sets Policies / Directives
- Program Manager Evaluation
- Approves / Appropriates Budget

## STAFF

Tom Dalziel, Program Manager
Elisa Wilfong, Watershed Management Planning Specialist
Tracy Hein, Administrative Analyst
Fan Ventura, Clerk - Experienced Level

## MONITORING COMMITTEE

**DUTIES**

- C.8 - Water Quality Monitoring
- C.9 - Pesticides Toxicity Control
- C.11 - Mercury Controls
- C.12 - Polychlorinated Biphenols (PCBs) Controls
- C.13 - Copper Controls
- C.14 - PBDEs, Legacy Pesticides and Selenium

## DEVELOPMENT COMMITTEE

**DUTIES**

- C.3 - New Development and Redevelopment
- C.6 - Construction Site Control

## PUBLIC INFORMATION / PARTICIPATION COMMITTEE

**DUTIES**

- C.7 - Public Information and Outreach
- C.9 Pesticides Toxicity Control
- Coordinaton of Program Outreach

## MUNICIPAL OPERATIONS COMMITTEE

**DUTIES**

- C.2 - Municipal Operations
- C.4 - Industrial and Commercial Site Controls
- C.5 - Illicit Discharge Detention and Elimination
- C.9 - Pesticides Toxicity Control
- C.10 - Trash Reduction
- C.15 - Exempted and Conditonally Exempted Discharges

## BASMAA MONITORING / POC COMMITTEE

**PROGRAM REPRESENTATIVES**

Elisa Wilfong, Program Staff
Lynne Scarpa, City of Richmond
Joanne Le, City of Richmond
Cece Sellgren, CCC Flood Control
Mike Carlson, CCC Flood Control

## BASMAA DEVELOPMENT COMMITTEE

**PROGRAM REPRESENTATIVES**

Tom Dalziel, Program Staff
David Swartz, Contra Costa Cnty.
Frank Kennedy, City of Concord
Cece Sellgren, CCC Flood Control

## BASMAA PUBLIC INFORMATION / PARTICIPATION COMMITTEE

**PROGRAM REPRESENTATIVES**

Tracy Hein, Program Staff
Dan Jordan, Contra Costa County
Rinta Perkins, City of Walnut Creek

## BASMAA MUNICIPAL OPERATIONS COMMITTEE

**PROGRAM REPRESENTATIVES**

Elisa Wilfong, Program Staff
Rinta Perkins, City of Walnut Creek
Lynne Scarpa, City of Richmond

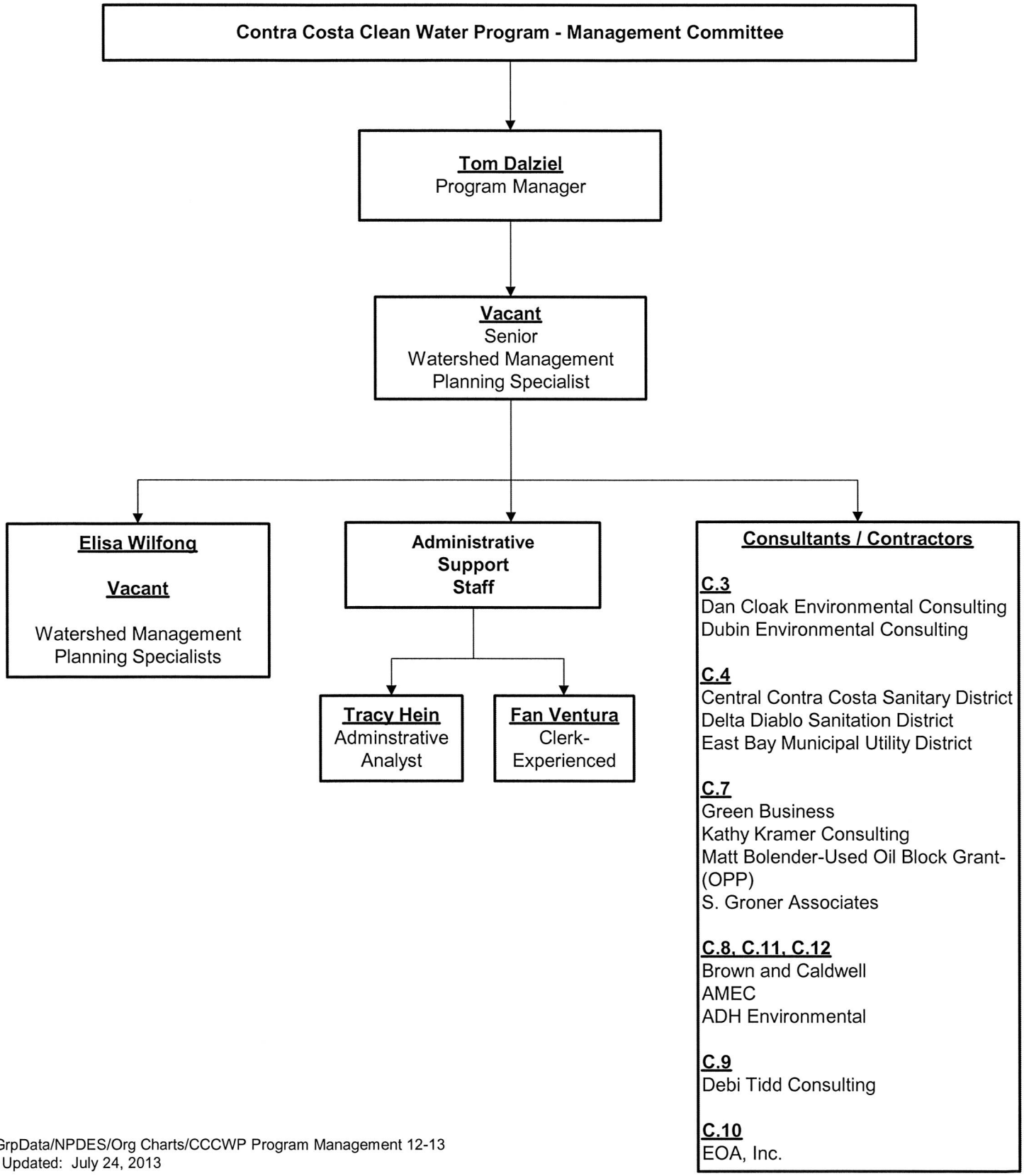
## BASMAA TRASH COMMITTEE

**PROGRAM REPRESENTATIVES**

Elisa Wilfong, Program Staff
Rinta Perkins, City of Walnut Creek
Lynne Scarpa, City of Richmond

# Contra Costa Clean Water Program Management

Attachment 1.2

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Last Updated: July 24, 2013

# ADMINISTRATIVE COMMITTEE
# FY 2012-13 ATTENDANCE ROSTER

| MUNICIPALITY | REPRESENTATIVE | JUL (3) | AUG | SEP (3) | OCT | NOV (3) | DEC | JAN | FEB | MAR | APR | MAY | JUN | INDIV% ATT | MUNI % ATT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| City of Concord | **Dan Sequeira** (2) | | 1 | | | | 1 | | | 1 | 1 | 1 | 1 | 66.7% | **66.7%** |
| Contra Costa County | **Cece Sellgren** | | | | 1 | | 1 | | | 1 | 1 | | 1 | 55.6% | **77.8%** |
| | David Swartz | | | | | | | | 1 | | | 1 | | 22.2% | |
| | Mike Carlson* | | 1 | | | | | | | | | | | | |
| | Mitch Avalon* | | | | | | | 1 | 1 | | | | | | |
| CCC Flood Control District | **Mike Carlson** | | 1 | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100.0% | **100.0%** |
| | Tim Jensen | | | | | | | | | | | | | | |
| Town of Danville | **Chris McCann** | | | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 88.9% | **88.9%** |
| | Michael Stella | | | | | | | | | | | | | | |
| City of El Cerrito | **Stephen Pree** | | 1 | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100.0% | **100.0%** |
| | Jerry Bradshaw | | | | | | | | | | | | | | |
| City of Oakley | **Jason Vogan** | | | | | | | | | | | | | | **88.9%** |
| | Keith Coggins | | 1 | | 1 | | 1 | | 1 | 1 | 1 | 1 | 1 | 88.9% | |
| City of San Pablo | **Karineh Samkian** (1) | | 1 | | 1 | | 1 | 1 | 1 | 1 | | 1 | 1 | 88.9% | **88.9%** |
| | Adele Ho | | | | | | | | | | | | | | |
| **NON-VOTING** | | | | | | | | | | | | | | | |
| City of Clayton | Laura Hoffmeister | | 1 | | | | | | | | | | | | |
| City of San Ramon | Steven Spedowfski | | | | | | | | 1 | 1 | | | | | |
| City of Walnut Creek | Rinta Perkins | | | | | | | | | | | | 1 | | |
| **PROGRAM STAFF** | | | | | | | | | | | | | | | |
| | Tom Dalziel | | x | | x | | x | x | x | x | x | x | x | | |
| | Elisa Wilfong | | x | | | | | | | | x | | | | |
| | Fan Ventura | | x | | x | | x | x | x | x | x | x | x | | |

(1) Chairperson (2) Vice-Chairperson (3) Meeting cancelled

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*Not a representative designated by agency for this Committee. Not counted in totals.

# DEVELOPMENT COMMITTEE
# FY 2012-13 ATTENDANCE ROSTER

| MUNICIPALITY | REPRESENTATIVE | JUL | AUG (3) | SEP | OCT | NOV | DEC (3) | JAN | FEB | MAR (3) | APR (3) | MAY | JUN | INDIV % ATT | MUNI % ATT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| City of Antioch | **Phil Hoffmeister** | | | | 1 | 1 | | 1 | 1 | | | 1 | 1 | 75% | **75%** |
| | Julie Haas-Wajdowicz | | | | | | | | | | | | | | |
| City of Brentwood | **Jeff Cowling** | | | | | 1 | | 1 | 1 | | | | | 38% | **88%** |
| | Jagtar Dhaliwal | 1 | | 1 | | | | | | | | | | 25% | |
| | Dee Boskovic | | | | | | | | | | | 1 | 1 | 25% | |
| City of Clayton | **Laura Hoffmeister** | 1 | | | | 1 | | | 1 | | | 1 | 1 | 63% | **63%** |
| | David Woltering | | | | | | | | | | | | | | |
| City of Concord | **Frank Kennedy** | 1 | | | 1 | 1 | | 1 | 1 | | | 1 | | 75% | **75%** |
| Contra Costa County | **David Swartz**[2] | 1 | | | 1 | | | 1 | 1 | | | 1 | 1 | 75% | **100%** |
| | Alex Anaya | | | 1 | -- | -- | | -- | -- | | | -- | -- | 13% | |
| | Bill Bailey | -- | | -- | -- | 1 | | | | | | | | 13% | |
| City of Orinda | Cathleen Terentieff | | | 1 | 1 | 1 | | 1 | 1 | | | -- | -- | 63% | **100%** |
| | **Larry Theis** | -- | | -- | -- | -- | | -- | -- | | | -- | 1 | 13% | |
| | **Wendy Wellbrock** | -- | | -- | -- | -- | | -- | -- | | | -- | 1 | 13% | |
| | David McIntire | 1 | | | | | | | | | | | | 13% | |
| City of Pittsburg | **Majeed Bahri** | 1 | | | 1 | 1 | | 1 | 1 | | | 1 | | 75% | **100%** |
| | Jolan Longway | | | 1 | | | | | 1 | | | | 1 | 38% | |
| | Amanda Pease | | | | | | | | | | | | 1 | 13% | |
| City of Pleasant Hill | **Ann Page** | 1 | | 1 | 1 | | | | | | | | | 38% | **38%** |
| | Rod Wui | | | | | | | | | | | | | | |
| City of Richmond | **Joanne Le** | 1 | | 1 | 1 | | | 1 | | | | 1 | 1 | 75% | **100%** |
| | Lynne Scarpa | | | | | 1 | | | 1 | | | | | 25% | |
| City of Walnut Creek | **Carlton Thompson**[1] | | | 1 | 1 | 1 | | 1 | 1 | | | 1 | | 75% | **100%** |
| | Scott Wikstrom | | | | | | | | | | | | | | |
| | Rinta Perkins | | | | | | | | | | | | | | |
| | Michael Hawthorne | 1 | | | | | | | | | | | 1 | 25% | |
| **NON-VOTING** | | | | | | | | | | | | | | | |
| Town of Danville | Chris McCann | | | 1 | 1 | 1 | | 1 | 1 | | | 1 | 1 | | |
| City of San Ramon | Steven Spedowfski | --- | --- | --- | 1 | | | 1 | | | | 1 | | | |
| | Chris Low | | | | | | | | 1 | | | | 1 | | |

# DEVELOPMENT COMMITTEE
# FY 2012-13 ATTENDANCE ROSTER

| MUNICIPALITY | REPRESENTATIVE | JUL | AUG (3) | SEP | OCT | NOV | DEC (3) | JAN | FEB | MAR (3) | APR (3) | MAY | JUN | INDIV % ATT | MUNI % ATT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PROGRAM STAFF** | | | | | | | | | | | | | | | |
| | Tom Dalziel | 1 | | 1 | 1 | | | | | | | | | | |
| | Dan Cloak | 1 | | 1 | 1 | 1 | | 1 | 1 | | | 1 | 1 | | |

(1) Chairperson, (2) Vice-Chairperson, (3) Meeting Cancelled

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# MANAGEMENT COMMITTEE
# FY 2012-13 ATTENDANCE ROSTER

| MUNICIPALITY | REPRESENTATIVE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | INDIV% ATT | MUNI % ATT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| City of Antioch | **Phil Hoffmeister** | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 91.7% | **91.7%** |
| | Ron Bernal | | | | | | | | | | | | | | |
| City of Brentwood | **Jack Dhaliwal** | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 83.3% | **91.7%** |
| | Miki Tsubota | 1 | | | | | | | | | | | | 8.3% | |
| | Jeff Cowling* | | | | | | 1 | | | | | | | | |
| City of Clayton | **Laura Hoffmeister** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 91.7% | **91.7%** |
| City of Concord | **Dan Sequeira** | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 91.7% | **100.0%** |
| | Frank Kennedy | | | | | | 1 | | | | | | | 8.3% | |
| Town of Danville | **Chris McCann** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100.0% | **100.0%** |
| | Michael Stella | | | | | | | | | | | | | | |
| City of El Cerrito | Jerry Bradshaw | | | | | | | | | | | | | | **83.3%** |
| | **Stephen Pree** | 1 | | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 83.3% | |
| City of Hercules | John McGuire | | | | | | | | 1 | 1 | 1 | 1 | 1 | 41.7% | **66.7%** |
| | **Jose Pacheco** | | | | 1 | 1 | | 1 | | | | | | 25.0% | |
| | Jeff Brown* | | 1 | 1 | | | | | | | | | | | |
| City of Lafayette | **Donna Feehan** | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 91.7% | **91.7%** |
| | Ron Lefler | | | | | | | | | | | | | | |
| City of Martinez | **Khalil Yowakim** | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 91.7% | **91.7%** |
| | Tim Tucker | | | | | | | | | | | | | | |
| Town of Moraga | **Frank Kennedy** | 1 | | | | | | | | 1 | 1 | | 1 | 33.3% | **100.0%** |
| | Edric Kwan | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | | 66.7% | |
| City of Oakley | **Keith Coggins** | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 91.7% | **91.7%** |
| | Jason Vogan | | | | | | | | | | | | | | |
| | Frank Kennedy* | | | | | | 1 | | | | | | | | |
| City of Orinda | Cathy Terentieff | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | ---- | ---- | ---- | 66.7% | **100.0%** |
| | **Wendy Wellbrock** | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 1 | 8.3% | |
| | Tonya Gilmore | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 1 | 1 | 1 | 25.0% | |
| | Charles Swanson | 1 | | | | | | | | | | | | 8.3% | |
| City of Pinole | **Dean Allison** | | | | | | | | | 1 | | 1 | 1 | 25.0% | **25.0%** |
| | Frank Kennedy* | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | | | | | | |
| City of Pittsburg | **Jolan Longway** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100.0% | **100.0%** |
| | Laura Wright | | | | | | | | | | | | | | |

# MANAGEMENT COMMITTEE
# FY 2012-13 ATTENDANCE ROSTER

| MUNICIPALITY | REPRESENTATIVE | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | INDIV% ATT | MUNI % ATT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| City of Pleasant Hill | **Rod Wui** | 1 | 1 | 1 | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 | 83.3% | **83.3%** |
| | Ann Page* | | | | | | | | 1 | | | | | | |
| City of Richmond | **Lynne Scarpa** | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 83.3% | **91.7%** |
| | Joanne Le** | 1 | 1 | | | | | | | | | | | 16.7% | |
| City of San Pablo | **Karineh Samkian** (1) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100.0% | **100.0%** |
| | Adele Ho | | | | | | | | | | | | | | |
| City of San Ramon | **Steven Spedowfski** | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 91.7% | **100.0%** |
| | Robin Bartlett | | | | | 1 | | | | | | | | 8.3% | |
| City of Walnut Creek | **Rinta Perkins** (2) | | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 | 75.0% | **100.0%** |
| | Steve Waymire | | | | | | | | | | | | | | |
| | Carlton Thompson | | | | | | | | | 1 | | | | 8.3% | |
| | Michael Hawthorne | 1 | | | | | | | 1 | | | | | 16.7% | |
| Contra Costa County | **Cece Sellgren** | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 91.7% | **91.7%** |
| | Julie Bueren | | | | | | | | | | | | | | |
| | Mitch Avalon** | | | | 1 | | | 1 | | | 1 | | | | |
| | Mike Carlson | | | | | | | | | | | | | | |
| | Tim Jensen | | | | | | | | | | | | | | |
| Flood Control | **Mike Carlson** | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 83.3% | **83.3%** |
| | Tim Jensen | | | | | | | | | | | | | | |
| | Cece Sellgren* | 1 | | | | | | | | | | | | | |
| **PROGRAM STAFF** | | | | | | | | | | | | | | | |
| Tom Dalziel | | x | x | x | x | x | x | x | x | x | x | x | | | |
| Jamison Crosby | | x | - | - | - | - | - | - | - | - | - | - | - | | |
| Elisa Wilfong | | x | | | | | | | x | x | x | x | x | | |
| Tracy Hein | | x | x | x | x | x | | x | x | x | x | x | x | | |
| Fan Ventura | | x | x | x | x | x | | x | x | x | x | x | x | | |
| Khalil Abusaba | Consultant | x | | x | x | x | | x | x | x | x | x | x | | |
| Dan Cloak | Consultant | | x | x | x | x | x | x | x | x | x | x | | | |

(1) Chairperson (2) Vice-Chairperson

*Person is not designated by City Manager/Agency Executive to represent agency on this committee. This is not counted in totals.

**Both Primary and Alternate attended the same meeting; attendance credit goes to Primary representative.

Attachment 1.3

# MONITORING COMMITTEE
# ATTENDANCE ROSTER FY 2012-13

| MUNICIPALITY | REPRESENTATIVE | JUL | AUG | SEP* | OCT | NOV* | DEC | JAN | FEB | MAR | APR | MAY | JUN | INDIV % ATT | MUNI % ATT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| City of Antioch | **Phil Hoffmeister** | 1 | | | 1 | | 1 | 1 | | 1 | 1 | | 1 | 70% | **70%** |
| | Julie Haas-Wajdowicz | | | | | | | | | | | | | | |
| County Flood Control | **Cece Sellgren** (2) | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 | | 1 | 1 | 90% | **100%** |
| | Mike Carlson | | | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 80% | |
| City of Pittsburg | **Alfredo Hurtado** | | 1 | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 90% | **90%** |
| | Walter Pease | | | | | | | | | | | | | | |
| City of Richmond | **Lynne Scarpa** | | 1 | | 1 | | 1 | | 1 | 1 | 1 | 1 | | 70% | **100%** |
| | Joanne Le | 1 | | | | | | 1 | | | | | 1 | 30% | |
| City of San Pablo | **Karineh Samkian** | 1 | 1 | | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 90% | **90%** |
| | Adele Ho | | | | | | | | | | | | | | |
| City of San Ramon | **Steven Spedowfski** (1) | 1 | 1 | | 1 | | 1 | 1 | | | 1 | 1 | | 70% | **70%** |
| | Robin Bartlett | | | | | | | | | | | | | | |
| **NON-VOTING** | | | | | | | | | | | | | | | |
| | None | | | | | | | | | | | | | | |
| **PROGRAM STAFF** | | | | | | | | | | | | | | | |
| Jamison Crosby | | 1 | --- | | --- | | --- | --- | --- | --- | --- | --- | --- | | |
| Elisa Wilfong | | | | | | | | | 1 | 1 | 1 | 1 | 1 | | |
| Fan Ventura | | 1 | 1 | | 1 | | 1 | 1 | | | 1 | 1 | 1 | | |
| Khalil Abusaba | Consultant | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 | | 1 | 1 | | |
| Tom Dalziel | | | 1 | | 1 | | 1 | 1 | | | 1 | | 1 | | |

(1) Chair (2) Vice Chair *Meeting Cancelled

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# MUNICIPAL OPERATIONS COMMITTEE
# FY 2012-13 ATTENDANCE ROSTER

| MUNICIPALITY | REPRESENTATIVE | JUL | AUG (3) | SEP | OCT (3) | NOV (3) | DEC (3) | JAN (3) | FEB | MAR* | APR | MAY | JUN* | INDIV% ATT | MUNI % ATT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| City of Antioch | **Cleveland Porter** | 1 | | | | | | | | 1 | | | | 66.7% | **100.0%** |
| | Phil Hoffmeister | | | 1 | | | | | | 1 | | | | 66.7% | |
| City of Brentwood | **Jeff Cowling(1)** | | | 1 | | | | | | 1 | | | | 66.7% | **100.0%** |
| | Kelly Martinez | 1 | | | | | | | | | | | | 33.3% | |
| City of Concord | **Joe Tagliaboschi** | -- | | -- | | | | | | | | | | | **0.0%** |
| | Dan Sequeira | | | | | | | | | | | | | | |
| Contra Costa County | **Charmaine Bernard** | | | | | | | -- | -- | -- | -- | -- | -- | | **66.7%** |
| | Alex Anaya | 1 | | 1 | | | -- | -- | -- | -- | -- | -- | -- | 66.7% | |
| | Bill Bailey | -- | | -- | | | | | | | | | | | |
| City of Hercules | **Glen Moniz** | 1 | | 1 | | | | | | 1 | | | | 100.0% | **100.0%** |
| | Jeff Brown | | | | | | | | | | | | | | |
| City of Lafayette | **David Terhune** | 1 | | 1 | | | | | | 1 | | | | 100.0% | **100.0%** |
| | Ron Lefler | | | | | | | | | | | | | | |
| City of Pinole | **Kimberly Odom** | | | | | | | | | | | | | | **0.0%** |
| | Patrick Bowie | | | | | | | | | | | | | | |
| City of Pittsburg | **Jolan Longway** | | | 1 | | | | | | 1 | | | | 66.7% | **66.7%** |
| | Ramona Anderson | | | | | | | | | | | | | | |
| City of Richmond | **Joanne Le** | 1 | | | | | | | | | | | | 33.3% | **100.0%** |
| | Lynne Scarpa | | | 1 | | | | | | 1 | | | | 66.7% | |
| City of San Ramon | **Steven Spedowfski(2)** | 1 | | 1 | | | | | | 1 | | | | 100.0% | **100.0%** |
| | Patrick Gutierrez | | | | | | | | | | | | | | |
| City of Walnut Creek | **John Johnston** | 1 | | | | | | | | | | | | 33.3% | **66.7%** |
| | Rich Payne | | | | | | | | | | | | | | |
| | Rinta Perkins | | | 1 | | | | | | | | | | 33.3% | |
| **NON-VOTING** | | | | | | | | | | | | | | | |
| Town of Danville | Chris McCann | | | 1 | | | | | | 1 | | | | | |
| **PROGRAM STAFF** | | | | | | | | | | | | | | | |
| Elisa Wilfong | Elisa Wilfong | 1 | | | | | | | | 1 | | | | | |
| Fan Ventura | Fan Ventura | | | | | | | | | 1 | | | | | |
| Dan Cloak | Consultant | 1 | | 1 | | | | | | 1 | | | | | |

(1) Chairperson, (2) Vice-Chairperson, (3) Meeting Cancelled

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*Changed to quarterly meetings starting Feb. 2013.

# PUBLIC INFORMATION/PARTICIPATION COMMITTEE
# FY 2012-13 ATTENDANCE ROSTER

| MUNICIPALITY | REPRESENTATIVE | JUL (3) | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | INDIV % ATT | MUNI % ATT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| City of Antioch | **Julie Haas-Wajdowicz** | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100% | **100%** |
| | Phil Hoffmeister | | | | | | | | | | | | | | |
| CCC Flood Control District | **Dan Jordan** (1) | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100% | **100%** |
| | Cece Sellgren | | | | | | | | | | | | | | |
| City of Martinez | **Tim Tucker** | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 91% | **91%** |
| | Khalil Yowakim | | | | | | | | | | | | | | |
| City of Pittsburg | **Laura Wright** | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 91% | **91%** |
| | Jolan Longway | | | | | | | | | | | | | | |
| City of Richmond | **Lynne Scarpa** | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 91% | **91%** |
| | Joanne Le | | | | | | | | | | | | | | |
| City of Walnut Creek | **Rinta Perkins** | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 91% | **100%** |
| | Michael Hawthorne | | | | | | | | | 1 | | | | 9% | |
| **PROGRAM STAFF** | | | | | | | | | | | | | | | |
| | Tracy Hein | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | Elisa Wilfong | | | | | | | | | | 1 | | | | |
| | Tom Dalziel | | | | 1 | 1 | 1 | | | 1 | | | | | |

(1) Chairperson, (2) Vice-Chairperson, (3) Meeting Cancelled

**Contra Costa Clean Water Program**

# IMP Monitoring Report

## IMP Model Calibration and Validation Project

## Municipal Regional Permit Attachment C

**Submitted to the**

**California Regional Water Quality Control Board**

**San Francisco Bay Region**

**September 15, 2013**

**Acknowledgements**

Dan Cloak, of Dan Cloak Environmental Consulting, prepared the project plan, oversaw implementation of the model calibration and verification project, and prepared this report.

Tony Dubin, of Dubin Environmental Consulting, was involved in developing the model documented in CCCWP's 2005 HMP. He conducted the modeling runs, calibrated and verified the model, and prepared the tables, figures, and text in Chapter 6 of this report.

Scott McQuarrie, of the Contra Costa Flood Control and Water Conservation District, designed and implemented the instrumentation, monitored the IMPs, and compiled the data used in the model calibration and verification.

Tom Dalziel, of the Contra Costa Clean Water Program, has provided project management and coordination since the advent of this effort in 2003.

Jolan Longway, of the City of Pittsburg, provided project coordination and troubleshooting during design and construction of the facilities at the Pittsburg Fire Protection Bureau Building.

Carlton Thompson, Michael Hawthorne, and Scott Wikstrom, of the City of Walnut Creek, provided project coordination and troubleshooting during and following design and construction of the facilities at Walden Parks Commons.

Tom Mumley, Dale Bowyer, and Jan O'Hara, of the San Francisco Bay Regional Water Quality Control Board, were involved in developing and negotiating requirements for implementation of HM measures and for the IMP calibration and verification project.

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IMP Modeling Analysis and Results

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# 0 · Executive Summary

The Contra Costa Clean Water Program (CCCWP) comprises Contra Costa County and the 19 cities and towns within the County, all of which are Permittees under an NPDES permit issued by the San Francisco Bay Regional Water Quality Control Board (Water Board).

Pursuant to permit provision C.3.g., the Permittees require Hydromodification Management (HM) measures to be implemented on development projects. HM measures are intended to control runoff flows so that they do not exceed pre-project flow rates and durations for a specified range of flows. The requirements apply to projects that create or replace an acre or more of impervious area and increase the total amount of impervious area on the project site.

Criteria for HM measures—including factors for sizing HM facilities, called Integrated Management Practices or IMPs—are incorporated in CCCWP's *Stormwater C.3 Guidebook.* The IMPs include bioretention and variations consisting of bioretention combined with upstream or downstream storage.

The sizing factors were developed using a continuous-simulation computer model. The model uses 30 or more years of hourly local rainfall data and generates corresponding estimates of hourly runoff. Model output is used to compare estimated runoff in the site's pre-development condition to runoff post-development, including incorporation of HM measures. Sizing factors represent the minimum IMP areas and volumes required to fully control runoff flows to match the pre-development condition.

The permit requires CCCWP to implement a model calibration and verification project, which is the subject of this report. The purpose of the project is to determine the flow-control effectiveness of the IMPs. The permit specifies that IMPs at a minimum of five locations be monitored for a minimum of two years and that the observed flows be compared to flows that would be estimated by the model.

Three IMPs (bioretention facilities) at an office building in Pittsburg, and two IMPs (bioretention + downstream vault facilities) at a townhouse development in Walnut Creek, were monitored during the 2011-2012 and 2012-2013 water years. Rainfall data was collected at each location. For the IMPs at the Pittsburg site, the water level in the subsurface storage layer was also continuously monitored.

Results of the comparison show that the IMPs provide considerably greater flow-control effectiveness than predicted by the model. The primary reason is that model inputs underestimated the amount of runoff that would be infiltrated by the IMPs. In addition, it was found that runoff percolated through the IMPs soil/compost planting mix more readily than the model predicted. Following changes to input parameters, including the infiltration rate of underlying soils, the model outputs closely matched observed IMP flows and storage.

Local long-term rainfall records were then input to the calibrated model to analyze how IMPs would perform in comparison to current and potential future permit requirements. The simulation indicates that the IMPs fully control runoff flows between the thresholds specified in the current permit (two-tenths of the 2-year pre-project peak flow, or 0.2Q2, and the 10-year pre-project peak flow, or Q10). The Pittsburg bioretention IMPs also control runoff flows within a range extended to the potential future threshold of one-tenth of the 2-year pre-project peak flow, or 0.1Q2. The Walnut Creek bioretention + vault facilities could control flows within the extended range with minor modifications.

In next steps, CCCWP will work with other Bay Area Permittees, through the Bay Area Stormwater Management Agencies Association (BASMAA), to propose appropriate flow-control criteria and sizing factors to be used during the term of a reissued Regional Municipal Stormwater NPDES permit. Lessons learned with regard to facility design details have already been incorporated into the current 6$^{th}$ edition of the *Stormwater C.3 Guidebook.*

# 1 · Background: Hydrograph Modification Management

## 1.1 Permit Definitions and Requirements

Provision C.3.g. in the San Francisco Bay Regional Water Quality Control Board's Municipal Regional Stormwater Permit (MRP), titled "Hydromodification Management" (HM), defines HM projects as those creating or replacing an acre or more of impervious area, subject to various exclusions. Provision C.3.g. requires that:

> The stormwater discharges from HM Projects shall not cause an increase in the erosion potential of the receiving stream over the pre-project (existing) condition. Increases in runoff flow and volume shall be managed so that post-project runoff shall not exceed estimated pre-project rates and durations, where such increased flow and/or volume is likely to cause increased potential for erosion of creek beds and banks, silt pollutant generation, or other adverse impacts on beneficial uses due to increased erosive force.

Specific requirements for design of HM controls are:

> For Alameda, Contra Costa, San Mateo, and Santa Clara Permittees, HM controls shall be designed such that post-project stormwater discharge rates and durations match pre-project discharge rates and durations from 10 % of the pre-project 2-year peak flow up to the pre-project 10-year peak flow. For Fairfield-Suisun Permittees, HM controls shall be designed such that post-project stormwater discharge rates and durations shall match from 20 percent of the 2-year peak flow up to the pre-project 10-year peak flow. Contra Costa Permittees, when using pre-sized and pre-designed Integrated Management Practices (IMPs) per Attachment C of this Order, are not required to meet the low-flow criterion of 10% of the 2-year peak flow. These IMPs are designed to control 20% of the 2-year peak flow. After the Contra Costa Permittees conduct the required monitoring specified in Attachment C, the design of these IMPs will be reviewed.

Nearly identical requirements for new development projects appear in the 2010 East Contra Costa County Municipal NPDES Permit issued by the California Regional Water Quality Control Board for the Central Valley Region.

In the MRP, the referenced Attachment C specifies:

> The Program shall monitor flow from Hydrograph Modification Integrated Management Practices (IMPs) to determine the accuracy of its model inputs and assumptions. Monitoring shall be conducted with the aim of evaluating flow control effectiveness of the IMPs. The Program shall implement monitoring where feasible at future new development projects to gain insight into actual versus predicted rates and durations of flow from IMP overflows and underdrains.
>
> At a minimum, Permittees shall monitor five locations for a minimum of two rainy seasons. If two rainy seasons are not sufficient to collect enough data to determine the accuracy of model inputs and assumptions, monitoring shall continue until such time as adequate data are collected.
>
> Permittees shall conduct the IMP monitoring as described in the IMP Model Calibration and Validation Plan in Section 5 of this Attachment. Monitoring results shall be submitted to the Executive Officer by June 15 of each year following collection of monitoring data. If the first year's data indicate IMPs are not effectively controlling flows as modeled in the HMP, the Executive Officer may require the Program to make adjustments to the IMP sizing factors or design, or otherwise take appropriate corrective action. The Permittees shall submit an IMP Monitoring Report by August 30 of the second year of monitoring. The IMP Monitoring Report shall contain, at a minimum, all the data, graphic output from model runs, and a listing of all model outputs to be adjusted, with full explanation for each. Board staff will review the IMP Monitoring Report and require the Program to make any appropriate changes to the model within a 3-month time frame.

Section 4 of MRP Attachment C states in part:

> Monitoring shall be conducted with the aim of evaluating flow control effectiveness of the IMPs. The IMPs were redesigned in 2008 to meet a low flow criterion of 0.2Q2, not 0.1Q2, which is current HMP standard for Contra Costa County. The Program shall implement monitoring at future new development projects at a minimum of five locations and for a minimum of two rainy seasons to gain insight into actual versus predicted rates and durations of flow from IMP overflows and underdrains. If two rainy seasons are not sufficient to collect enough data to

> determine the accuracy of model inputs and assumptions, monitoring shall continue until such time as adequate data are collected….
>
> ….The principal use of the monitoring data shall be a comparison of predicted to actual flows. The Dischargers shall ensure that the HSPF model is set up as it was to prepare the curves in Attachment 2 of the HMP, with appropriate adjustments for the drainage area of the IMP to be monitored and for the actual sizing and configuration of the IMP. Hourly rainfall data from observed storms shall be input to the model, and the resulting hourly predicted output recorded. Where sub-hourly rainfall data are available, the model shall be run with, and output recorded for, 15-minute time steps.
>
> The Dischargers shall compare predicted hourly outflows to the actual hourly outflows. As more data are gathered, the Dischargers may examine aggregated data to characterize deviations from predicted performance at various storm intensities and durations.
>
> Because high-intensity storms are rare, it will take many years to obtain a suitable number of events to evaluate IMP performance under overflow conditions. Underdrain flows will occur more frequently, but possibly only a few times a year, depending on rainfall and IMP characteristics (e.g., extent to which the IMP is oversized, and actual, rather than predicted, permeability of native soils). However, evaluating a range of rainfall events that do not produce underflow will help demonstrate the effectiveness of the IMP.

Similar, but less detailed, requirements were incorporated into RWQCB Order R2-2006-0050, whereby the San Francisco Bay Regional Water Quality Control Board (Water Board) adopted Contra Costa's HMP in 2006. That Order was superseded by the MRP.

## 1.2 Hydromodification, Control Methods, and Measurements

### 1.2.1 Hydromodification and Stream Erosion

The following brief summary of factors affecting stream erosion was included in the HMP Work Plan submitted in November 2004. Subsequent research has upheld these points.

> Contra Costa streams are subject to a myriad of influences, and it is typically difficult, if not impossible,

to generalize regarding causes and effects across the entire County. Further, it is often difficult to attribute any particular observed condition in a specific stream to only one proximate cause. In general, it is necessary to consider many potential causes and to consider their relative significance. For example, Riley (2002) attributes the incision of stream channels in the Bay Area over the past 100 years primarily to climate changes and earth movement, while noting that incision may be induced accelerated by land use change as well.

As an illustration of the interaction of these influences, consider the stream equilibrium equation identified by Lane (1955).

$$(\text{Sediment load} \times \text{sediment size}) \ \alpha \ (\text{slope} \times \text{discharge})$$

A change in any one of these four factors may contribute to disequilibrium (net erosion or deposition stream sediments) and consequent changes in channel width and depth.

- Sediment load may increased by earth movement (e.g., geologic uplift and mass wasting), land disturbance (e.g., agriculture, road construction), or loss of vegetation, or may be decreased by land development (e.g., paving, terracing), by dams, or by dredging.
- Sediment size may be affected by changed balance among different sediment loads (and the erosion of different geologic strata), by dams, or by in-stream mining.
- Stream slopes are often increased by straightening (removal of meanders), or may be increased or decreased by the placement of downstream culverts or grade controls.
- Finally, stream discharge, and particularly rainfall/runoff relationships, may be increased by deforestation, agriculture, and other land use changes, prior to and including urbanization, or may be decreased by dams and diversions.

The above considerations address only system-wide instabilities, those that are in effect over a long reach or series of reaches. Bank erosion at specific sites may be related to the presence or absence of vegetation and to

localized channel conditions (e.g., placement or removal of woody debris or riprap upstream or downstream).

### 1.2.2 Criteria for Control of Runoff Flows from Development Projects

Notwithstanding the complexity of factors affecting stream erosion, and the watershed scale at which those factors interact, California's nine Regional Water Quality Control Boards (Water Boards) have focused on controlling increased flows and durations from individual development sites.

The nine Water Boards have adopted a variety of criteria, using a mix of methodologies and engineering methods, to regulate land development.

Some Water Boards use the estimated peak flow or volume resulting from a specific storm event ("design storm") as a criterion. Examples of "design-storm" based criteria follow:

- No increase in the predevelopment 2-year peak flow (Orange County and the statewide Phase II permit for small municipalities)
- No increase in runoff volume resulting from the 85$^{th}$ percentile storm or 95$^{th}$ percentile storm, depending on development project location (Central Coast Region)
- No increase in 2-year peak flow or peak duration or increase in runoff volume from the 85$^{th}$ percentile storm (North Coast Region)

Criteria required by other Water Boards involve an analysis of rainfall and runoff over 30 years or more. This continuous simulation approach is discussed in Section 2 below. To determine whether the criteria are met, an hourly rainfall record of 30 years or more is used. Hourly runoff volumes are estimated using a continuous-simulation model applicable to the development site. Runoff is simulated in the pre-project condition and in the post-project condition with proposed IMPs or other flow-control facilities.

The pre-project and post-project runoff statistics are compiled to compare the duration of simulated flow at each flow rate, from rare high flows to more frequent low flows.

The post-project flow durations must be equal to or less than the pre-project flow durations for flows within a specified range.

The Water Boards have required different ranges to be used. The basis for setting different ranges is, ostensibly, that different streams have different thresholds of flow at which their beds or

banks may be eroded and the resulting sediment transported downstream. However, in fact, the ranges are often applied to all the stream segments on all the streams in a whole city or even an entire county.

The lower limit of the range is more critical to facility design. The lower limit is commonly expressed as a fraction of the 2-year pre-project peak runoff flow (Q2). Here are some low-flow thresholds currently mandated by the various Water Boards:

- Sacramento-area municipalities: 0.25Q2 or 0.45Q2
- San Diego County municipalities: 0.1Q2, 0.3Q2, or 0.5Q2, depending on receiving channel material and dimensions.
- Cities of Fairfield and Suisun City: 0.2Q2
- Santa Clara, Alameda, and San Mateo Counties: 0.1Q2
- Contra Costa County: 0.2Q2 when applied to specified IMPs.

### 1.3 LID and HM

The California Ocean Protection Council describes Low Impact Development (LID) as a

> … stormwater management strategy aimed at maintaining or restoring the natural hydrologic functions of a site to achieve natural resource protection objectives and fulfill environmental regulatory requirements; LID employs a variety of natural and built features that reduce the rate of runoff, filter pollutants out of runoff, and facilitate the infiltration of water into the ground…
>
> …LID design detains, treats and infiltrates runoff by minimizing impervious area, using pervious pavements and green roofs, dispersing runoff to landscaped areas, and routing runoff to rain gardens, cisterns, swales, and other small-scale facilities distributed throughout a site.

LID was first developed as a comprehensive stormwater management strategy by Prince Georges County (1999). The hydrologic approach is described as follows:

> The LID approach attempts to match the predevelopment condition by compensating for losses of rainfall abstraction through maintenance of infiltration potential, evapotranspiration, and surface storage, as well as increased travel time to reduce rapid concentration of excess runoff.

In essence, LID seeks to address potential hydrologic impacts of land development by maintaining and restoring site characteristics and conditions at the smallest scale possible. Priority is placed on reducing runoff by limiting impervious surfaces, then on dispersing runoff to landscape within a site, and finally by directing runoff to small-scale facilities integrated into the landscape.

In contrast, HM attempts to address hydrologic impacts of land development at a watershed scale. Flow criteria are developed for streams draining the watershed, and those criteria are then translated to criteria for development of sites draining to the watershed. (In the case of the San Francisco Bay Water Board's approach, criteria developed for flows within selected reaches of three streams in Santa Clara County were applied to all Bay Area development sites directly and without further analysis.)

LID promotes a multiplicity of approaches and promotes "green" urban development, while HM specifies that runoff discharges adhere to a specified hydraulic regime.

The HM criteria adopted by the San Francisco Bay Water Board specify the use of flow duration control basins, and require "HM controls shall be designed such that post-project stormwater rates and durations match pre-project discharge rates and durations…." In flow duration control basins, this "match" is achieved through the sizing and placement of orifices draining a basin. Cost-effectiveness and operational considerations favor larger basins (the opposite of LID's small-scale approach). Indeed, the MRP allows compliance through the use of regional-scale flow-duration control basins.

### 1.4 CCCWP Approach to HM

CCCWP committed to implementing LID beginning in 2003, and published the first edition of the *Stormwater C.3 Guidebook (Guidebook),* emphasizing LID design, in 2004. Faced with the San Francisco Bay Water Board's subsequent emphasis on HM, as opposed to LID, CCCWP sought a way for local developers to meet the HM criteria by using LID. This was accomplished by creating designs for LID IMPs that can also demonstrably meet HM criteria.

CCCWP guidance for HM compliance is incorporated in the *Guidebook.* The *Guidebook* is referenced in stormwater ordinances adopted by each Contra Costa municipality.

The *Guidebook* provides applicants for HM projects the following options for HM compliance. The options also appear in MRP Attachment C:

1. Demonstrate there is no increase in impervious area.
2. Use the HM IMPs in the Guidebook.
3. Use a continuous simulation model and a rainfall record of at least 30 years to show estimated post-project runoff durations and peak flows do not exceed pre-project durations and peak flows.
4. Show that there is a low risk of downstream erosion because all downstream channels are pipes, hardened channels, subject to tidal action, or aggrading, or that a channel restoration project will be constructed that takes the post-project flows into account.

For Option 2, the *Guidebook* incorporates sizing factors that land development engineers may use to determine the minimum required dimensions of a variety of IMPs. The land development engineer divides the development site into discrete Drainage Management Areas (DMAs), determines the amount of equivalent impervious area within each DMA, and uses the *Guidebook* sizing factors to calculate minimum values for the following parameters for an IMP serving that DMA:

- area, **A**
- surface storage volume, $\mathbf{V_1}$
- subsurface storage volume $\mathbf{V_2}$

See Figure 1-1. The land development engineer then shows how, for each DMA, the IMP meets or exceeds minimum values for each parameter.

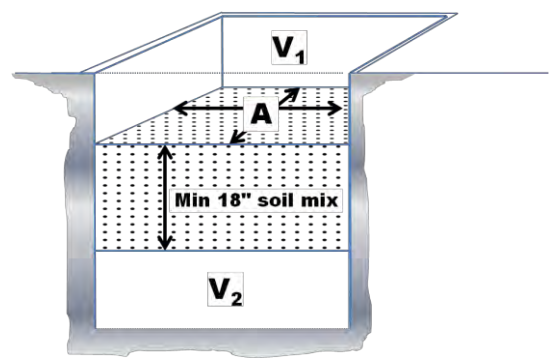


**Figure 1-1.** A, $V_1$, and $V_2$. Note $V_2$ is the free volume; gravel volume is multiplied by porosity

### 1.4.1 Bioretention HM Facilities

Bioretention facilities are the most commonly used IMPs on Contra Costa development projects. They are typically constructed for runoff treatment and to maximize retention of runoff via evapotranspiration and infiltration, but the design is adapted to also provide HM. Bioretention facilities work as follows:

Runoff enters the bioretention facility via sheet flow or pipes and is detained in a shallow surface reservoir. The reservoir also serves to spread runoff evenly across the facility surface. Runoff then percolates through an engineered soil (sand/compost mix). Some runoff is retained in soil pores and plant roots and is subsequently evapotranspirated. Runoff that exceeds the moisture-holding capacity of the soil percolates through the soil layer and enters a subsurface storage layer (typically gravel). The treated runoff subsequently then infiltrates into the soils below the facility. If runoff enters the gravel layer more rapidly than it infiltrates, the saturation level in the gravel layer rises until it reaches the discharge elevation for a perforated pipe underdrain. When this occurs, runoff will also discharge through the perforated pipe underdrain to a discharge point (typically connected to the municipal storm drain system). In general, this discharge will occur rarely—a few times per year, or even once in many years.

In facilities constructed for HM, this perforated pipe underdrain is equipped with a flow-limiting orifice. This allows the bioretention facility to act like a flow duration control basin during the infrequent occasions when the storage layer fills, and as a LID facility at other times.

The surface reservoir is also equipped with an overflow that will become active under either of two scenarios: (1) runoff enters the surface reservoir more rapidly than it percolates through the engineered sand/compost mix, and the surface reservoir fills to its maximum volume or (2) runoff enters the facility more rapidly than it leaves via *both* infiltration to the soils below the facility *and* discharge via the underdrain, and this continues until the gravel and soil layers become fully saturated, and the surface reservoir fills to its maximum volume.

In summary, a bioretention facility receives runoff from a specific delineated area, retains that runoff via infiltration and evapotranspiration, and discharges excess runoff via an underdrain and an overflow.

### 1.4.2 Variations of Bioretention Facilities for HM

The *Guidebook* includes criteria and sizing factors for three design variations:

1. The Flow-through Planter, which can be built above ground or other locations where infiltration to native soils cannot be allowed.

2. Bioretention + Vault, which includes surface storage and engineered soil, but provides for subsurface storage $\mathbf{V_2}$ in a separate structure rather than a subsurface gravel layer.
3. Cistern + Bioretention, which allows for upstream runoff storage $\mathbf{V_1}$ in a tank or basin; runoff is then metered through an orifice to be treated in a bioretention facility.

As described in Section 4, this model calibration and validation project included monitoring of Bioretention + Vault facilities as well as bioretention facilities.

The *Guidebook* also includes design criteria and sizing factors for "direct infiltration" facilities, that is, facilities designed to infiltrate runoff directly, without first routing it through a soil layer to remove pollutants. These design criteria and sizing factors for "direct infiltration" can be used to design infiltration basins, infiltration trenches, and dry wells. This model calibration and validation project did not include "direct infiltration" facilities.

## 2 · Model Representation of Hydrologic Performance

A project team comprising hydrologists and engineers from Philip Williams & Associates and Brown & Caldwell developed the continuous simulation model that is the subject of this model verification and calibration project. The work was done during 2004-2005. The modeling results formed the basis for the designs and sizing factors proposed in the CCCWP's Hydrograph Modification Management Plan (HMP), submitted to the Water Board in May 2005 and approved by the Water Board, with minor changes, in July 2006.

In 2009, Brown and Caldwell used the same continuous simulation model—with the same input parameters and assumptions—to create sizing factors for new IMP designs. The new IMP designs and sizing factors were incorporated into an addendum to the 4th Edition of the *Stormwater C.3 Guidebook,* and subsequently carried forward through the 5th and 6th (most recent) *Guidebook* edition.

The model was created in HSPF (Hydrologic Simulation Program – Fortran). HSPF has a history going back to the 1960s, has been used and endorsed by USEPA, and has been embraced in many parts of the US for evaluation and design of the hydrologic impacts of new developments. The Western Washington Hydrologic Model (WWHM) consists of an HSPF-based simulation and a user interface, as does the Bay Area Hydrology Model

(BAHM) currently used in Alameda, Santa Clara, and San Mateo Counties. Because HSPF is widely used, there is a significant body of literature and a community of practitioners to support use of the model in HSPF applications.

In HSPF, the various hydrologic processes are represented as flows and storages. Each flow is an outflow from a storage, which, at each time step, is typically a function of the storage volume at that time step and the physical characteristics of the storage. For undeveloped watersheds, HSPF models the movement of water along three paths: overland flow, interflow, and groundwater flow. A variety of storage zones are used to represent storage that occurs on the land surface and in the soil horizons.

The continuous-simulation model was developed and used to demonstrate that, with the inclusion of appropriately sized IMPs in a development project, increases in runoff flow and volume are managed so that post-project runoff does not exceed estimated pre-project rates and durations.

This requires that the model generate representation of pre-project flows at each time step over a long period, as well as post-project flows at each time step during that same period. It is then possible to make statistical cumulative comparisons of the two sets of generated data.

To develop the model, the consultant team:

- Characterized pre-project runoff peaks and durations for a range of soil groups, vegetation, and rainfall patterns characteristic of Contra Costa County development sites.
- Modeled outflow peaks and durations from several IMP designs (based on a unit area of new impervious surface draining to the IMP).
- Compared modeled pre-project flows to modeled post-project-with-IMP flows, using conservative assumptions.
- Developed calculations for sizing factors for each IMP associated with each pre-project condition.

To model the IMPs, the project team constructed representations of each IMP in HSPF. For example, a bioretention facility is represented in HSPF by length, cross-section geometry, layers of soil and underdrain material, and transmissivity of underlying soils.

# 3 · Model Verification and Calibration Project Design

This project compared model-predicted hydrologic performance to actual hydrologic performance for five facilities at two test sites.

## 3.1 Steps for Model Verification and Calibration

The experimental design of this project can be summarized as follows:

1. Create a customized version of the HSPF model for each test facility and its corresponding tributary area to continuously simulate inflow, infiltration, evapotranspiration, and underdrain discharge for that test facility. The customized versions use the same values as the 2004-2005 model for soil permeability and bioretention planting soil characteristics, and facility-specific values for the tributary drainage area size and runoff factors and for facility dimensions.
2. Measure rainfall at each test site at each time increment.
3. Input site rainfall data, and use the model to predict, for each time increment, the rates and volumes of inflow, infiltration, evapotranspiration and underdrain discharge for each test facility, as well as storage within each component of the facility.
4. Directly measure the underdrain discharge for each facility at each time increment. (Also, for three of the test facilities, the saturation level in the gravel layer was measured at each time increment.)
5. Compare predicted to measured flows and storage.
6. Adjust the previously assumed model parameter values so that predicted flows and storage more closely approximate measured flows and storage at each time increment (that is, calibrate the model).

## 3.2 Evaluation of Sizing Factors

The procedure for calculating sizing factors, previously implemented in 2004-2005 and again in 2009, was used with the now-calibrated model to evaluate whether the current sizing factors for bioretention and bioretention + vault facilities are adequate.

Long-term hourly rainfall records from two of the same rain gauges previously used for calculating the sizing factors were input into one of the calibrated site-specific models to examine whether the facility met regulatory criteria.

This procedure was completed for two regulatory scenarios:

1. For a low-flow criterion of 0.2Q2, as specified under the MRP adopted in 2009.
2. For a low-flow criterion of 0.1Q2.

Results are in Section 6.

# 4 · Project Test Facility Characteristics and Parameters

The CCCWP sought to identify development projects with the following characteristics (Cloak, 2009):

- One or more facilities (bioretention, flow-through planter, bioretention + vault, or cistern + bioretention).
- Facilities must include an underdrain (as required on sites where native soils are in Hydrologic Soil Groups "C" or "D").
- Clearly defined and accurately sized Drainage Management Areas.
- Facilities designed according to the criteria in the Guidebook 4th Edition, including documentation and calculations of minimum and provided bioretention surface area, surface storage volume, diameter of circular orifice, and subsurface storage volume.
- Arrangements/permissions to work with the project contractor and inspector to document and verify construction of the facilities.
- 24-hour access and permission from site owner to access facilities to maintain monitoring equipment.
- Above-ground location to mount a datalogger, rain gauge, and telemetry.

There were five test facilities at two test sites. Three bioretention facilities were monitored at the Pittsburg Fire Prevention Bureau Building, and two bioretention + vault facilities were monitored at Walden Park Commons, a 65-unit townhouse development in Walnut Creek.

## 4.1 Pittsburg Fire Protection Bureau Building

### 4.1.1 Site Description

The Pittsburg Fire Protection Bureau Building is located at 2329 Loveridge Road in Pittsburg. Total project site area is 1.09 acres. The site is nearly flat. A single-story building of about 19,000 square feet houses offices of the Contra Costa Fire Protection District. There is an accompanying parking lot with 35 spaces and a trash enclosure. The site includes landscaping around the building, around the perimeter of the site adjacent to Loveridge Road and Loveridge Circle, and in parking medians. The project was constructed during 2011.

As originally designed, the project included a paved overflow parking area. With this area, the total new impervious surface exceeded one acre. The City of Pittsburg required HM compliance for the project. In later revisions to the project scope, the overflow parking area was left graveled rather than paved and the total new impervious area was reduced to 26,457 square feet.

Figure 4-1.
Pittsburg site pre-project

### 4.1.2 Pre-Project Condition and Site Soils

Figure 4-1 shows the site in its pre-project condition. As can be seen in the photo, the site was previously undeveloped; however, it had been used for parking and perhaps as a construction staging area.

Figure 4-2. Excavation of IMP #2 at Pittsburg Site.

Borings on the site were taken in 2004. According to the report by Kleinfelder (2004), subsurface soils "consisted predominantly of stiff to hard, moderately to highly plastic silty clays, extending to depths ranging from about 4 to 14 feet below existing site grade." This covers the range of depths at the bottom of the bioretention facilities. Surface soils were found to have high shear strength and be highly plastic, as indicated by Atterberg Limits: a Liquid Limit of 59% and a corresponding Plasticity Index of 37. This indicates high expansion potential. The shear strength of the soils is apparent in Figure 4-2.

Boring depths extended as deep as 31 feet, and groundwater was not encountered.

### 4.1.3 Drainage Management Areas

The Pittsburg Fire Protection Bureau Building design for treatment and HM compliance incorporates eight DMAs.

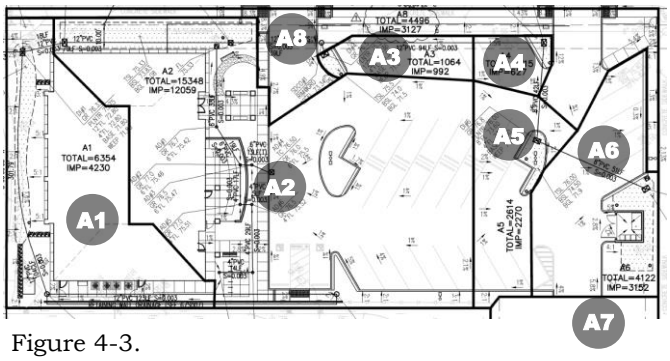


Figure 4-3.
Pittsburg site Drainage Management Areas.

For the model verification project, the completed site was inspected to verify that DMA delineation corresponded to site drainage as built. This included visual verification of the location of rain gutters and downspouts. In addition, the parking lot and grounds were inspected to verify that grade breaks correspond to the DMA boundaries shown in the project plans.

See Figure 4-3 and Table 4-1.

DMA 7 is a self-treating pervious graveled area. DMA 8 consists of driveway and sidewalk areas that could not be made to drain to treatment facilities. The remaining six DMAs each drain to a bioretention facility. Three of these six bioretention facilities were selected to be monitored as part of this project; these are designated as A2, A4, and A6 in Table 4-1.

Table 4-1. Pittsburg Fire Protection Bureau Building Facility Dimensions.

| | **Tributary Area** | | **Bioretention Facility Dimensions** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Landscaped (SF) | Impervious (SF) | A (SF) | A* (gravel layer) | $V_1$ (CF) | Surface Depth (in.) | $V_2$ (CF) | Gravel Depth (in.) | Orifice diameter (In.) |
| **A1** | 1582 | 4230 | 558 | 558 | 316 | 7 | 379 | 21 | 0.51 |
| **A2** | 2415 | 12059 | 886 | 886 | 874 | 12 | 961 | 33 | 0.81 |
| **A3** | 0 | 992 | 60 | 72 | 72 | 12 | 72 | 30 | 0.21 |
| **A4** | 0 | 627 | 67.5 | 82.5 | 44 | 6 | 44 | 15 | 0.17 |
| **A5** | 180 | 2270 | 170 | 195 | 130 | 9.5 | 170 | 31 | 0.32 |
| **A6** | 562 | 3152 | 340 | 340 | 204 | 6 | 258 | 19 | 0.41 |

*The gravel layer on some facilities extended beyond the surface dimension due to installation of a curb that extended only to top of the gravel layer.

### 4.1.4 Design of Bioretention Facilities

Each of the three test bioretention facilities was constructed using the cross section and key features specified in the 4th Edition of the *Guidebook.* Some specifications that were new for the 5th ("MRP") Edition were incorporated. All three facilities have:

- Surface reservoir depth as required for $V_1$
- 18-inch depth sand/compost mix
- Subsurface reservoir of Class 2 permeable (Caltrans Specification 68-1.025), as required for $V_2$
- Underdrain of PVC SDR 35 perforated pipe
- Underdrain discharge orifice
- Curb inlets; these are constructed somewhat differently from the standard 12-inch-wide curb cut and consisted of pipe sections in the curb face.
- Outlet structures consisting of 24" × 36" precast catch basins; this larger size was to ensure the instrument technician would be able to enter and access the tipping buckets located where the underdrain discharges to the outlet structure.
- Monitoring wells, composed of a section of 6-inch PVC pipe extending vertically through the soil and gravel layers.

Bioretention facilities A2 and A4 were designed with perimeter walls. Bioretention facility A6 was designed without perimeter walls.

A discharge orifice design was developed for this project; the design was subsequently included in the 5th Edition of the *Guidebook.* The design incorporates a solid PVC pipe extending through the wall of the outlet structure; the pipe is fitted with a threaded cap. The orifice is drilled into the cap. This allows the cap to be removed so that the orifice and pipe can be cleaned if necessary; it also allows the cap to be

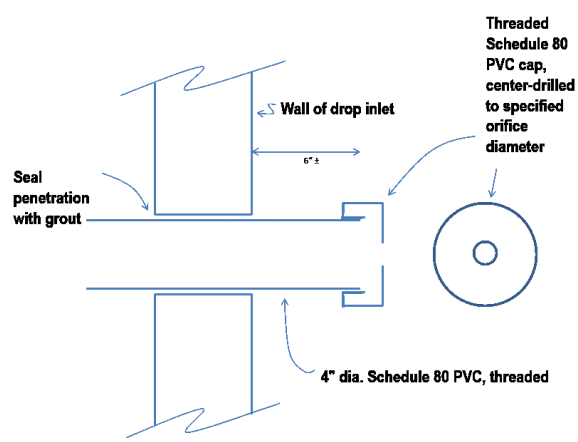

Figure 4-4. Underdrain Orifice Detail.

replaced if the orifice size needs to be adjusted. See Figure 4-4.

As is typical on development sites, the area for some of the IMPs substantially exceeds the minimum. See Table 4-1. This is done for constructability. It is often easier and more cost-effective to build a facility with dimensions that coincide with the available space (such as a parking median) than to build the additional walls and other structure necessary to minimize the size of the IMP.

### 4.1.5 Construction of Bioretention Facilities

The bioretention facilities were constructed consequent with the construction of the Fire Protection Bureau Building during 2011.

The facilities were constructed generally as designed. The following issues were encountered during construction:

The outfall structures had to be constructed deep enough to fit tipping buckets beneath the underdrain discharge elevation. Because the site is flat, and because the municipal storm drain in Loveridge Road is shallow, there was concern that during storm events flow from the municipal storm drain would back up into the site storm drains and flood the tipping buckets. To address this concern, the most downstream on-site drainage structure (not a bioretention outfall) was fitted with a weir wall and a pump placed on the upstream side with discharge to the downstream (municipal storm drain) side. The pump operated successfully to maintain drainage over the weir wall.

The addition of curbs and widening of curbs for structural stability resulted in reductions to the surface area of each test facility. The reduced areas were noted in updated drawings (and in Table 1) and incorporated into the customized model for each facility.

Following excavation, the native clay soils at the bottom of each bioretention facility were “ripped” using the toothed bucket of the excavator.

### 4.1.6 Instrumentation

A rain gauge was located on the roof of the trash enclosure.

Each of the three bioretention facilities was equipped with the following measuring devices:

- A tipping bucket, Model TB1L made by Hydrological Services Ltd., located in the facility overflow structure to measure flows discharged through the underdrain orifice

- A piezometer, located in a monitoring well

The instruments were connected to a datalogger on the site via wired connections. Some of the wired connections were strung through the site storm drains—a notable convenience. The datalogger was connected via telemetry to the County Flood Control District's data system.

## 4.2 Walden Park Commons

Walden Park Commons is a 65-unit multi-family development on a 4.59-acre site fronting Oak Road in Walnut Creek. The site is flat, sloping less than 0.5% away from Oak Road.

### 4.2.1 Pre-Project Conditions and Site Soils

The site was previously occupied by ten single-family homes with pools, sheds, and associated driveways. These accounted for 74,000 square feet (1.7 acres) of pre-project impervious area.

A geotechnical study of the site (Korbmacher Engineering, 2006) found site soils were native to the site (that is, not fill), and that soils "consisted of a medium stiff to very stiff silty clay and sandy clay." The near-surface soils have moderate expansion potential.

The Korbmacher report indicates groundwater was encountered in borings at a range of 7 to 11 feet below existing grade.

### 4.2.2 Drainage Management Areas

The applicant was required to ensure all site impervious surfaces drain to LID treatment. The applicant was allowed to size and design bioretention facilities for "treatment only" for new impervious areas equivalent to the pre-project impervious area. For the remainder of the site (corresponding to the increase in impervious area as a result of the project), the applicant was required to provide both treatment and HM control. See the CCCWP's "Guidance on Flow Control for Development Projects on Sites that are Already Partially Developed," (March 2009).

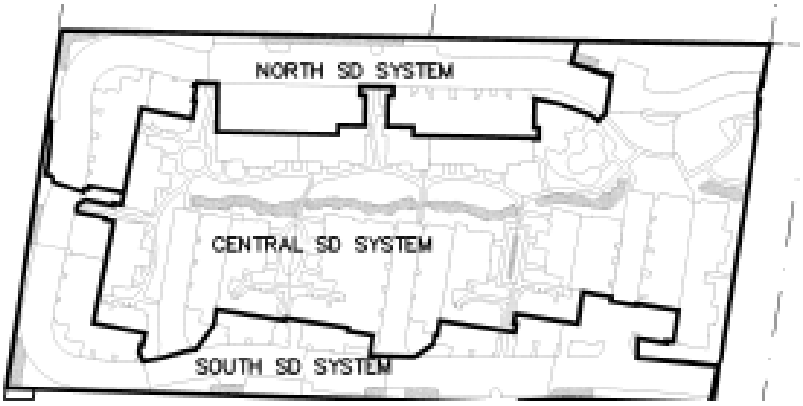


Figure 4-5.
Walden Park Commons Storm Drainage Areas

The site was divided into North, Central, and South areas, with the Central area

being routed to treatment-only bioretention facilities. See Figure 4-5. The Central area DMAs and treatment facilities are not considered further in this report.

The North Area is divided into eight DMAs. There are six impervious DMAs totaling 33,301 square feet of impervious roof and driveway, and two landscaped DMAs with 5,948 square feet of pervious area.

The South Area is divided into 19 DMAs. There are 14 impervious DMAs with 36,257 square feet of impervious area, and five landscaped DMAs with 7,495 square feet of pervious area.

All DMAs in the North and South Areas were drained to bioretention facilities. Landscaped DMAs were assigned a runoff factor of 0.7 as specified in the 2005 HMP; that is, landscaped areas were assumed to be 70% impervious. Roofs and paved areas were assumed to be 100% impervious.

### 4.2.3 Design of Bioretention Facilities

A sizing factor of 0.04 was applied to the resulting equivalent impervious area. Bioretention facilities were sized to exceed this minimum.

Key characteristics of the bioretention facilities are:

- 18 inches of sand/compost mix
- Class 2 permeable drainage layer
- Overflow constructed of vertical ADS pipe, cut to design height
- 6-inch perforated pipe underdrain
- Overflow and underdrain connected to large-diameter storage pipe

The bioretention facilities are located between the site's loop road and the site perimeter fence and are generally configured as linear swales. According to construction drawings, the bottom of the excavation was sloped toward a central line running the length of the swale. The gravel (Class 2 permeable) layer is likewise sloped. The upstream sections do not have underdrains; the most downstream section of the bioretention facilities (near the rear of the development) includes a perforated pipe underdrain See Figure 4-6.

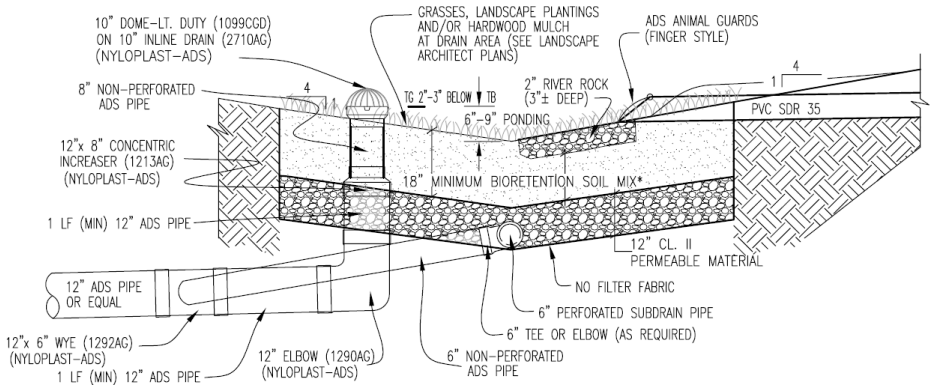

Figure 4-6. Configuration of Walden Park Commons Bioretention Facilities

This configuration allows runoff to infiltrate over much of the bioretention facility area; however, runoff pooling in the gravel layer of the most downstream section will tend to enter the underdrain pipe rather than infiltrate.

### 4.2.4 Design of Downstream Storage

The underdrain/overflow from the bioretention facilities is routed to common storage facilities—one for the North Area and one for the South Area. The storage consists of reinforced concrete pipe of 30" and 42" diameter set at a slope of 0.005. This information was used to establish stage-storage relationships within the model (See Section 6.)

The concrete pipe storage facility is sealed, preventing exfiltration to the Class A/B backfill material around the pipes and eliminating the opportunity for subsequent infiltration to the native soils around and beneath the storage pipe. This is a significant variance from the design intent for Bioretention + Vault facilities. The *Guidebook* design detail for Bioretention + Vault shows a chamber with an open bottom.

The storage pipes for the North Area and South Area each discharge into concrete vaults at the rear of the development. Each vault is equipped with a weir wall. A pipe through each weir wall conveys metered flows. Each of these pipes is equipped with a PVC pipe and threaded cap. An orifice drilled into the cap meters flows.

Should either of the storage pipes become full, flows would overtop the corresponding weir wall. Downstream of the weir walls, the vaults discharge to the City of Walnut Creek storm drain system.

### 4.2.5 Construction of Facilities

Drainage facilities were constructed, along with most of the townhouses, during 2011. The following were noted following construction:

Because the bioretention facilities were designed without a hard delineation of their perimeter (that is, they slope seamlessly to surrounding landscaping), it is difficult to visually discern their areal extent. The facilities were surveyed post-construction to confirm the floodable area (that is, the area that lies below the overflow height) corresponded to the areas shown in the descriptions and calculations submitted by the applicant.

Data from the initial storm showed vault outflows began soon after the beginning of a rain event, the facilities were inspected for construction errors that might cause short-circuiting. It was found that the overflow pipe risers had been constructed with perforated pipe, which could have allowed ponded runoff to enter the overflow rather than percolating through the soil/compost mix layer. This was corrected on March 6, 2012.

### 4.2.6 Instrumentation

Because the bioretention areas were routed to common detention vaults, the total area tributary to the vault is relatively large, and the allowable discharge rate is correspondingly large. To illustrate, the 0.1Q2 discharge from the North and South Areas at Walden Park Commons is 0.07 and 0.08 cfs, respectively, compared with 0.02 cfs for the largest of the bioretention facilities (Facility A2) at the Pittsburg Fire Protection Bureau Building. The larger flow rates allowed the use of electromagnetic flow meters (“magmeters”) rather than tipping buckets. Model #EX 81P-40 by Seametrics was selected. The correspondingly larger orifice sizes (over an inch) also helped alleviate concerns about potential orifice clogging.

The magmeters were installed in 1.5" diameter sections of pipe extending upstream of the orifice discharge and through the weir.

The selected magmeter sensors generate a frequency range from 0 – 550Hz over a velocity range of 0.28 – 20 feet per second

respectively. This frequency was sampled by the data logger every 15 minutes and velocity was calculated from frequency.

A rain gauge was located in the central courtyard of the development.

The data was transmitted every half hour to a County mountain top repeater and to the office base station where the entire data base is maintained.

# 5 · Data Collection and Review

Instrumentation and telemetry were established in September 2011 and maintained through May 2013. The instrumentation was operating for all storms during this period. Following is a list of occurrences that affected data collection.

## 5.1 Exceptions Affecting Data Collection—Pittsburg

### 5.1.1 Tips When Piezometer Levels Show No Outflow

During each sizable storm, tipping buckets recorded a single tip although piezometer levels indicated the saturation level in the gravel layer had not reached the height of the underdrain. These tips could have been caused by small amounts of runoff entering the underdrain rather than percolating through the unsaturated gravel layer, or by rain falling directly into the tipping bucket.

### 5.1.2 Data Loss on October 22, 2012

Data for a storm on this date showed very high flows entering the tipping bucket for IMP #2. On examination of the data, it was determined that the recorded flows were outside the range of the tipping buckets ability to record. On further investigation, it was determined that moisture had caused wired connections between the tipping buckets and the datalogger to short-circuit. The wired connections were insulated with silicone rubber sealer. The erroneous data was taken out of the data base at that time.

## 5.2 Exceptions Affecting Data Collection—Walden Park

### 5.2.1 Construction Error on Overflow Risers

As noted above, a construction error may have allowed short-circuiting of flows during storms prior to March 6, 2012.

### 5.2.2 Cut-out at High Flows

It was noted that data for some events showed flows rising following the onset of rain, suddenly dropping to zero, and then

resuming with a falling limb as the storage pipe drained. On investigation it was determined the most likely cause was turbulent flow within the discharge pipe.

As a backup method of measuring flows, on January 17, 2013 level sensors were installed in the discharge vault. Also at this time two feet of linear pipe was installed upstream of the magmeters. It was planned to correlate the water levels and measured flows to establish a rating curve and to use the rating curve to estimate flows during intervals when the flow sensor was not registering. However, there were not enough subsequent storms to establish the rating curve, and no subsequent flows were high enough to cause recurrence of the problem.

### 5.3 Data Review and Consistency Check

Data were reviewed for internal consistency and consistency with expectations and visual observations. The following were noted:

- Rainfall data was consistent with observed events and other rain gauge data collected by the District.
- Saturation levels in the Pittsburg bioretention facilities rose to relative levels consistent with rainfall depths and with facility sizing.
- Discharge measured at the Walden Park facilities was recorded at relative flows consistent with rainfall intensity and depths.

In summary, the data collected covered most but not all storm events during the monitoring period. In addition, the 2-year monitoring period corresponded to a time of relatively few rainfall events, and smaller rainfall events, compared with long-term averages. There were no events intense enough to cause overflow of bioretention facility surface reservoirs at either site, or with enough intensity and volume to cause underdrain discharge at the Pittsburg facilities.

However, the data collected are sufficient for comparison of facility performance with the performance predicted by the model. See Section 6.

## 6 · Analysis and Results

This section describes the modeling and data analysis methods that were used together to characterize the performance of the Pittsburg and Walden Park Commons IMPs. This section contains the following details:

- Evaluation of rain gauge data for the monitoring period and a comparison of monitored storm events to long-term rainfall statistics for the area.
- Evaluation of IMP monitoring data and the potential implications of the hydraulic characteristics on long-term IMP performance.
- Comparison of HMP model results and IMP monitoring data.
- Description of model parameter adjustments to produce closer agreement between the model outputs and IMP monitoring data.
- Discussion of the current IMP sizing factors and their adequacy for meeting the NPDES permit's flow duration control standard.

Additional modeling and analysis details are contained in Appendix A.

## 6.1 Comparison of Simulated and Recorded Data

### 6.1.1 Storm Characteristics

Rainfall accumulations for the 2011-12 and 2012-13 monitoring periods were examined to determine how the monitoring period compares to long-term trends in the Pittsburg and Walnut Creek areas. The purpose of this analysis was to assess whether the monitored storms are representative for the area and whether the storms produced enough rain to adequately characterize the long-term performance of the IMPs at the Fire Prevention Bureau Building in Pittsburg and Walden Park Commons in Walnut Creek.

For the Pittsburg site, the closest rain gauge with a long-term record is Los Medanos, which is located between Pittsburg and Antioch. For Walnut Creek, the closest representative rainfall gauge with a long-term record is the FCD11 gauge located in Martinez.

Table 6-1 shows the seasonal rainfall totals at each project rain gauge and the long-term seasonal averages at the Los Medanos and Martinez gauges. At Pittsburg, the total rainfall was 13 percent below average for the first monitoring season and about average for the second season. At Walden Park Commons, the rainfall was 5 percent below average for the first monitoring season and 24 percent below average for the second season.

| Table 6-1. Seasonal Rainfall Totals | | | | |
|---|---|---|---|---|
| Pittsburg Fire Prevention Bureau | | | | |
| Season | Dates | Project Site Rainfall (in) | Los Medanos Avg. Rainfall (in) | Difference |
| 1 | Oct-2011 – Apr-2012 | 6.84 | 7.85 | -13% |
| 2 | Sept-2012 – May-2013 | 8.14 | 8.20 | -1% |
| Walden Park Commons | | | | |
| Season | Dates | Project Site Rainfall (in) | Martinez Avg. Rainfall (in) | Difference |
| 1 | Nov-2011 – Apr-2012 | 17.19 | 18.05 | -5% |
| 2 | Sept-2012 – May-2013 | 14.69 | 19.31 | -24% |

Even though the total rainfall was less than average over the monitoring period, there were several significant events during each season. Table 6-2 and Table 6-3 list the 10 and 13 largest rainfall events that were recorded during the monitoring period at the Fire Prevention Bureau and Walden Park Commons, respectively. The Walden Park Commons list was expanded to capture three events for which both outflow rates and storage pipe levels were recorded. The "recurrence" column in the two tables refers to how often a storm of similar magnitude would be expected to occur, based on the long-term rainfall data. Depth-duration-frequency curves were developed for the Los Medanos and Martinez sites for this analysis.

| Table 6-2. Pittsburg Fire Prevention Bureau Site Storm Events | | | |
|---|---|---|---|
| Start Date | Duration (hours) | Total (in) | Recurrence (12-hr) |
| 1/19/2012 | 90 | 1.45 | 3-month |
| 3/15/2012 | 49 | 0.66 | 3-month |
| 3/24/2012 | 13 | 0.65 | 3-month |
| 4/12/2012 | 40 | 1.20 | 3-month |
| 10/22/2012 | 26 | 0.51 | <3-month |
| 11/21/2012 | 9 | 0.45 | <3-month |
| 11/28/2012 | 56 | 1.64 | 2-year |
| 12/1/2012 | 17 | 1.12 | 1-year |
| 12/21/2012 | 46 | 1.00 | 3-month |
| 12/25/2012 | 14 | 0.50 | 3-month |

| Table 6-3. Walden Park Commons Site Storm Events | | | |
|---|---|---|---|
| Start Date | Duration (hours) | Total (in) | Recurrence (12-hr) |
| 1/19/2012 | 95 | 3.51 | 1-year |
| 2/29/2012 | 36 | 1.01 | <3-month |
| 3/13/2012 | 109 | 2.59 | 3-month |
| 3/24/2012 | 17 | 1.03 | 3-month |
| 3/27/2012 | 16 | 0.89 | <3-month |
| 4/10/2012 | 79 | 2.81 | 3-month |
| 11/20/2012 | 11 | 0.92 | 3-month |
| 11/29/2012 | 69 | 4.64 | 2-year |
| 12/21/2012 | 69 | 2.32 | 3-month |
| 12/25/2012 | 24 | 0.79 | <3-month |
| 2/19/2013 | 9 | 0.34 | <3-month |
| 3/30/2013 | 36 | 0.76 | <3-month |
| 4/4/2013 | 8 | 0.29 | <3-month |

The number of significant storm events during the monitoring period is very consistent with the long-term local rainfall record. For example, there were 8 events that exceeded the 3-month recurrence (for 12-hour rainfall accumulations) at the Fire Prevention Bureau site and 7 events surpassing this threshold at the Walden Park Commons site. This is important, because 3-month storm events would be expected to produce flow rates that approach the lower control threshold flow rate in the County's current NPDES permit (two-tenths of the two-year flow rate, or 0.2Q2). Additionally, the Fire Prevention Bureau and Walden Park Commons sites both experienced 2 rainfall events that were larger than the 1-year (12-hour) storm. In conclusion, the monitoring period included enough storms across a range of

intensities and total accumulations to adequately demonstrate how the IMPs perform.

### 6.1.2 Observed IMP Performance Characteristics

For each significant storm event, IMP monitoring data were examined to better understand the following soil hydraulics and performance characteristics:

1. Percolation of stormwater from the ponding layer through the bioretention soils into the storage layer
2. Infiltration of treated stormwater from the storage layer to the surrounding soils (note: this applies only to the Fire Prevention Bureau bioretention IMPs)
3. Performance of storage layer and frequency of underdrain discharges
4. Any evidence of performance problems

Percolation Characteristics

At the Fire Prevention Bureau site, a slotted-standpipe monitoring well was installed within the gravel storage layer of each monitored IMP. At the Walden Park Commons site, water levels were monitored in the vaults at the downstream end of the storage pipes. The IMP percolation characteristics were examined by comparing the timing and volume of rainfall to the appearance of water within the storage layer at each IMP.

The monitoring data shows that percolation begins after relatively modest levels of rainfall. In the 2004-2005 HSPF model, bioretention soils were modeled using the van Genuchten relationship for water retention. This relationship dictates that percolation rates in sandy-loamy soils would be minimal until the soil reached about three-quarters saturation. However, water appeared in the gravel layer before that volume was reached.

Similar runoff and percolation characteristics were observed at the Fire Prevention Bureau and Walden Park Commons IMPs. The bioretention soils are faster-draining than we expected when creating HSPF models for the HMP.

Figure 6-1 shows an example percolation response for the March 16-18, 2012 storm event at IMP #2 at the Fire Prevention Bureau. The observed depths in the gravel storage layer begin to climb after the first 0.07 inches of rainfall. Based on the tributary area and our initial assumptions about the soil's water retention characteristics, we expected this initial runoff to be

fully absorbed within the bioretention soils, filling the available pore spaces like water fills the void spaces in a sponge.

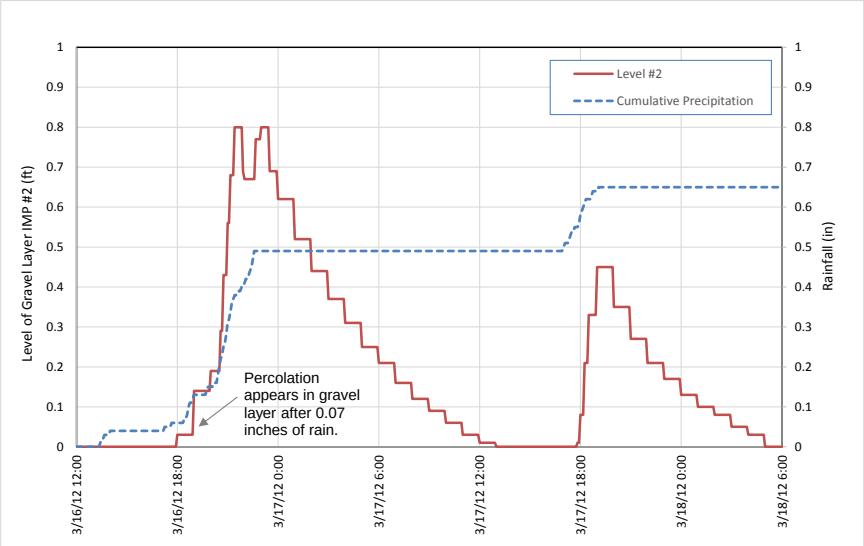


Figure 6-1. Percolation and infiltration, Fire Prevention Bureau IMP #2.

In general percolation in IMP #2 occurred after 0.07 to 0.16 inches of rain, except during an extended wet period from late-November through December 2012 when soils remained wet between storms and percolation began almost immediately after the start of a rain event. In IMP #6 percolation started later in storm events, usually after 0.3 to 0.8 inches of rain (Figure 6-2). IMP #4 is much smaller than the other IMPs and is about two-thirds larger the necessary, based on the HMP sizing factors. IMP #4 did not produce a consistent response to rainfall.

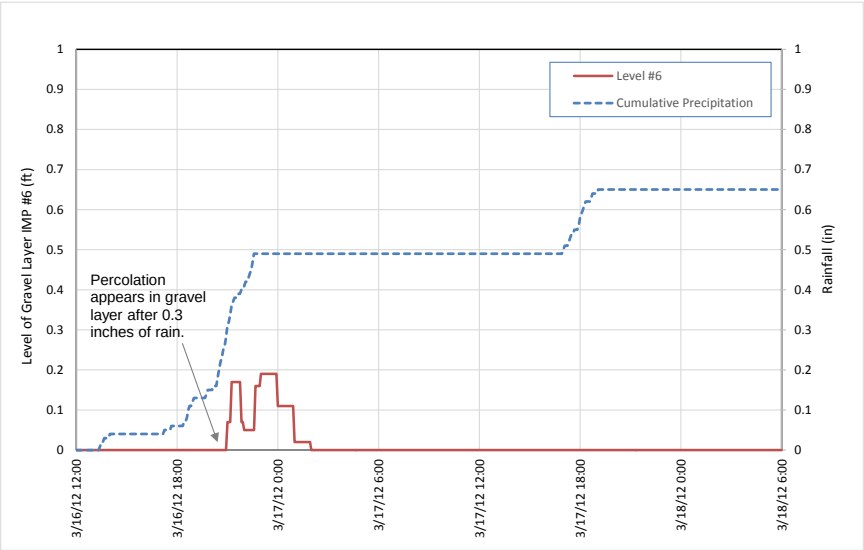


Figure 6-2. Percolation and Infiltration, Fire Prevention Bureau IMP #6.

The reasons for the different response times at IMP #2 and IMP #6 were evaluated. The large roof area adjacent to IMP #2 discharges water via three downspout connections. This water may be saturating the soils in the immediate vicinity of the downspouts and generating percolation to the gravel layer without wetting other portions of the bioretention facility.

Conversely, IMP #6 spreads inflows more broadly and provides a larger soil volume to capture stormwater runoff.

At Walden Park Commons stormwater quickly appears in the storage layer soon after rainfall begins. Figure 6-3 shows accumulated rainfall and IMP outflow for an April 2012 storm event at IMP #1 (North). The storage pipe has received enough percolation to produce outflow after 0.1 inches of rainfall is recorded.

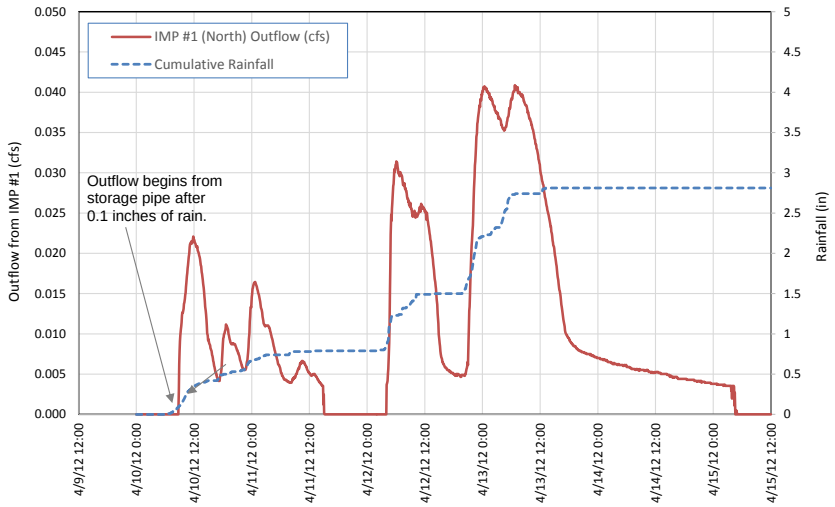


Figure 6-3. Stormwater appears in storage pipe shortly after rain begins IMP #1 (North).

Figure 6-4 shows the start of percolation at IMP #2 (South). The percolation starts later in IMP #2 (South) because a) bioretention area is larger and b) more of the tributary area contains pervious surfaces. The relative responses at IMP #1 (North) and IMP #2 (South) are similar for other storm events.

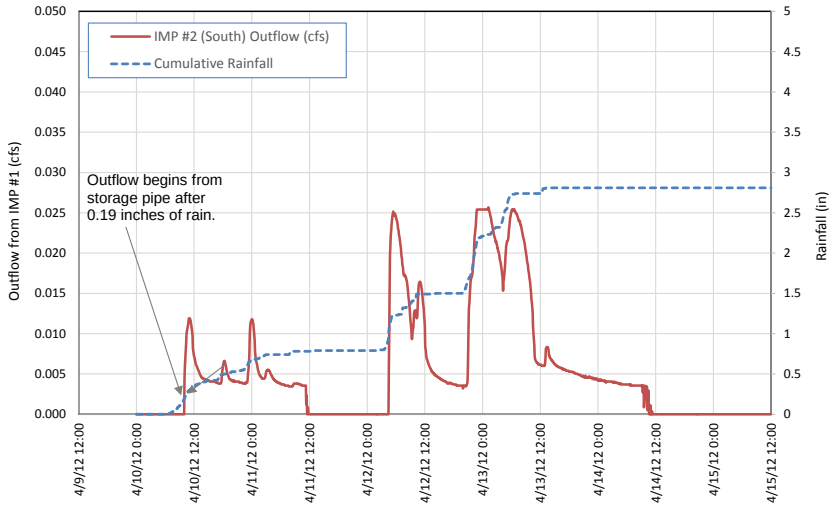


Figure 6-4. At IMP #2 (South) stormwater runoff appears in storage pipe more slowly than in IMP #1 (North)

In conclusion, the bioretention soils appear to allow percolation at lower soil moisture content levels than we expected when preparing the HMP. The effect is less pronounced in over-sized bioretention installations, such as Fire Prevention Bureau IMP #6 and Walden Park Commons IMP #2 (South). This characteristic will probably have a negligible effect on IMP performance. One potential benefit of the fast-percolating soils is the reduced likelihood stormwater building up in the ponding layer and spilling into the overflow in response to high-intensity rainfall.

Infiltration Characteristics

The infiltration characteristics of the surrounding soils were first evaluated at the Fire Prevention Bureau site, where the IMP gravel layers discharge directly to the surrounding soils. Figure 6-5 shows the recorded water levels in the storage layer at Fire Prevention Bureau IMP #2 for the November 28-30, 2012 storm event. Figure 6-6 shows the same storm event at IMP #6.

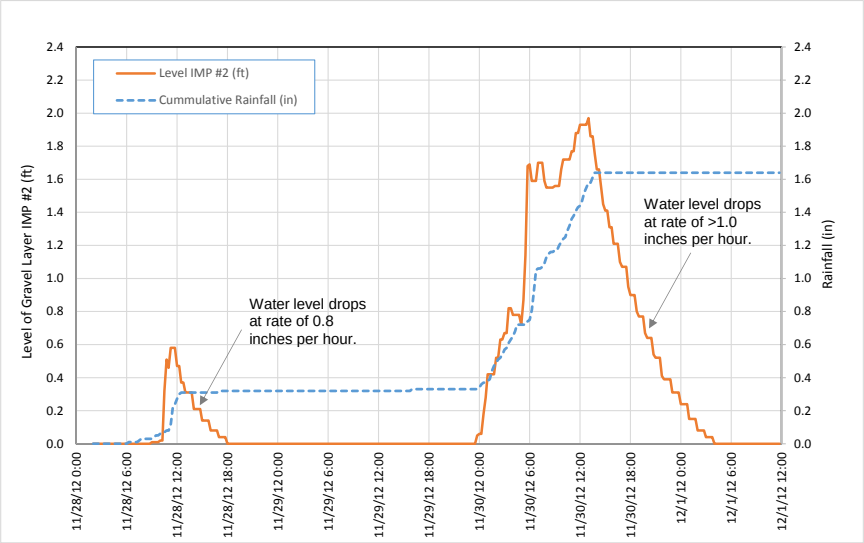


Figure 6-5. Storm recession rates at Pittsburg Site37 IMP #2

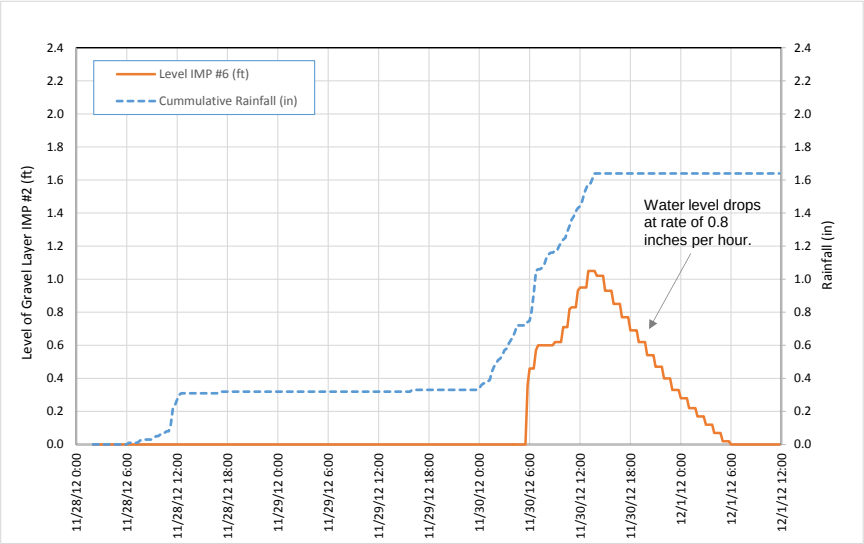


Figure 6-6. Storm recession rates at Fire Prevention Bureau IMP #6

After the rain stops, the water level in the storage layer decreases quickly—at a rate between 0.8 inches per hour and more than 1 inch per hour. Several storm events were examined and while the rate varied by storm in all cases the recession rate was higher than expected for NRCS Group D soils. Even late in the winter season, there was no noticeable groundwater mounding-related reduction in infiltration capacity. The Fire Prevention Bureau infiltration rates surpass the assumed rate of 0.024 inches per hour used in the 2004-2005 HSPF model.

In conclusion, soils at the Fire Prevention Bureau infiltrate runoff more rapidly than the reference values for NRCS Group D

soils. IMPs at this site will provide a higher overall onsite stormwater capture fraction than previously expected. These IMPs should also provide a higher level of performance relative to the NPDES permit's flow duration performance standard.

The native soil characteristics for the Walden Park Commons site were indirectly evaluated using a combination of monitoring data and modeling (see Section 6.1.3).

Storage Layer and Underdrain Performance

The Fire Prevention Bureau monitoring data for IMP #2, IMP #4 and IMP #6 were also examined to determine a) how often the flow monitoring equipment registered underdrain discharge, and b) whether these discharges were caused by the filling of the gravel layer.

The items below describe the monitoring data results, which are also summarized in Table 6-4.

- IMP #2: Small underdrain discharges were recorded at 10 separate days over the 20 month monitoring period. The total volume of these discharges was less than 3 cubic feet. None of the discharges lasted more than 15 minutes and only four occurred during the 10 largest rainfall events. In all cases the corresponding water depth did not reach the level of the discharge pipe. The mostly likely reasons for the underdrain discharge are that a small amount of water migrated into the underdrain pipe as it was descending into the gravel layer, and/or that rain fell directly into the tipping bucket.
- IMP #4: Small underdrain discharges were recorded on 16 separate days with the total discharge over 20 months of 4.4 cubic feet. Similar to IMP 2, the discharge volumes are very small and not continuous. The observed water level in the gravel layer never reached the elevation of the under-drain pipe.
- IMP #6: Small underdrain discharges were recorded on 21 separate days with the total discharge over 21 months of 6.6 cubic feet. Similar to IMP 2 and IMP 4, the discharge volumes are very small and not continuous. The observed water level in the gravel layer never reached the elevation of the underdrain pipe.

| Table 6-4. Pittsburg Fire Prevention Bureau Monitored Discharge Events | | | |
|---|---|---|---|
| IMP | Number of Underdrain Discharge Events* | Number of Events Due to Filling of Underdrain Layer | Total Volume |
| IMP #2 | 10 | 0 | 2.7 $ft^3$ |
| IMP #4 | 16 | 0 | 4.4 $ft^3$ |
| IMP #6 | 21 | 0 | 6.6 $ft^3$ |

*These discharge events each produced a small volume of water and were most likely due to the migration of water into the underdrain pipe as the water descended into the gravel layer, and/or rain falling directly into the tipping bucket.

Evidence of IMP Performance Issues

No significant or systematic IMP performance issues were evident from the monitoring data or from anecdotal observations during storm events. As noted in Section 5, the overflow risers in the bioretention facilities at Walden Park Commons were installed using perforated pipe, rather than the specified solid pipe. This allowed an unknown portion of stormwater flow to bypass the bioretention treatment. The contractor for the Walden Park Commons project corrected the problem on March 6, 2012.

Summary of Observed IMP Performance

The IMPs at the Pittsburg Fire Prevention Bureau Building and Walden Park Commons successfully captured, treated, detained, and slowly discharged stormwater from all storms during the two-year monitoring period. There were no overflows or significant performance issues.

The infiltration capacity of the native soils at the Pittsburg site will provide a higher level of onsite stormwater control and should allow these IMPs to surpass the flow control requirements of the NPDES permit. Additionally, the bioretention soils allow for faster percolation than was assumed when preparing the HMP. While this difference is not likely to affect the IMP sizing factors, it will protect the system from overflows during periods of very intense rainfall.

### 6.1.3 Comparison of Model Predictions to Measured Results

Model predictions and monitoring data (primarily water level) were compared for the 10 largest storm events during the 20-month monitoring period at the Fire Prevention Bureau (see Table 6-2 above for list of events).

Figure 6-7 shows an example comparison for Fire Prevention Bureau Building IMP #2 for the April 10-14, 2012 storm event.

Figure 6-8 shows the same storm event for IMP #6. As expected from the monitoring data review, the models do not produce early-storm percolation to the gravel storage layer that was observed in the monitoring data. The models also allow water to remain in both IMP layers for longer periods, which will make the Pittsburg site's model simulations overstate the site's sensitivity to back-to-back storms.

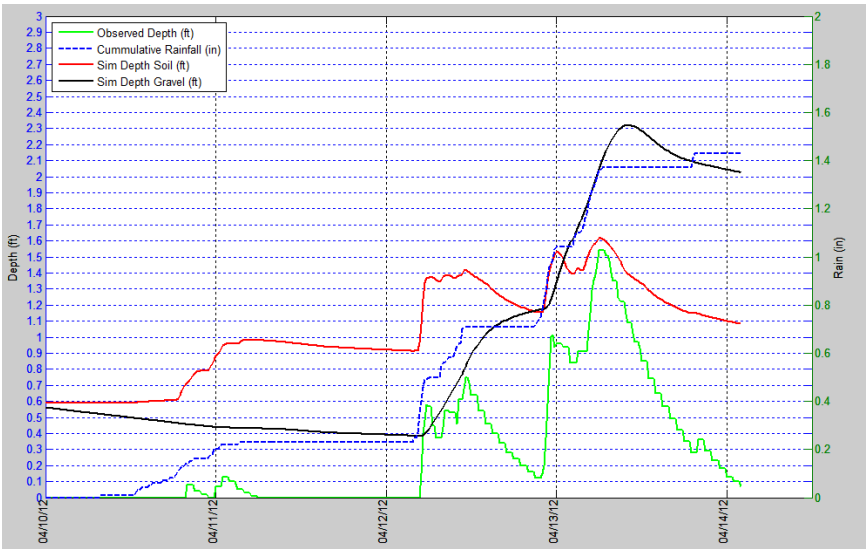


Figure 6-7. Model output and monitoring data comparison at IMP #2 from 4/10/12 to 4/14/12

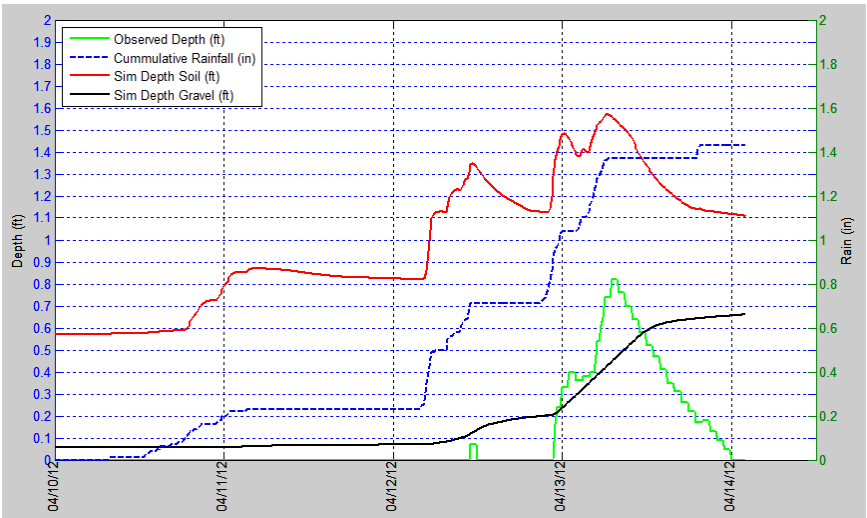


Figure 6-8. Model output and monitoring data comparison at IMP #6 from 4/10/12 to 4/14/12

The number of simulated and observed underdrain discharge events was also compared for IMP #2, IMP #4, and IMP #6. The

HSPF model predicts more frequent discharges through the underdrain pipe. Table 6-5 summarizes the model results.

| Table 6-5. Pittsburg Fire Prevention Bureau Model Discharge Events | | | |
|---|---|---|---|
| IMP | Number of Underdrain Discharge Events | Total Volume | Notes |
| IMP #2 | 6 | 2,700 ft3 | Each event lasts several hours |
| IMP #4 | 0 | 0 ft3 | |
| IMP #6 | 2 | 87 ft3 | Each event lasts several hours |

At the Walden Park Commons site, there were a limited number of storms with water level data, but flow rates were recorded through both monitoring seasons. Therefore the simulated and observed outflow volumes were compared for the 13 largest rainfall events during the monitoring period. Figure 6-9 and Figure 6-10 show example results for two separate storm events for IMP #1 (North), which is located in the northwest corner of the Walden Park Commons development. Similar to the initial Fire Prevention Bureau comparison, the monitoring data shows a faster percolation response in the IMP. The model simulation produces higher outflow volumes than were measured.

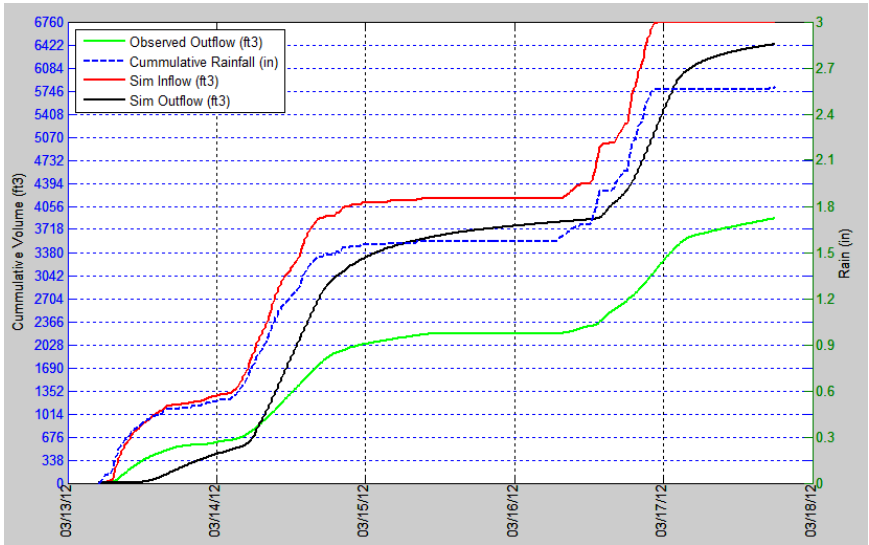


Figure 6-9. Model output and monitoring data comparison at Walden Park Commons IMP #1 (North) from 3/13/12 to 3/18/12

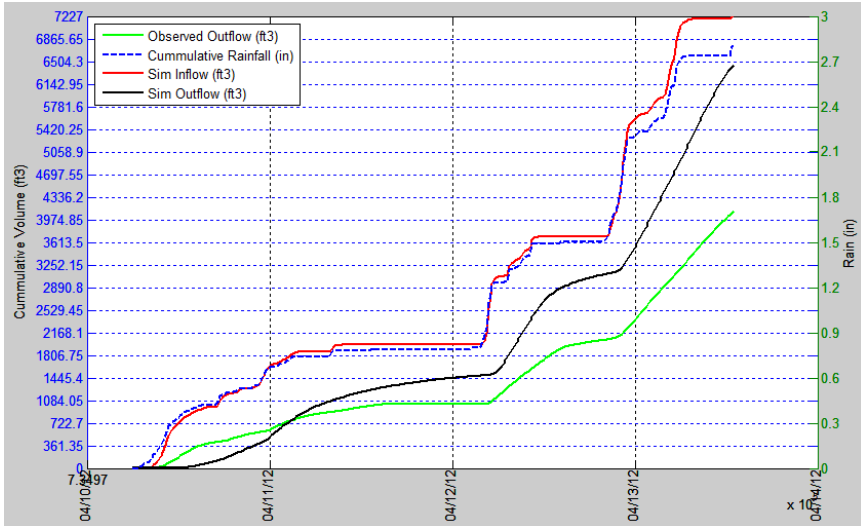


Figure 6-10. Model output and monitoring data comparison at Walden Park Commons IMP #1 (North) from 4/10/12 to 4/14/12

Figure 6-11 and Figure 6-12 compare the simulated and measured cumulative outflow volume for Walden Park Commons IMP #2 (South) for March and April 2012 storm events. The results of the comparison are similar to results for IMP #1 (North). The model simulation produces larger outflow volumes than were observed in the monitoring data.

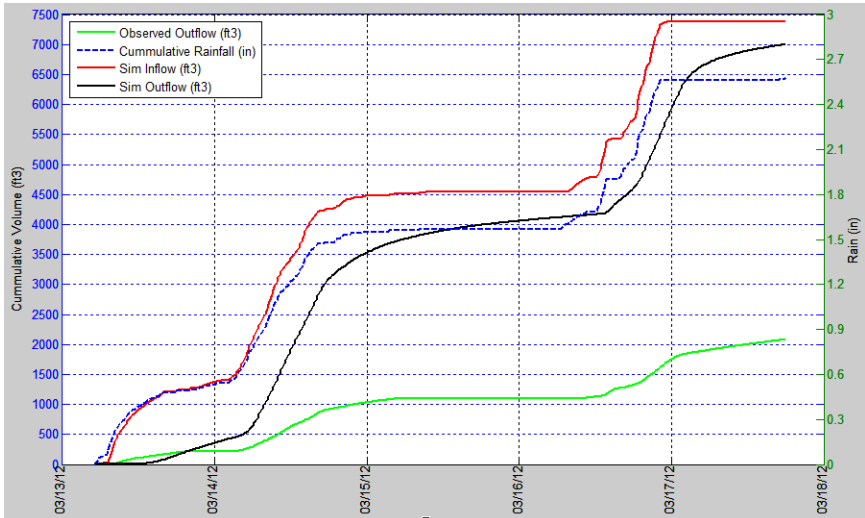


Figure 6-11. Model output and monitoring data comparison at Walden Park Commons IMP #2 (South) from 3/13/12 to 3/18/12

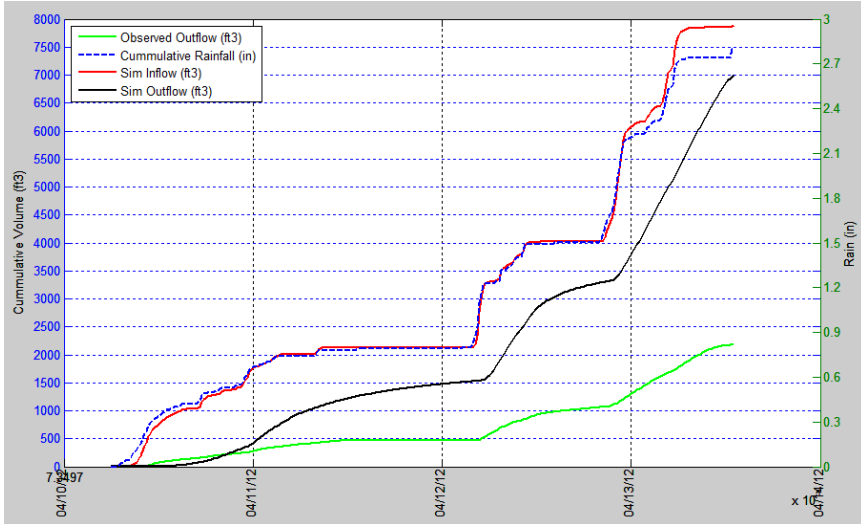


Figure 6-12. Model output and monitoring data comparison at Walden Park Commons IMP #2 (South) from 4/10/12 to 4/14/12

## 6.2 Adjustment of Model Parameter Values

To reduce the simulated IMP outflow and better match the monitoring data, the infiltration characteristics of each IMP were adjusted. The initial effort focused on the following revisions to Walden Park Commons IMP #1 (North):

1. The relationship between soil moisture and percolation in the bioretention soil was modified to allow percolation to begin soon after water enters the soil. The previous version of the HPSF model held back most percolation until the moisture content reached about 80 percent of saturation.
2. A zone of influence was established around the bioretention layer's underdrain. Because the monitored outflow was significantly less than the estimated inflow to the IMP, we assumed a portion of the stormwater entering the bioretention portion of IMP #1 (North) was infiltrating to surrounding soils. Similar losses to infiltration were evident in the data for IMP #2 (South).

The zone of influence value was iteratively modified until the IMP outflow volume better matched the monitoring data across a range of storm events. Figure 6-13 and Figure 6-14 show the updated results for the same two storm events included in the previous section (see Figures 6-9 and 6-10). For the zone of influence value selected, the simulated outflow volume closely matches the monitored outflow volume. For this value, 60 percent of the bioretention area drains to the underdrain and

storage pipe, and the remainder infiltrates runoff to the underlying soils.

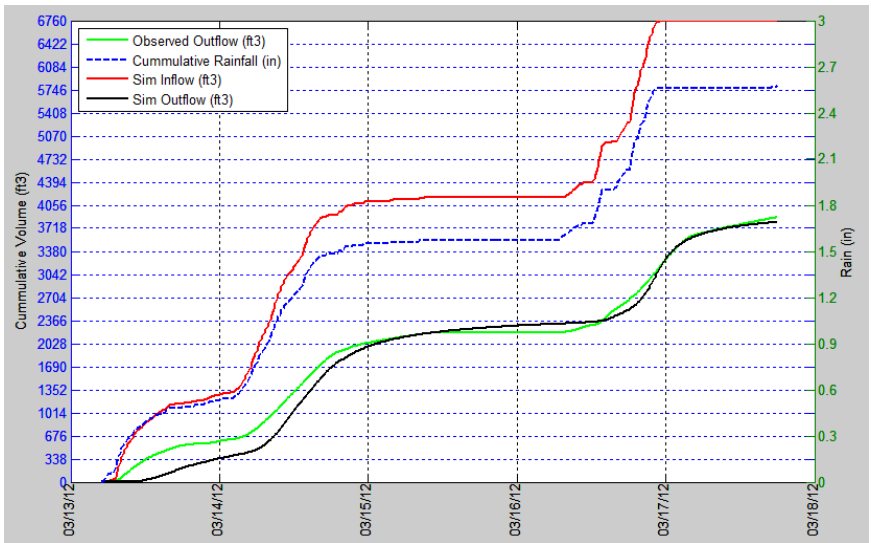


Figure 6-13. Updated model output and monitoring data comparison at Walden Park Commons IMP #1 (North) from 3/13/12 to 3/18/12

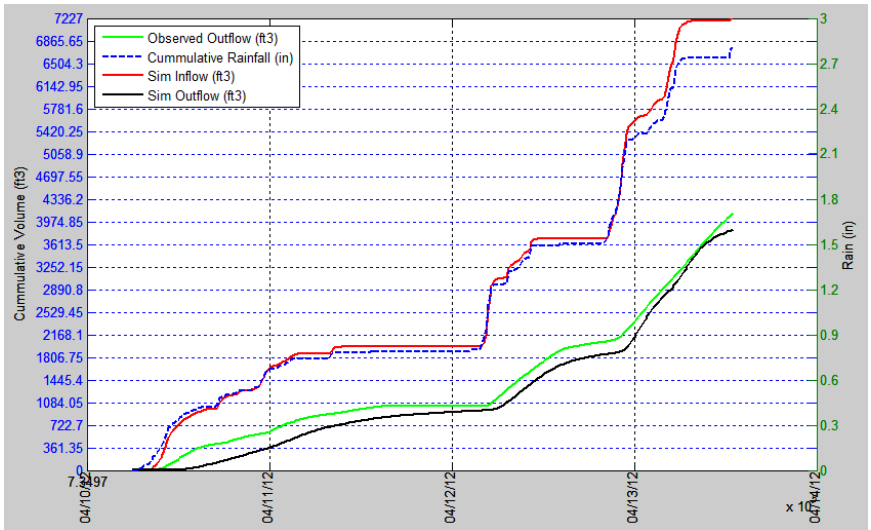


Figure 6-14. Updated model output and monitoring data comparison at Walden Park Commons IMP #1 (North) from 4/10/12 to 4/14/12

The model was also calibrated to match the response of IMP #6 at the Fire Prevention Bureau. The IMP model parameters were adjusted to a) represent the capacity of the bioretention soils to hold water prior to start of percolation, b) mimic the rapid percolation that occurs once the soil moisture threshold is met, and c) approximate the rate at which water drops in the gravel layer by adjusting the infiltration rate to surrounding soils. This

parameter also affects the simulated water level in the gravel layer during storm events.

Figure 6-15 shows an example of the calibrated model's response for the November 28, 2012 storm event. This was the largest event during the monitoring period and represents about a 2-year storm for the Pittsburg area. During the initial stages of the storm the simulated water moisture content rapidly accumulates in the bioretention soil while very little water appears in the gravel layer. When the second phase of the storm occurs, percolation occurs rapidly and the gravel layer fills with more than 1 foot of water (note: the underdrain is located about 2½ feet above the bottom of the gravel layer). The simulated maximum depth matches the monitored maximum depth to within 1 inch. The simulated gravel water level recession is a little more rapid than the monitored recession. In general, the simulated and observed recession rates are similar across the range of storm events.

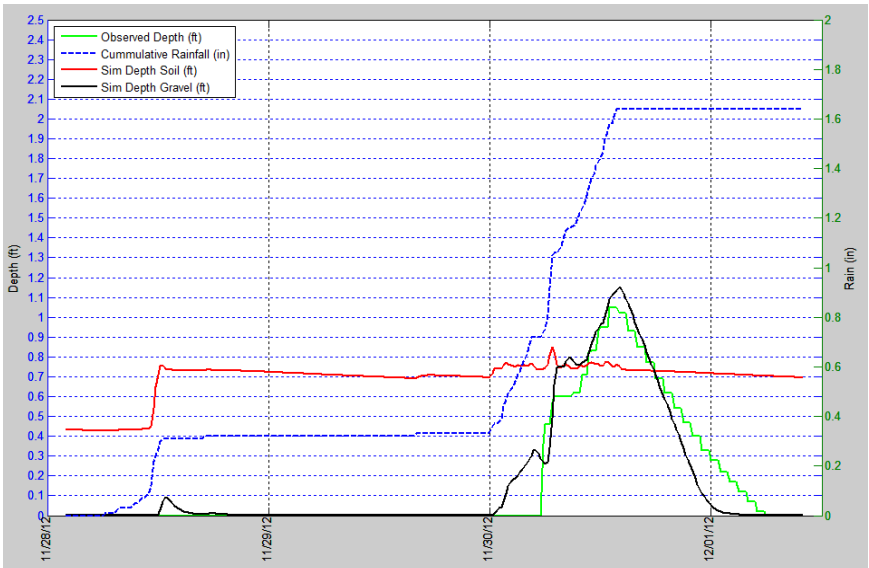


Figure 6-15. Updated model output and monitoring data comparison at Fire Prevention Bureau IMP #6 from 11/28/12 to 12/1/12

Figure 6-16 shows calibration results for a smaller storm event that occurred on March 25, 2012. This 0.65-inch event has about a 3-month (12-hour) recurrence interval. Similar to the larger event shown above, the initial rainfall is captured and held within the bioretention soils. Once the soil moisture threshold is met, stormwater percolates to the gravel layer. The simulated and monitored water levels match precisely and recession rates also agree very closely. There is an approximately one-hour offset

between the simulated and monitored peak water levels, which will have no impact on the ability of the model to predict long-term IMP performance.

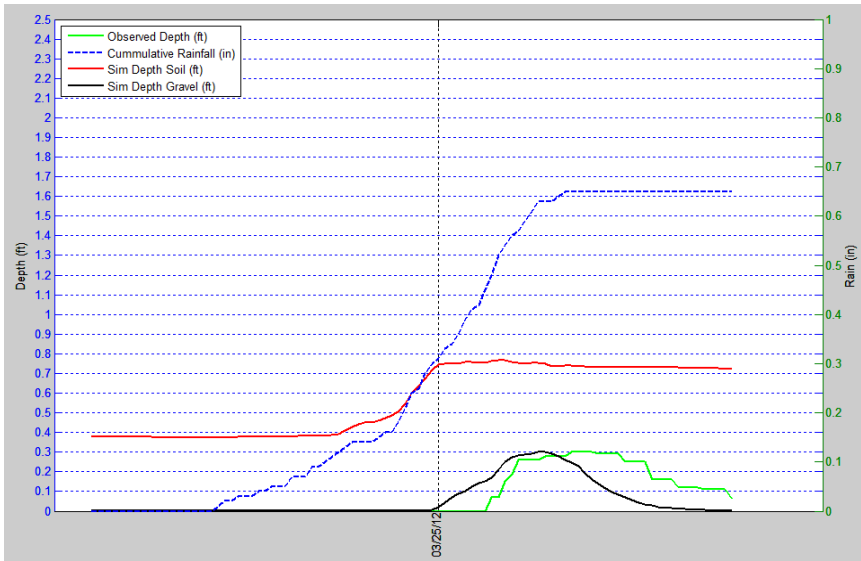


Figure 6-16. Updated model output and monitoring data comparison at Fire Prevention Bureau IMP #6 from 3/24/12 to 3/25/12

In conclusion, the bioretention characteristics were adjusted at the Walden Park Commons and Fire Prevention Bureau sites to achieve a closer agreement between the HSPF model predictions and the monitoring data. The infiltration rate to the surrounding soils was increased to 0.24 inches per hour for all the Fire Prevention Bureau IMPs.

The calibrated model adequately represents the key processing during and after storm events, specifically; a) the build-up of soil moisture, b) the percolation from bioretention soils to the storage layer and, c) the recovery of the IMP capacity through infiltration to surrounding soils (at the Fire Prevention Bureau). The calibrated model is suitable for the analysis of long-term IMP performance.

## 6.3 IMP Performance Compared to Flow Duration Standard

The IMP performance monitoring data review suggested the bioretention facilities at the Fire Prevention Bureau and the bioretention plus vault facilities at Walden Park Commons are likely to meet the NPDES permit requirements and may be performing in excess of these requirements by reducing flow durations below the pre-project flow durations for the specified range of flows (0.2Q2 to Q10).

Long-term HSPF simulations were run for the IMPs at both project sites to more fully test the IMP performance against the NPDES permit's flow control standard. The Fire Prevention Bureau simulations used hourly rainfall data collected at the Los Medanos gauge from 1972 through May 2013. The Walden Park Commons simulations used hourly data from the FCD 11 gauge in Martinez gauge from 1969 through May 2013. The following statistical analyses were then performed on the model outputs:

- Flow frequency statistics. The model outflow time series was divided into discrete flow events (i.e., a partial-duration series) using a 24-hour period of no flow to indicate the end of an event. The resulting table of events was sorted and ranked based on the peak flow rate. Each event was assigned a recurrence interval (sometimes referred to as a return period) using the Cunnane plotting position method. Partial duration series statistics were computed for the pre-project runoff and the post-project IMP outflows.
- Flow duration statistics. The model outflow time series was divided discrete bins (flow ranges). The number of hours – or duration – for which outflow occurred in each bin's flow range was then counted. These durations were computed for the pre-project runoff and the post-project IMP outflows.

Figure 6-17 shows the peak flow frequencies for the pre-project runoff and post-project (i.e., existing) outflow for Fire Prevention Bureau IMP #2.

Figure 6-18 compares flow durations for the pre-project and existing conditions. In both figures, the IMP outflows are below the pre-project flows between 0.2Q2 and Q10. Additionally, IMP #2 outflows are below the pre-project site flows down to the 0.1Q2 threshold. Because IMP #2 was constructed with dimensions that are very similar to the minimum required dimensions included in the HMP, this suggests IMP #2 would comply with a stricter lower control threshold of 0.1Q2. The infiltration rates at the Fire Prevention Bureau site allow for this level of performance.

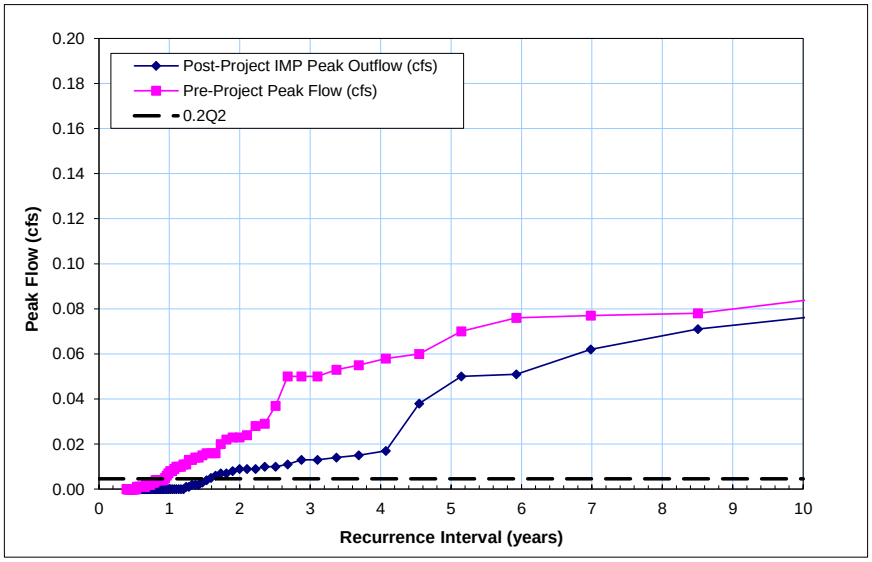


Figure 6-17. Peak flow frequency comparison for pre-project runoff and post-project outflows for Fire Prevention Bureau IMP #2

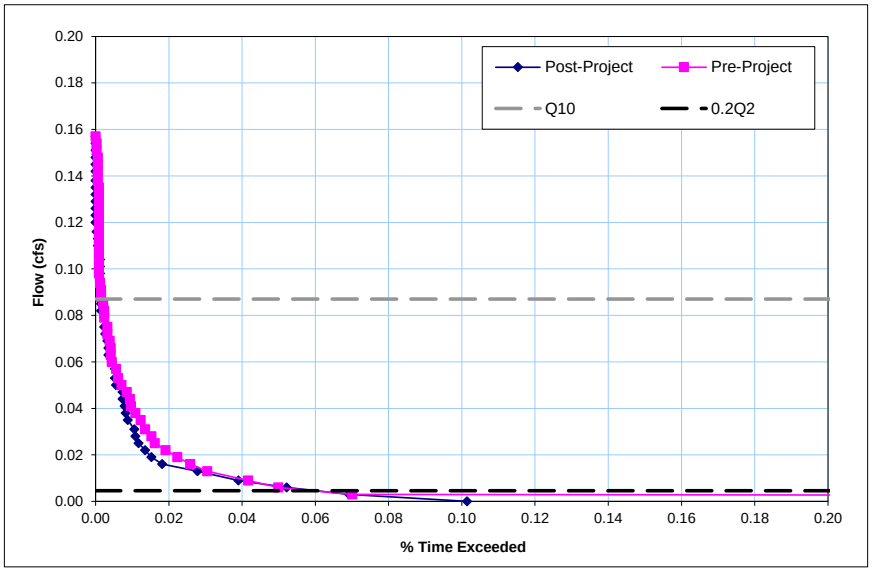


Figure 6-18. Flow duration comparison for pre-project runoff and post-project outflows for Fire Prevention Bureau IMP #2

Figure 6-19 and Figure 6-20 compare peak flow frequencies and flow durations for Walden Park Commons IMP #1 (North), respectively. IMP #1 (North) reduces site runoff to levels below the pre-project conditions between 0.2Q2 and Q10. However, the model results indicate that IMP #1 (North) does not control flows down to the 0.1Q2 flow rate. To meet this standard, the flow control orifice diameter would need to be reduced and the storage volume potentially increased by a modest amount, and/or the storage volume would need to be allowed to infiltrate to subsurface soils—as in the *Guidebook* criteria for bioretention + vault facilities.

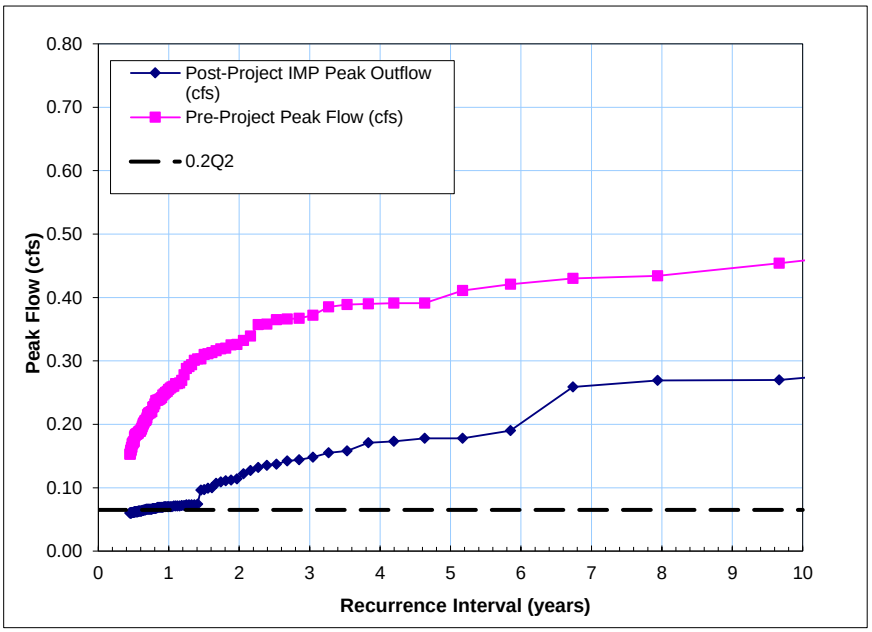


Figure 6-19. Peak flow frequency comparison for pre-project runoff and post-project outflows at IMP #1 (North)

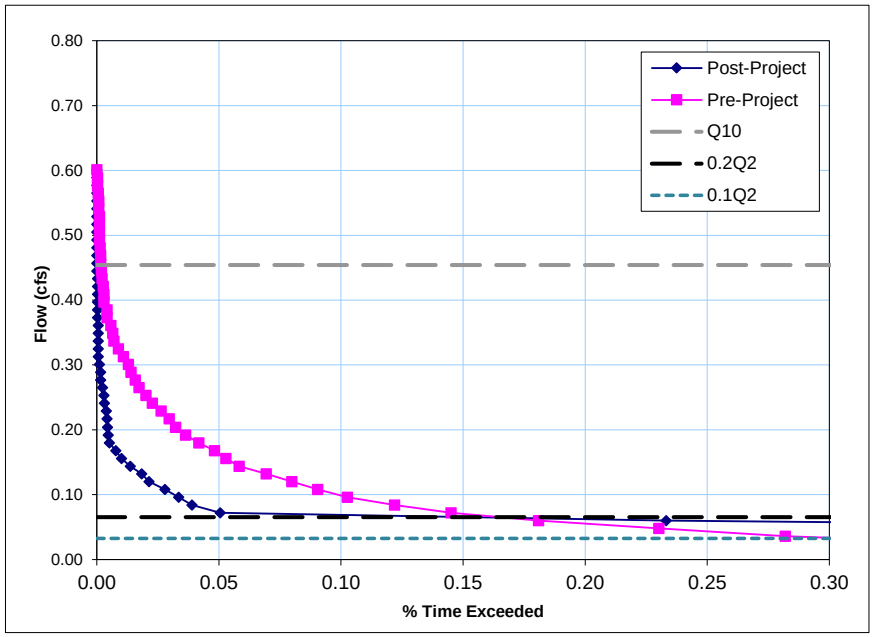


Figure 6-20. Flow duration comparison for pre-project runoff and post-project outflows IMP #1 (North)

All the IMPs successfully control outflows to their pre-project levels from 0.2Q2 to Q10. The Fire Prevention Bureau IMPs also control flows down to the 0.1Q2 threshold – benefitting from the infiltration capacity of site soil conditions. The Walden Park Commons do not control IMP outflows to the 0.1Q2 threshold, but the modeling results suggest this additional level of control could be achieved by a one or more of the following: modifying the orifice configuration, by allowing stored runoff to infiltrate to underlying soils, or by increasing the storage volume modestly.

# 7 · Discussion

## 7.1 Why These Results Are Important

The principal advantage of environmental modeling is the capability of modeling to extrapolate limited data sets to make predictions over an extended period and wide variety of conditions. However, because of limited data and the unpredictability of environmental conditions, a “garbage in, garbage out” scenario can occur, where model results are primarily a reflection of guesses and assumptions input to the model.

The 2004-2005 model used to determine CCCWP IMP sizing factors had the advantage of representing a relatively controlled

system and the disadvantage of a paucity of available data representing bioretention system performance. That is, the model did, in concept, accurately represent the structure and function of bioretention facilities as they are actually built; however, there was a near-absence of data to inform the selection of values for the parameters that most strongly affect bioretention performance—most notably the rate at which treated runoff infiltrates to native soils.

Data collection for this project fills this gap, and greatly advances the CCCWP model. Previously the CCCWP model was dependent primarily on guessed and assumed values for the most important parameters; now it is based on empirically derived values. The CCCWP data may also be useful in updating similar models, such as the Bay Area Hydrology Model, that currently use guessed and assumed values for the model parameters that most strongly affect facility performance and HM compliance.

## 7.2 Percolation Through Bioretention Planting Media

As noted in Section 6, the model was set up with the assumption that the entire planting media layer would become mostly saturated before treated runoff proceeded to percolate into the underlying gravel layer. When modeled and measured results were compared, it was noted that runoff was measured in the gravel layer of the bioretetention facilties (at the Pittsburg Fire Protection Bureau Building) and in the storage vaults (at Walden Park Commons) much more quickly than the model predicted.

This may be occurring either because runoff percolates rapidly downward near the inlet, and much of the planting media layer did not get wet, or because the soil media exhibits less moisture-holding capacity and matric head than the model predicted, or both.

## 7.3 Infiltration to Native Soils

The capability of a bioretention facility to control volumes and durations of discharge is dependent on, among other factors, the rate of infiltration to native clay soils. This study demonstrated that infiltration at the five test locations is approximately 10 times faster than estimated in the 2004-2005 CCCWP model.

The estimate in the 2004-2005 CCCWP model was drawn from guidance for the use of HSPF at the watershed scale. The values selected for continuous-simulation models are typically based on calibration of models of runoff at the watershed scale—that is, to

data sets consisting of local rainfall data and stream gauge data. The stream gauges represent flows collected from watersheds ranging from tens of acres to hundreds of acres.

Importantly, the resulting calibrated model values for key parameters representing losses of surface runoff to infiltration (in HSPF, "INFILT" is such a key parameter) do not necessarily correspond to results of infiltrometer tests or other direct tests of soil permeability. In fact, surface runoff losses at the watershed scale and movement of water through the pores of saturated soil are somewhat different physical processes.

The data collected by this project provide rare (perhaps unique) infiltration rate data and represent actual bioretention performance, rather than using an estimate of performance extrapolated from watershed-scale model calibrations or soil testing. Although limited to three bioretention facilities around a single 1-acre site, the data show that silty clays can, at least in some circumstances, infiltrate at rates in excess of 0.2 inches per hour—as measured by the recovery of a bioretention subsurface reservoir—and that these higher-than-expected rates are consistent throughout the season, for a range of storm sizes, and from facility to facility.

### 7.4 Applicability of Results Region-wide

The five IMP monitored locations are representative of typical Bay Area development patterns and conditions.

As noted in Section 5, the two bioretention + vault facilities at Walden Park Commons were constructed with some exceptions to current *Guidebook* design recommendations; these exceptions were incorporated into the customized model for the purposes of model calibration. The three facilities at the Pittsburg Fire Prevention Bureau Building were built very close to current *Guidebook* design criteria and design recommendations.

As previously noted, the rate at which runoff infiltrates to soils beneath the facility is a key factor determining overall performance. Are the infiltration rates found at the Pittsburg site representative of development sites in Contra Costa, or in the Bay Area as a whole?

There are no observed characteristics that would suggest otherwise. The site soils, described as "stiff to hard, moderately to highly plastic silty clays" in the site geotechnical report (Kleinfelder 2004) are typical of development sites throughout the Bay Area. The site is quite flat. Only the lack of near-surface groundwater would tend to suggest this site's soils could be

better-draining than similarly classified soils at another Bay Area development site.

Collection of data from bioretention facilities at additional locations would be necessary to accurately estimate the average and variance of infiltration rates that might occur in similar soils.

# 8 · Conclusions and Recommendations

This project demonstrated that the IMPs and sizing factors approved by the Water Board in 2006—and updated in subsequent editions of the *Guidebook*—are adequate to meet current regulatory requirements.

## 8.1 Next Steps for Use of the Calibrated and Validated Model

MRP Attachment C requires:

> By April 1, 2014, the Contra Costa Clean Water Program shall submit a proposal containing one or a combination of the following three options (a.-c.) for implementation after the expiration and reissuance of this permit:
>
> a. Present model verification monitoring results demonstrating that the IMPs are sufficiently overdesigned and perform to meet the 0.1Q2 low flow design criteria; or
>
> b. Present study results of Contra Costa County streams geology and other factors that support the low flow design criteria of 0.2Q2 as the limiting HMP design low flow; or
>
> c. Propose redesigns of the IMPs to meet the low flow design criteria of 0.1Q2 to be implemented during the next permit term.

CCCWP intends to work with other Permittees (through BASMAA, the Bay Area Stormwater Management Agencies Association) and with Water Board staff to develop and agree upon revised HM permit requirements applicable to all MRP Permittees that:

- Favor, rather than constrain, the implementation of LID to meet HM requirements
- Consider a potential range of low flow thresholds for streams, with the aim of revising the thresholds to provide for reasonable protection of beneficial uses
- Have a more technically defensible basis for translation of in-stream criteria to LID facility discharge criteria; this basis should include consideration of the potential future

extent of watershed development and the proportion of the watershed that the proposed development represents

- Take into account that IMPs tend to reduce flow durations to below pre-project levels for flows in the middle of the range (the most geomorphically significant range, between 0.2Q2 and Q2)
- Consider the extent of potential Bay Area development that may be subject to HM requirements vs. the effort expended so far, and that may be expended in the future, on developing and implementing HM regulations
- Apply exceptions, exclusions, and thresholds uniformly among MRP Permittees
- Incorporate design requirements and sizing factors that reflect the results of this study

## 8.2 Insights Concerning Bioretention Design and Construction

The CCCWP project team worked with City of Pittsburg and City of Walnut Creek staff and with the engineers and construction project managers for each of the two developments. Overall cooperation was excellent and contributed greatly to the success of the CCCWP project.

The following insights are the author's but resulted from the work of all involved.

### 8.2.1 Bioretention Design

To maximize the volume of runoff infiltrated, the facility must be configured so that each layer "fills up like a bathtub." The top of gravel layer should be at a consistent elevation so that all pore areas within the gravel layer are filled evenly; likewise for the soil layer and for the surface reservoir. The surface reservoir should be surrounded by concrete curbs or landscape timbers to maximize its volume (as compared to sloping sides toward the center of the facility) and to facilitate verification that the reservoir is level and will fill evenly.

The project design should be reviewed prior to construction to ensure the stability of roads, walkways, and structures adjacent to bioretention facilities has been adequately considered. Because bioretention soils cannot be compacted, bioretention walls must effectively resist lateral pressure from surrounding soils. Where necessary, bioretention walls can be made impervious as a precautionary measure to protect adjacent

roads, walkways, and structures while leaving the bottom of the bioretention facility open for infiltration.

Overflow structures are best constructed from precast manholes or catch basins. Construction crews have experience setting these structures at a precise elevation. Use of an adequately sized catch basin with a grate makes it possible to verify underdrain discharge visually and to access the underdrain pipe for cleaning or maintenance. Setting the underdrain discharge elevation at the top of the gravel layer may reduce the required depth of the overflow structure.

Overflow structures can also accommodate connections to site storm drainage pipes routed through the bioretention facilities.

Orifices on underdrains may be constructed of solid PVC pipe extending a few inches into the overflow catch basin structure, threaded, and equipped with a cap. The orifice is drilled into the cap as shown in Figure 4-4.

### 8.2.2 Bioretention Construction

It is necessary to have an engineer familiar with the structure, function, and details of bioretention to review construction at each stage (layout, excavation, installation of underdrains and overflows, installation of gravel and soil mix, irrigation systems, and planting). In particular, elevations should be checked and it should be ensured that the soils at the bottom of the excavation are ripped.

## 8.3 Recommendations for Instrumentation

Success in data collection was largely attributable to the participation of an experienced instrumentation technician (Scott McQuarrie, of the Contra Costa Flood Control and Water Conservation District). Installation of rain gauges, tipping buckets, magnetic flow meters, piezometers, dataloggers, and telemetry required considerable technical ingenuity and experience to configure at each site.

For future projects monitoring the hydrologic performance of bioretention facilities, including bioretention + vault facilities, it would be possible to rely on level sensors (piezometers) rather than flow sensors or tipping buckets. Piezometers are more reliable to operate and also provide information on saturation levels. Orifice factors and/or rating curves for each fabricated orifice could be determined prior to installation. This could be done by plumbing the fabricated orifices to a small tank or reservoir and timing the falling head. Once installed, the

discharge rate through the orifice, for each time interval, could be calculated from the corresponding piezometer reading.

## 8.4 Further Research

As noted above, it would be meaningful to obtain data from bioretention facilities installed in clay soils at additional sites. An additional 3-8 sites could be sufficient to demonstrate the regional applicability of the results found here.

This study showed the value of obtaining time-series for (1) rainfall and (2) saturation depth of the subsurface storage (gravel layer). It is recommended to select, where possible, facilities located on public development projects, as it is easier to coordinate documentation of design and construction of bioretention facilities on these projects.

As noted above, the monitoring effort could be reduced by installing only rain gauges at each site and only piezometers in each facility. As a rough estimate, instrumentation could be installed at an equipment cost of $7,000 and about 12 hours of technical labor for each facility. This does not include the cost of maintaining the instrumentation and downloading the data.

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# APPENDIX A
# IMP Modeling Analysis and Results

This appendix supplements the modeling and data analysis results included in Section 6 of the HMP Model Calibration and Verification report. This appendix includes a detailed description of the project site model development, rainfall analysis, model calibration and long-term simulation results.

## Section 1: Project Site HPSF Model Development

HSPF models were constructed for the Fire Prevention Bureau site in Pittsburg and the Walden Park Commons site in Walnut Creek. The models were adapted from the HPSF models that were developed for the HMP by including the drainage management area characteristics, IMP configurations of each site, and time series input data for each site.

The following site-specific modifications were made:

1. Setting up subcatchment areas within HSPF to represent the project site area
2. Modifying the bioretention IMP setup to represent the actual configurations of the IMPs – the constructed areas and volumes instead of the volumes required by the HMP.
3. Incorporating local time series data, including project site rainfall data in 15-minute increments.
4. Changing the model time step from 1 hour to 15 minutes. This also necessitated changing several conversion factors within HSPF – particularly for quantities that are calculated in HPSF as volumes or depths per time step (rather than per second or per hour).

Following these modifications, various QA/QC checks (e.g., comparing IMP inflow to rainfall volumes, comparing IMP layer 1 outflow and layer 2 inflow volumes) were performed to validate the model response.

### 1.1 Drainage Management Areas

The HPSF model's Drainage Management Area (DMA) characteristics were derived from drainage planning information provided by the Clean Water Program. For the Fire Prevention Bureau site, the Stormwater Treatment Plan (drawing sheet C-6, dated September 2009) included the drainage areas, soil types and other information needed for the model. For the Walden Park Commons site, the C.3 Plan – Stormwater Treatment Control Plan (drawing sheet C-1, dated July 2008) were used to characterize the DMAs. Table 1 lists the Fire Prevention Bureau DMA characteristics and Table 2 lists the Walden Park Commons DMA characteristics.

Table 1. Pittsburg Fire Prevention Bureau Site DMA Characteristics[A]

| DMA | Impervious Area | | Pervious Area | | Total Area | |
|---|---|---|---|---|---|---|
| | ft2 | acres | ft2 | acres | ft2 | acres |
| DMA 2 (trib. to IMP 2) | 12,059 | 0.2768 | 2,415 | 0.0554 | 14,474 | 0.3323 |
| DMA 4 (trib. to IMP 4) | 627 | 0.0144 | 0 | 0.0000 | 627 | 0.0144 |
| DMA 6 (trib. to IMP 6) | 3,152 | 0.0724 | 562 | 0.0129 | 3,714 | 0.0853 |

*A. All pervious areas were simulated as NRCS Group D soil (PERLND 102)*

| Table 2. Walden Park Commons Site DMA Characteristics[A] | | | | | | |
|---|---|---|---|---|---|---|
| DMA | Impervious Area | | Pervious Area | | Total Area | |
| | ft2 | acres | ft2 | acres | ft2 | acres |
| Tributary to IMP #1 (North) | | | | | | |
| M | 11,606 | 0.2664 | 2,153 | 0.0494 | 13,759 | 0.3159 |
| N | 21,695 | 0.4980 | 3,795 | 0.0871 | 25,490 | 0.5852 |
| Total IMP #1 (North) | 33,301 | 0.7645 | 5,948 | 0.1365 | 39,249 | 0.9010 |
| Tributary to IMP #2 (South) | | | | | | |
| D | 7,780 | 0.1786 | 1,381 | 0.0317 | 9,161 | 0.2103 |
| E | 7,574 | 0.1739 | 1,252 | 0.0287 | 8,826 | 0.2026 |
| J | 5,382 | 0.1236 | 2,120 | 0.0487 | 7,502 | 0.1722 |
| K | 8,996 | 0.2065 | 1,658 | 0.0381 | 10,654 | 0.2446 |
| L | 3,198 | 0.0734 | 575 | 0.0132 | 3,773 | 0.0866 |
| P | 3,597 | 0.0826 | 509 | 0.0117 | 4,106 | 0.0943 |
| Total IMP #2 (South) | 36,527 | 0.8385 | 7,495 | 0.1721 | 44,022 | 1.0106 |

*A. All pervious areas were simulated as NRCS Group D soil (PERLND 102)*

## 1.2 IMP Characteristics

**The DMA source data also contained information about the site IMPs. For the Walden Park Commons site, the *SWQ and Hydrology Study for Subdivision 9147* drainage report, dated October 2010, was also reviewed to obtain the total volume included in the storage pipes. Table 3 lists the Fire Prevention Bureau IMP dimensions and Table 4 lists the Walden Park Commons IMP dimensions.**

**At the Fire Prevention Bureau site, the IMPs were generally constructed with dimensions that were close to the requirements of the HMP. For example, the A (area) and V2 (gravel volume) components are IMP #2 are close to the IMP requirements while the V1 (ponding layer) component was larger than required. IMP #4 and IMP #6 were constructed with larger plan areas (A) but the volume ponding layer volume and gravel volume were close to the amount required by the HMP. The underdrain piping for the Fire Prevention Bureau IMPs were located near the top of the gravel layer to provide an opportunity for more of the treated water to infiltrate to the surrounding soils.**

| Table 3. Pittsburg Fire Prevention Bureau Site IMP Dimensions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IMP | Required Areas, Volumes | | | Constructed Areas, Volumes | | | Constructed Depths | | | Orifice Diameter (in) |
| | A (ft2) | V1 (ft3) | V2 (ft3) | A (ft2) | V1 (ft3) | V2 (ft3) | Ponding (in) | Soil (in) | Gravel (in) | |
| IMP #2 | 873 | 734 | 960 | 886 | 886 | 975 | 12 | 18 | 33 | 0.81 |
| IMP #4 | 40 | 34 | 44 | 82.5 | 41 | 41 | 6 | 18 | 15 | 0.17 |
| IMP #6 | 225 | 189 | 247 | 340 | 170 | 215 | 6 | 18 | 19 | 0.41 |

**The Walden Park Commons bioretention plus vault IMPs were constructed with storage volume (V) components that approximated the HMP requirements. IMP #2 (South) was constructed with a bioretention area that is approximately 20 percent larger than required by the HMP.**

Table 4. Walden Park Commons Site IMP Dimensions

| IMP | Bioretention Area (ft2) | Storage Volume (ft3) | Orifice Diameter (in) |
|---|---|---|---|
| IMP #1 (North) | 1,500 | 2,419 | 1.24 |
| IMP #2 (South) | 1,917 | 2,698 | 1.31 |

## 1.3 Time Series Data

**Time series data were used to provide rainfall and evapotranspiration inputs to the HSPF model. Table 5 lists the time series datasets used and the periods covered by these datasets.**

Table 5. HPSF Model Time Series Datasets

| Dataset | Type | Source | Period | Usage |
|---|---|---|---|---|
| Fire Prevention Bureau Rainfall | Rainfall tipping bucket processed in 15-min increments | Contra Costa Flood Control District | Oct-2011 to May-2013 | IMP hydraulic review and model calibration |
| Walden Park Commons Rainfall | Rainfall tipping bucket processed in 15-min increments | Contra Costa Flood Control District | Nov-2011 to May-2013 | IMP hydraulic review and model calibration |
| Los Medanos Rainfall | Long-term rainfall in hourly increments | Contra Costa Flood Control District | Jul-1974 to Aug-2013 | Long-term model simulations for Fire Prevention Bureau site |
| FCD11 Rainfall in Martinez | Long-term rainfall in hourly increments | Contra Costa Flood Control District | Feb-1969 to Aug-2013 | Long-term model simulations for Walden Park Commons site |
| Brentwood Evaporation | Long-term ET data in hourly increments | CIMIS | Jan-1986 to Aug-2013 | Model calibration and long-term simulations (with Los Alamitos ET data) |
| Los Alamitos Evaporation | Long-term ET data in hourly increments | EPA Basins software | Jul-1948 to Dec-1985 | Long-term simulations combined with Brentwood. Provided pre-1986 ET data. |

## 1.4 Model Time Step Adjustment

**The HSPF models were adapted to run in either 15-minute or hourly time steps. The shorter time step provided better resolution of the IMP hydraulic processes during the model calibration process whereas hourly time steps were needed for the long-term simulations to match the available input time series data sources. Several hydrologic variables are computed by HSPF in time-dependent units (e.g., inches per time step), so conversion factors were needed to allow the model to run with different time steps. These conversions are documented within the HPSF input files (i.e., the UCI files) and listed in Table 6.**

| Table 6. HSPF Model Time Step Adjustments and Conversion Factors | | |
|---|---|---|
| HSPF Block | Description | Conversion Factor Revision |
| NETWORK | Outflow from upper layer of IMP (HYDR) is computed in cfs whereas input to lower layer (IVOL) is computed in acre-feet per time step | For 15-minute time steps:<br>CONVERSION = [1 FT3/S] * [1/43560 AC/FT2] * [900 S/TS]<br>CONVERSION = 0.0207<br>For 1-hour time steps:<br>CONVERSION = [1 FT3/S] * [1/43560 AC/FT2] * [3600 S/TS]<br>CONVERSION = 0.0826 |
| NETWORK | IMP inflows (IVOL) are computed in units of acre-foot per time step and these data are converted to cfs for reporting via the PLTGEN file | For 15-minute time steps:<br>CONVERSION = [43560 FT3/AC-FT] * [1/900 TS/S]<br>CONVERSION = 48.4<br>For 1-hour time steps:<br>CONVERSION = [43560 FT3/AC-FT] * [1/3600 TS/S]<br>CONVERSION = 12.1 |
| NETWORK | Pre-project site runoff rates (PWATER SURO) are computed in units of inches per time step. These data are converted to cfs for reporting via the PLTGEN file | For 15-minute time steps:<br>CONVERSION = [43560 FT2/AC] * [1/12 FT/IN] * [1/900 TS/S] * [AREA in AC]<br>CONVERSION = 4.0333 * [AREA in AC]<br>For 1-hour time steps:<br>CONVERSION = [43560 FT2/AC] * [1/12 FT/IN] * [1/3600 TS/S] * [AREA in AC]<br>CONVERSION = 1.0083 * [AREA in AC] |

After the conversions were applied, the model outputs were tested through a QA/QC process to validate the results.

## Section 2: Rainfall Characteristics

This section supplements the description included in Section 6.1.1 of the HMP Model Calibration and Verification report, specifically the estimate of recurrence intervals for the storms that were recorded during the monitoring period.

To understand the monitored storm events within the context of long-term local rainfall characteristics, depth-duration-frequency curves were developed from the long-term hourly datasets recorded at the Los Medanos gauge and the FCD11-Martinez gauge. The following method was used to develop the curves:

5. The rainfall data was parsed into discrete storm events. A dry period of 24-hours was used to separate rainfall into distinct, independent events. The resulting set of storm events is called as a partial-duration series.
6. Each rainfall event was examined to determine the maximum amount of rain that occurred within specific periods of the storm (e.g., the maximum 3-hour accumulation, 6-hour accumulation) from durations of 1-hour to 72-hours.
7. The accumulations for each duration were ranked and assigned a recurrence interval using the Cunnane plotting position method (e.g., all 12-hour accumulations were ranked, all 24-hour accumulations were ranked).
8. A logarithmic regression relationship was developed to relate rainfall depth to recurrence interval for each storm duration from 1-hour to 72-hour. The regression equations were then used to compute curves shown in Figure 1 and Figure 2. The plots only include the computed durations up to 24-hours.

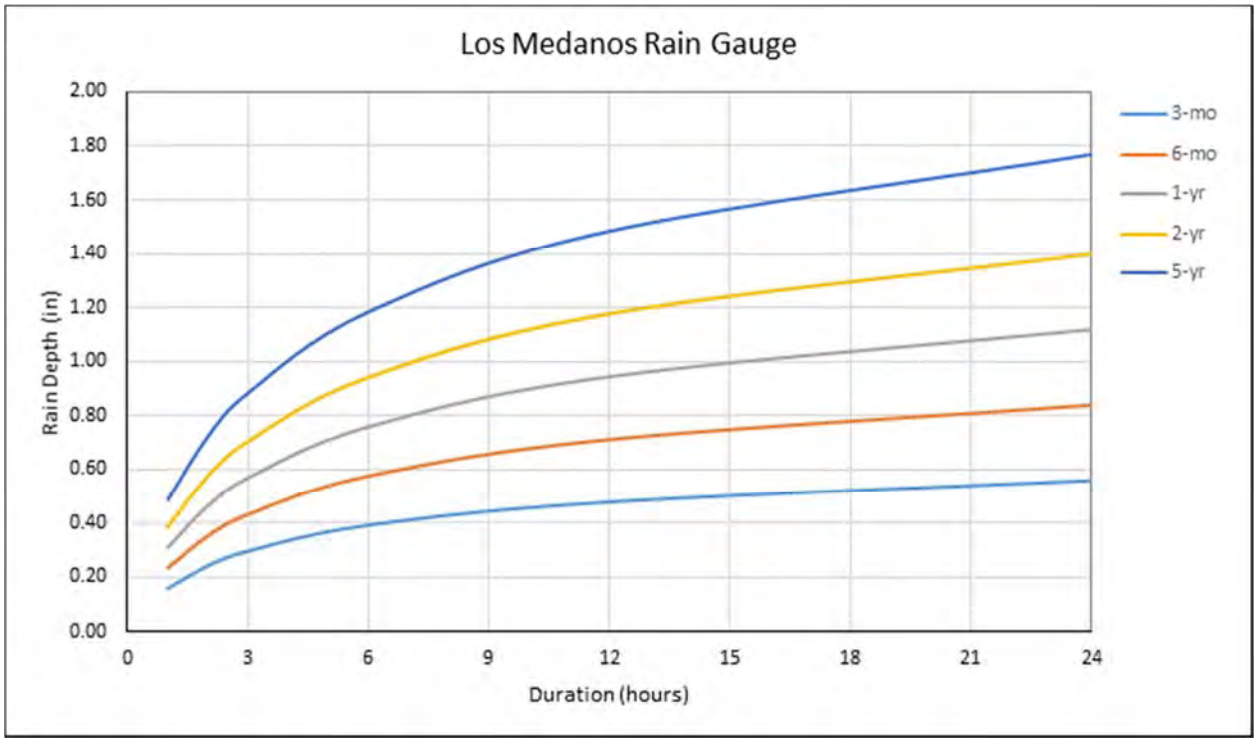


*Figure 1. Depth-Duration Frequency curve for Los Medanos rain gauge. Curve was used to estimate the recurrence interval for storms monitored at the Fire Prevention Bureau site.*

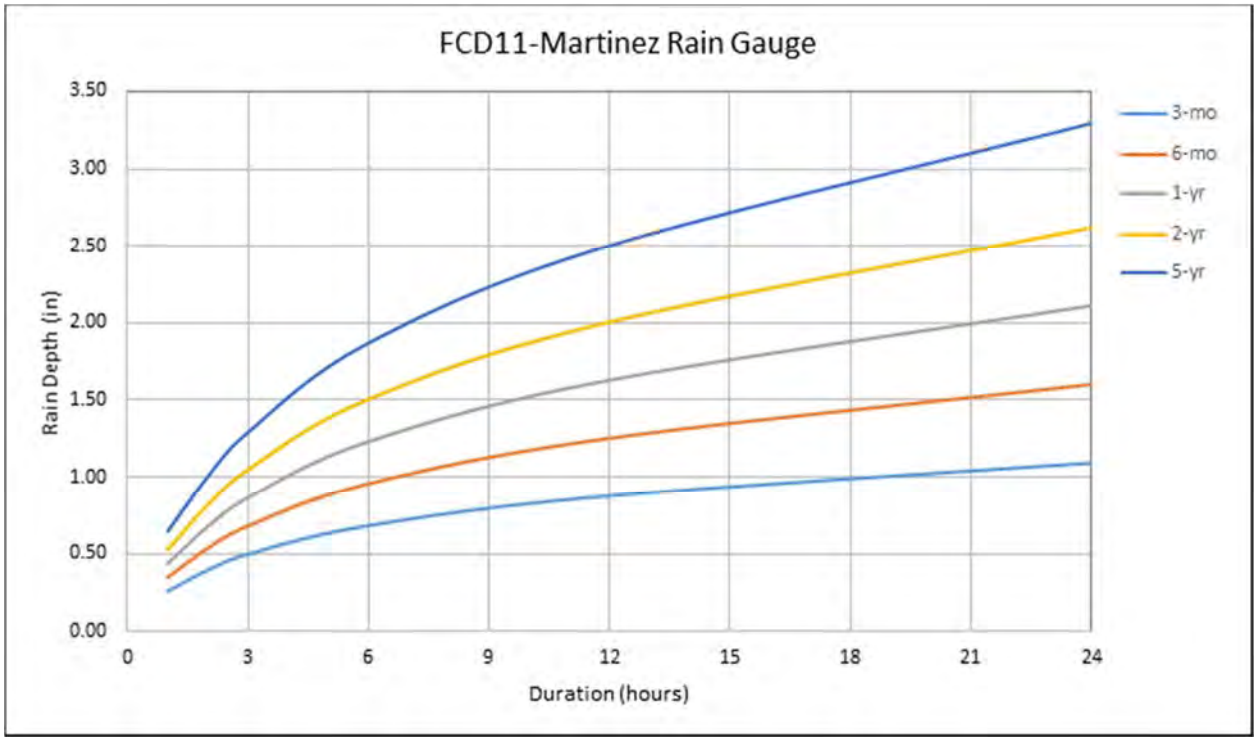


*Figure 2. Depth-Duration Frequency curve for FCD11-Martinez rain gauge. Curve was used to estimate the recurrence interval for storms monitored at the Walden Park Commons site.*

After the depth-duration-frequency curves were computed from the long-term rainfall datasets, similar partial-duration series rainfall accumulations were computed for the Fire Prevention Bureau and Walden Park Commons rain gauge data. The rainfall depth was computed for each significant storm for durations ranging from 1 hour to 72 hours. The accumulations were then compared to the long-term curves (either Figure 1 or Figure 2) to determine the recurrence interval for the monitored data.

Table 7 and Figure 3 provide an example of how the monitoring period storm recurrence intervals were estimated. The 11/28/2012 storm data provided a total of 1.64 inches of rain at the Fire Prevention Bureau gauge and Table 7 lists the maximum rainfall accumulation for specific periods within the storm event. These data are plotted over the long-term Los Medanos depth-duration-frequency curve in Figure 3 to provide context. The 11/28/2012 storm was approximately a 6-month to 1-year event for durations less than 6 hours. The 12-hour and 24-hour accumulations were approximately equal to a 2-year storm event.

Table 7. Rainfall Accumulations the 11/28/2012 Storm at the Fire Prevention Bureau

| Duration (hour) | Rainfall (in) |
|---|---|
| 1 | 0.31 |
| 2 | 0.38 |
| 3 | 0.44 |
| 6 | 0.69 |
| 12 | 1.20 |
| 24 | 1.32 |
| 48 | 1.33 |
| 72 | 1.64 |

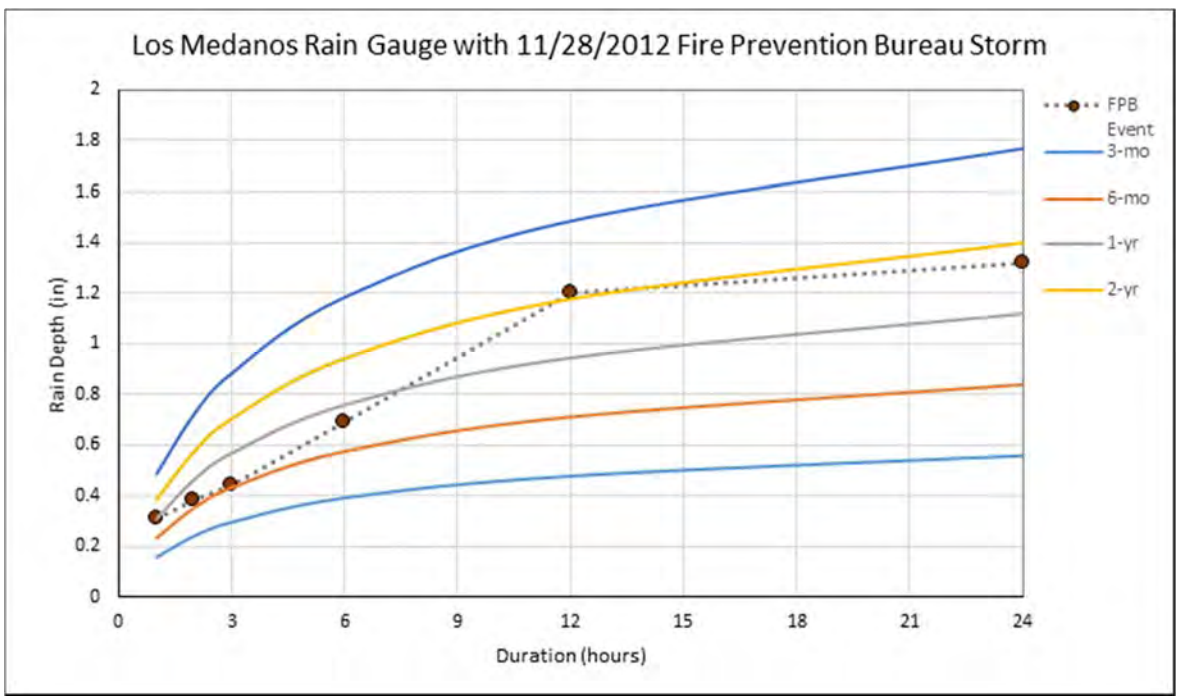

*Figure 3. The 11/28/2012 storm event at the Fire Prevention Bureau was approximately a 2-year storm over a 12-hour duration.*

Rainfall accumulations were compared to the depth-duration-frequency curves for all of the significant storm events listed in Table 6-2 and Table 6-3. The approximate recurrence interval was reported for 12-hour durations. This duration was selected because it balances both the short-term intensities and long-term accumulations that can affect IMP performance.

# Section 3: HSPF Modeling Results

This section supplements the discussion included in Section 6.2 and 6.3 of the HMP Model Calibration and Verification report. It describes he model calibration process in greater detail and provides long-term simulation results for all IMPs.

## 3.1 Model Parameter Adjustments

This section describes how the model parameters were adjusted and provides additional example calibration results.

### 3.1.1 Bioretention Soil Characteristics

As described in Section 6.1.3, Fire Prevent Bureau bioretention soils produces faster percolation rates earlier and respond earlier in storm events than was predicted by the HPSF model used to develop the HMP. Additionally, the Fire Prevention Bureau IMPs produced significantly more infiltration to surrounding soils than the HPSF model predicted. The model calibration effort focused on these two key differences.

Rainfall and water level monitoring data and modeling results were examined to approximate a) what level of soil moisture is needed to initiative percolation from the bioretention soil to the gravel layer and b) at what rate does the percolation occur. The bioretention soils appear to produce little percolation until the soils reach about 50 percent of saturation. At this point, percolation occurs rapidly. While the precise rate was difficult to isolate, the monitoring data suggested percolation rates of up to 7.5 inches per hour could occur.

The HSPF model's representation of the bioretention soils was iteratively modified based on the percolation response of Fire Prevention Bureau IMP #6 for different storm events. The adjustments focused on a) allowing the bioretention soils to hold almost all runoff during small storm events and b) percolating the appropriate volume of stormwater to the gravel layer during large storm events.

Figure 4 illustrates how the percolation characteristics were adjusted by showing the soil moisture-percolation relationship used in the HMP models and the modified relationship that was developed by examining the Fire Prevention Bureau monitoring data. The calibrated relationship allows water to move rapidly into the gravel layer when the bioretention soils fill with water and provides the appropriate level of soil drying between storm events.

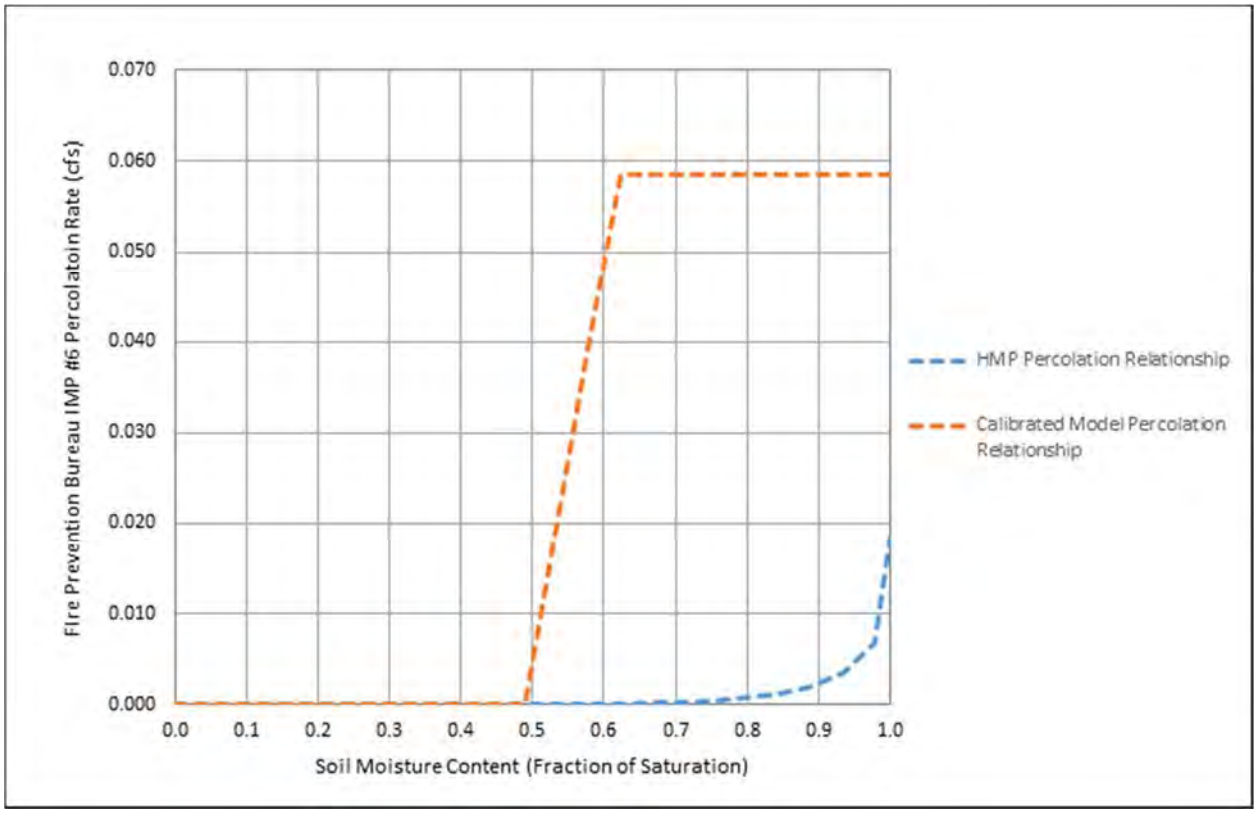


*Figure 4. Soil moisture-percolation relationship for bioretention soils at the Fire Prevention Bureau*

### 3.1.2 Infiltration to Surrounding Soils

The observed water level recession rates indicate that the NRCS Group D soils at the Fire Prevention Bureau allow for a greater level of infiltration than was expected when preparing the HMP. The HSPF model's rate of infiltration from the IMP gravel layer to the surrounding soils was adjusted iteratively until the shape of the water level curve approximated the level monitoring data across the largest storm events.

Several gravel layer-to-surrounding soils infiltration rates were tested and the best-fit rate for Fire Prevention Bureau IMP #6 was 0.24 inches per hour. Figure 5, Figure 6 and Figure 7 show the model results for the 11/28/2012 storm event with infiltration rates of 0.20 in/hr, 0.24 in/hr and 0.28 in/hr, respectively. The closest match occurs with the 0.24 in/hr simulation.

The IMP #6 calibration was then applied to the other Fire Prevention Bureau IMPs. The simulation results and monitoring data were compared for IMP #2 and the model results provided a good approximation of the monitoring data. A similar comparison was not practical at IMP #4 due to its small dimensions at IMP #4 and lack of a defined gravel layer response to rainfall.

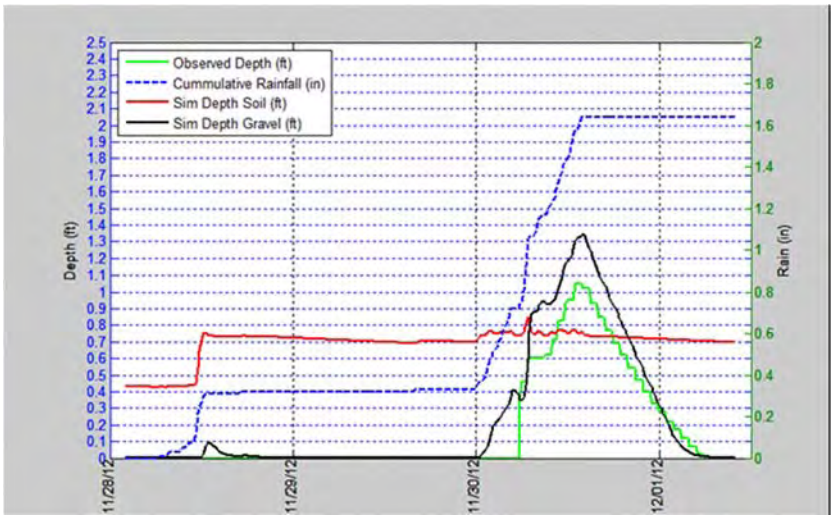


*Figure 5. IMP #6 infiltration = 0.20 in/hr. Simulation > monitoring data*

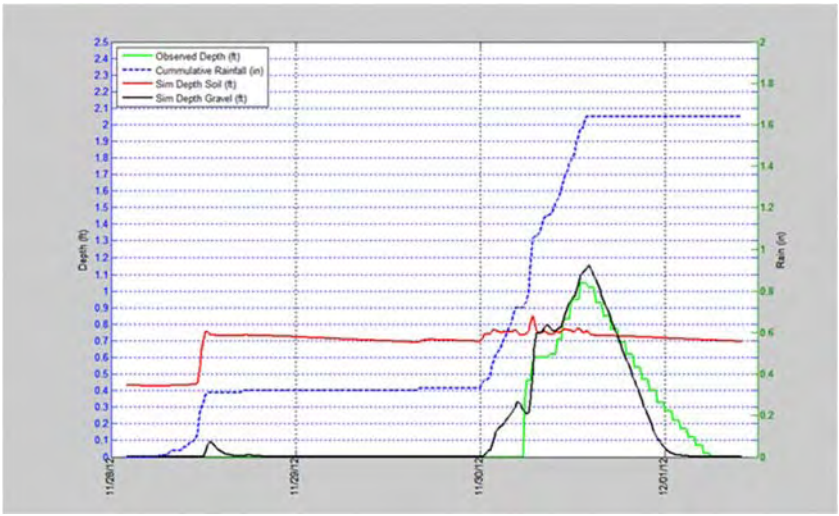


*Figure 6. IMP #6 infiltration = 0.24 in/hr. Simulation ~ monitoring data*

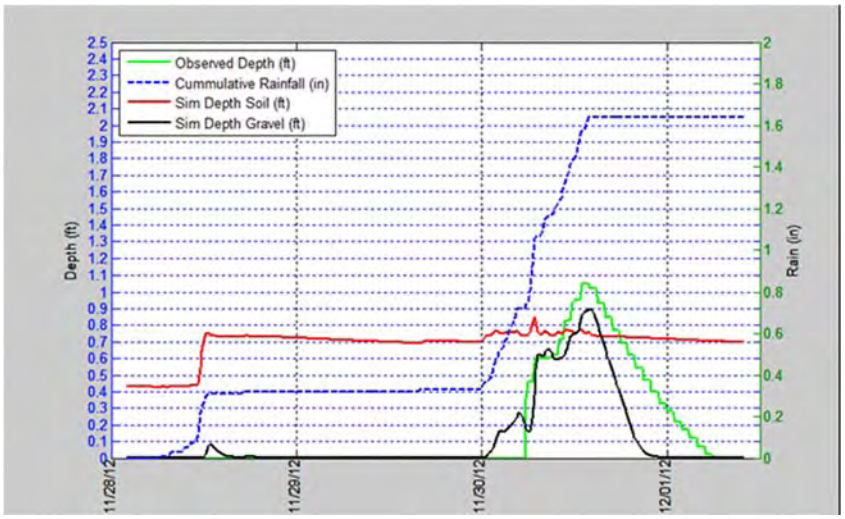


*Figure 7. IMP #6 infiltration = 0.28 in/hr. Simulation < monitoring data*

## 3.2 Long-Term Model Performance

This section describes the process for setting up the long-term model simulations and using the results to assess the performance of the Fire Prevention Bureau and Walden Park Commons IMPs in comparison to the HMP's peak flow and flow duration control standard.

### 3.2.1 Long-Term Simulation Setup

The calibrated models for the Fire Prevention Bureau IMPs and Walden Park Commons IMPs (see Section 6.3 for these examples) were used to prepare long-term simulations. The following steps were needed to prepare the long-term simulation models:

1. The FTABLE representations of the calibrated IMPs were copied into the HSPF long-term simulation input file.
2. The HSPF input file was linked to the long-term time series datasets described above in Table 5. The Fire Prevention Bureau simulations used hourly rainfall data collected at the Los Medanos gauge from 1974 through May 2013. The Walden Park Commons simulations used hourly data from the FCD11 gauge in Martinez from 1969 through May 2013. The evaporation time series dataset was composed of Los Alamitos data (pre-1985) and Brentwood data (1986 and later).
3. The HSPF input file unit conversions were applied as needed for the long-term simulations hourly time steps (see Table 6 for details).
4. The list of variables included model's time series output file (i.e., the PLTGEN file) were modified to allow for a comparison of pre-project and post-project conditions.

### 3.2.2 Long-Term Simulation Results

The long-term simulation outputs were evaluated using flow frequency statistics and flow duration statistics (see Section 6.3). Next, the IMP outflows were compared to pre-project flows to determine of the IMPs reduced peak flows and flow durations below pre-project levels. This section includes peak flow and flow duration graphics for all of the IMPs. Figure 8 through Figure 13 show results for the Fire Prevention Bureau site and Figure 14 through Figure 17 show results for the Walden Park Commons sites. All IMPs control flows to down to the current 0.2Q2 lower control threshold. Additionally, the Fire Prevention Bureau sites control flows down to the 0.1Q2 lower control threshold. The Walden Park Commons sites do not meet the stricter lower control threshold.

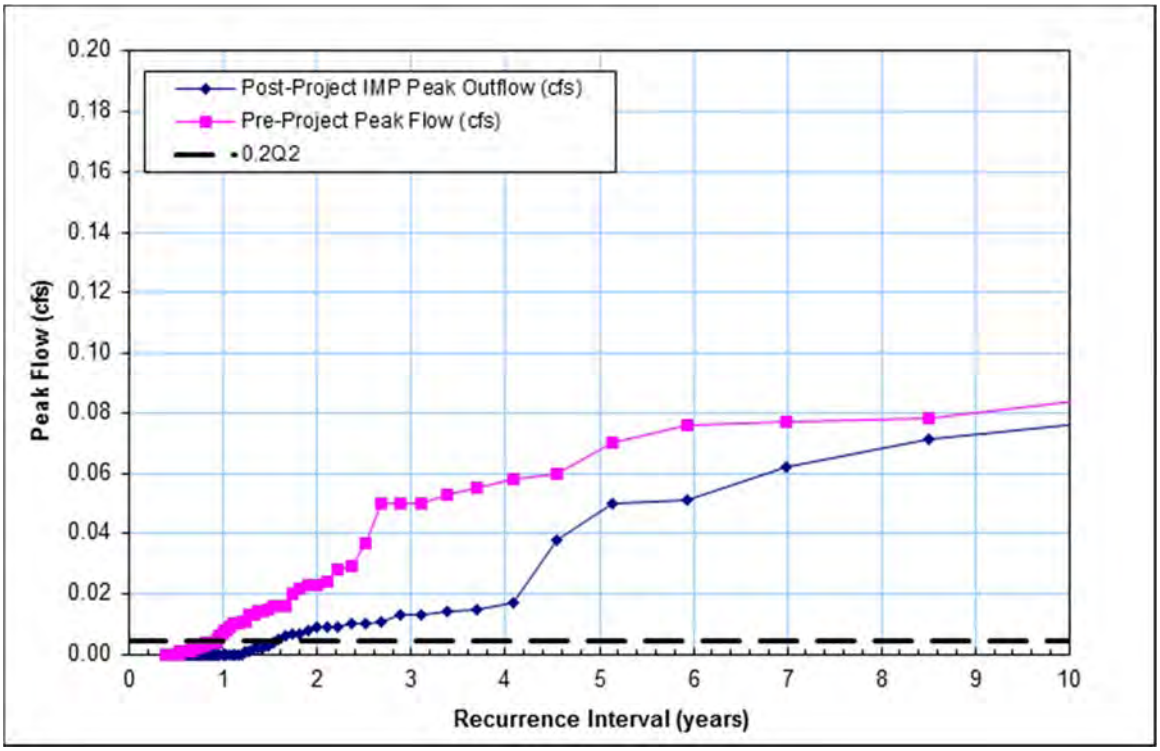


*Figure 8. Peak flow frequency comparison for pre-project runoff and post-project outflows for Fire Prevention Bureau IMP #2*

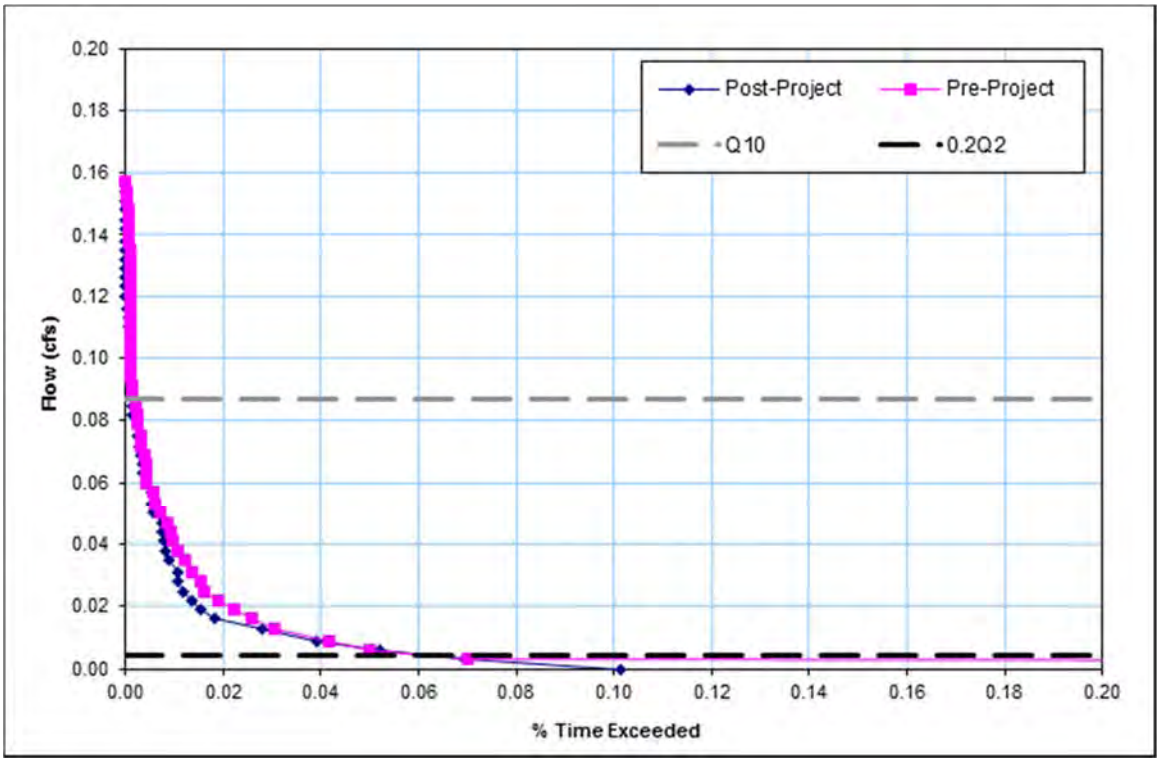


*Figure 9. Flow duration comparison for pre-project runoff and post-project outflows for Fire Prevention Bureau IMP #2*

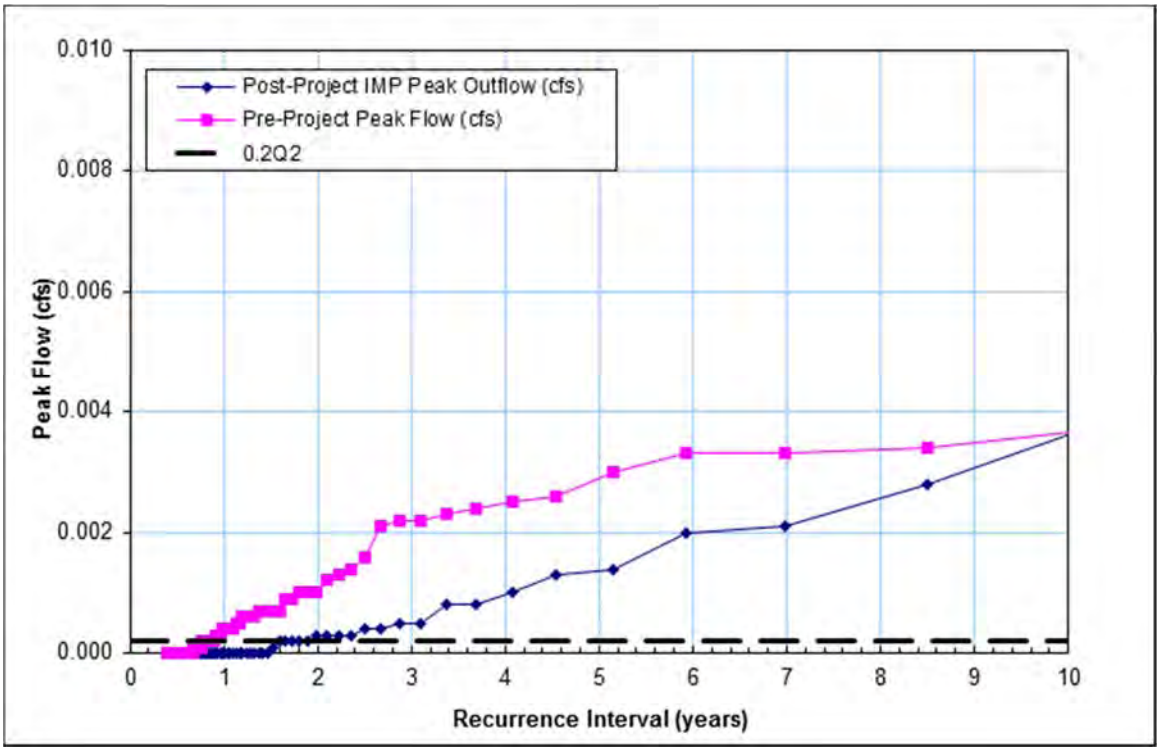


*Figure 10. Peak flow frequency comparison for pre-project runoff and post-project outflows for Fire Prevention Bureau IMP #4*

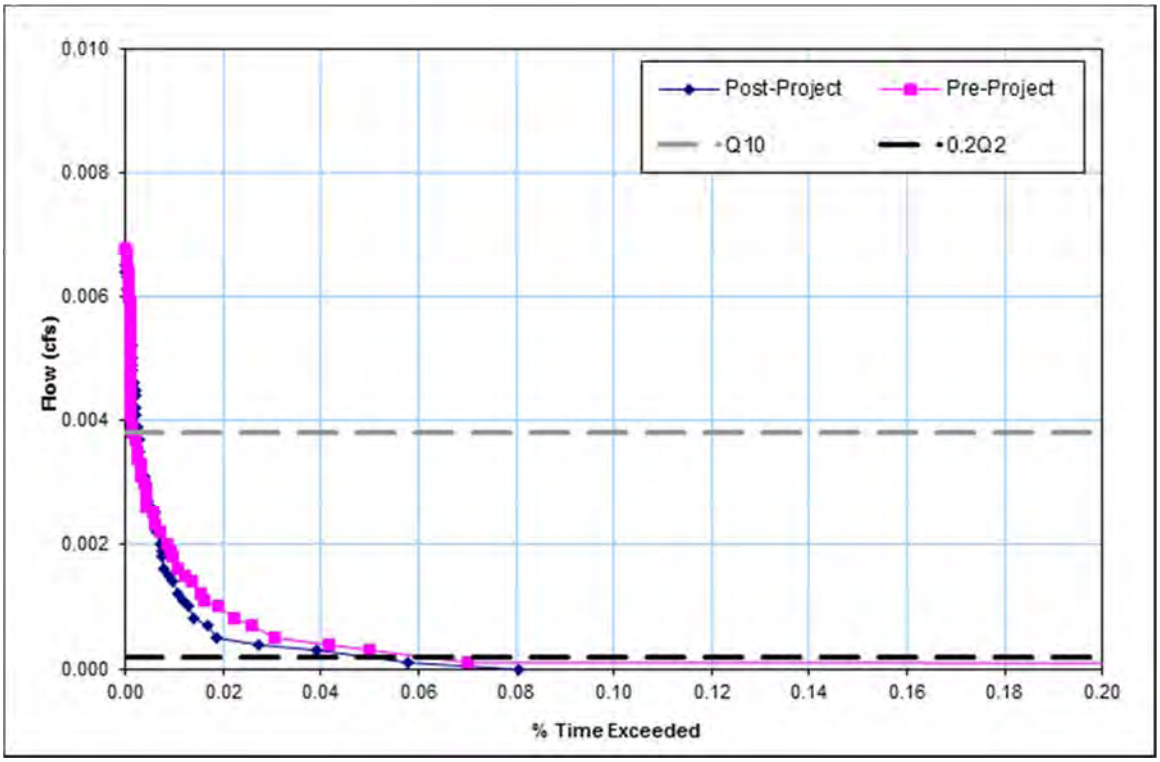


*Figure 11. Flow duration comparison for pre-project runoff and post-project outflows for Fire Prevention Bureau IMP #4*

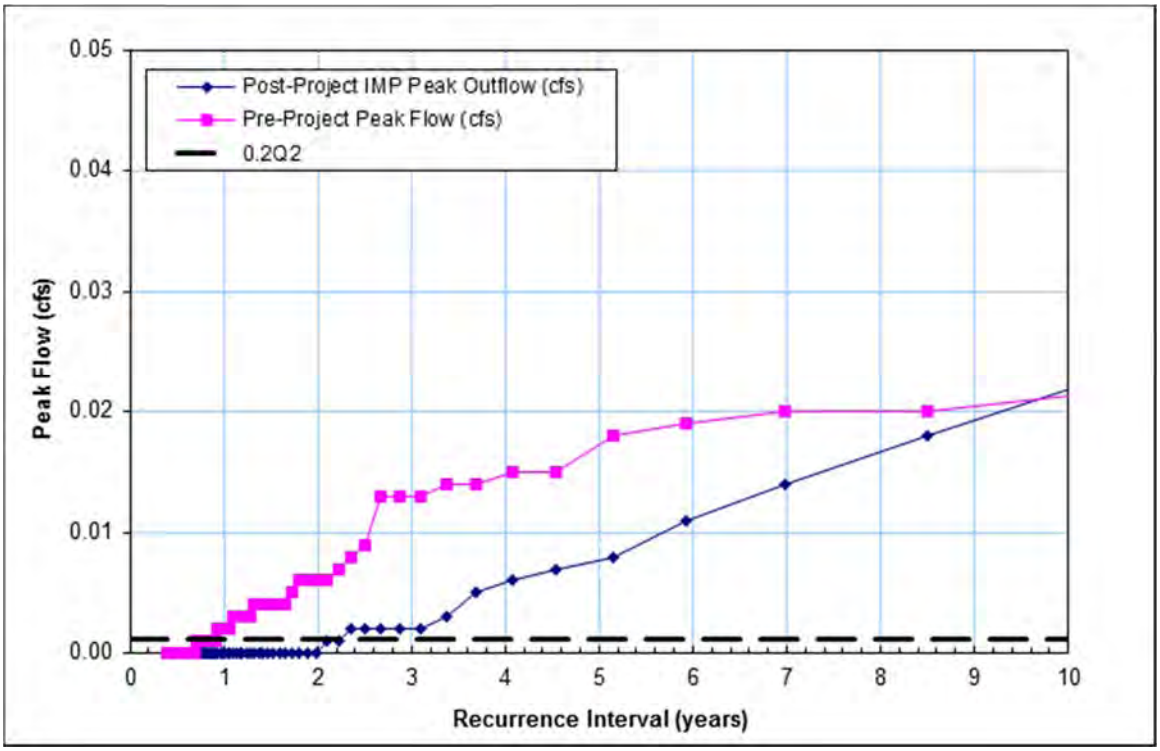


*Figure 12. Peak flow frequency comparison for pre-project runoff and post-project outflows for Fire Prevention Bureau IMP #6*

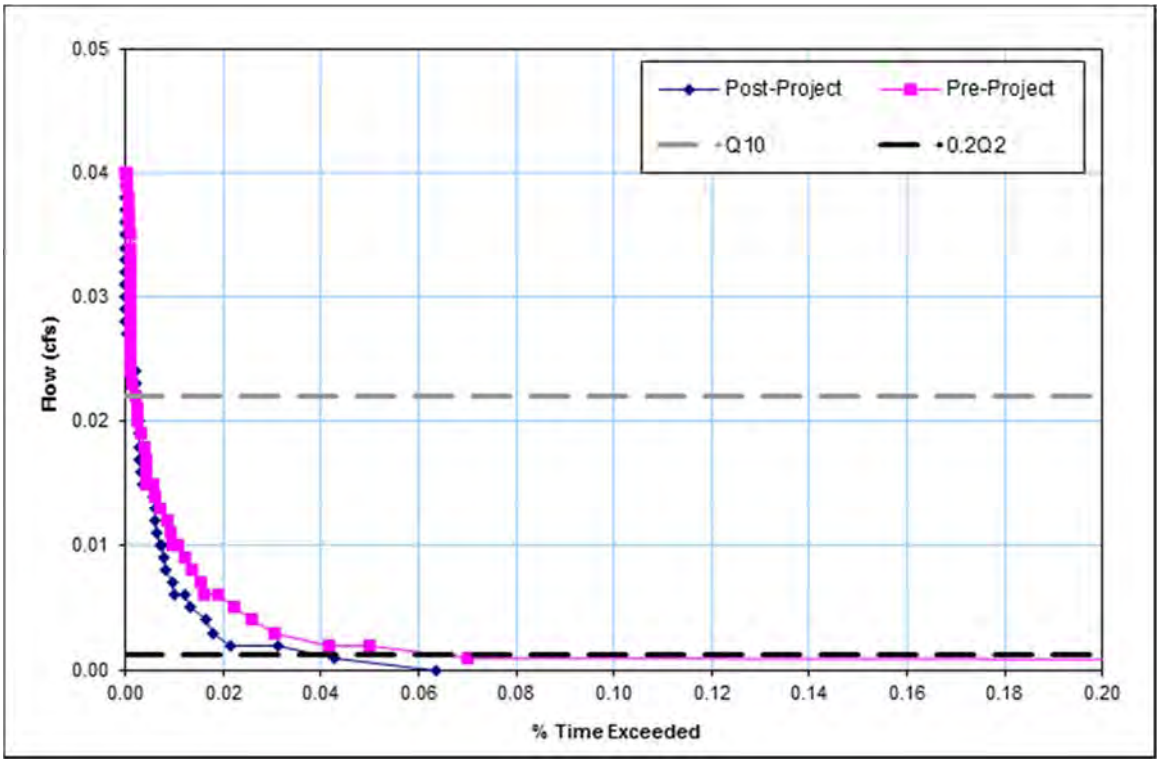


*Figure 13. Flow duration comparison for pre-project runoff and post-project outflows for Fire Prevention Bureau IMP #6*

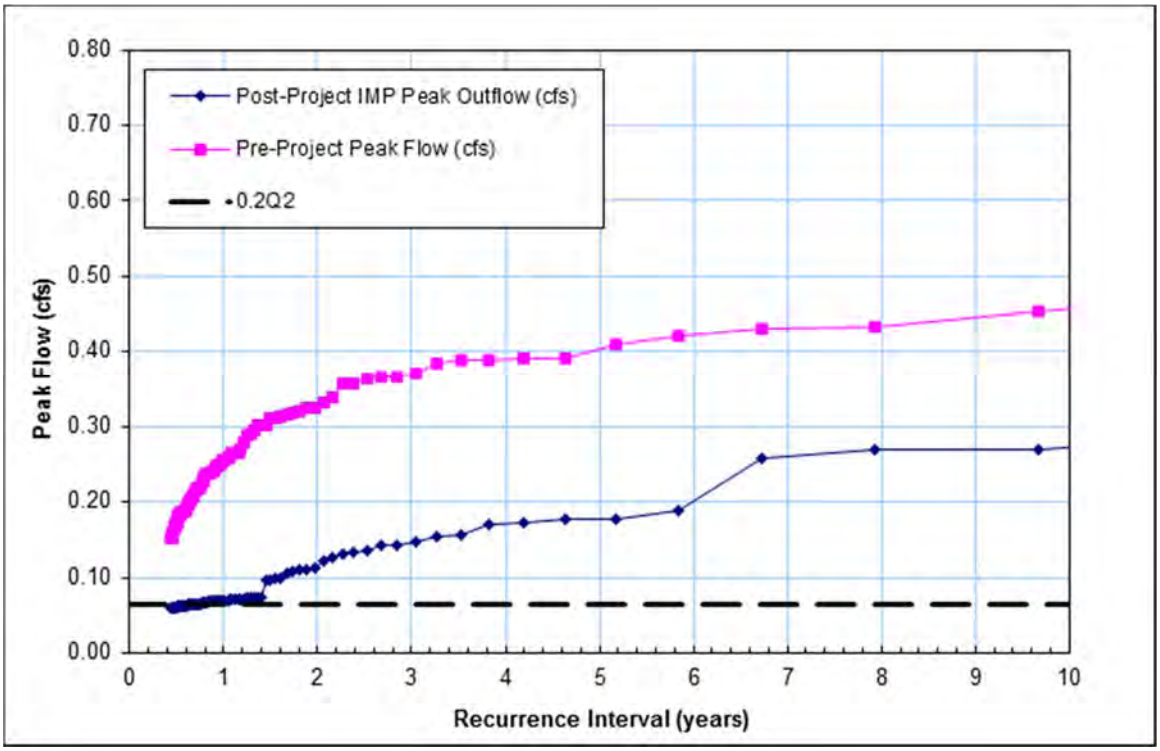


*Figure 14. Peak flow frequency comparison for pre-project runoff and post-project outflows for Walden Park Commons IMP #1 (North)*

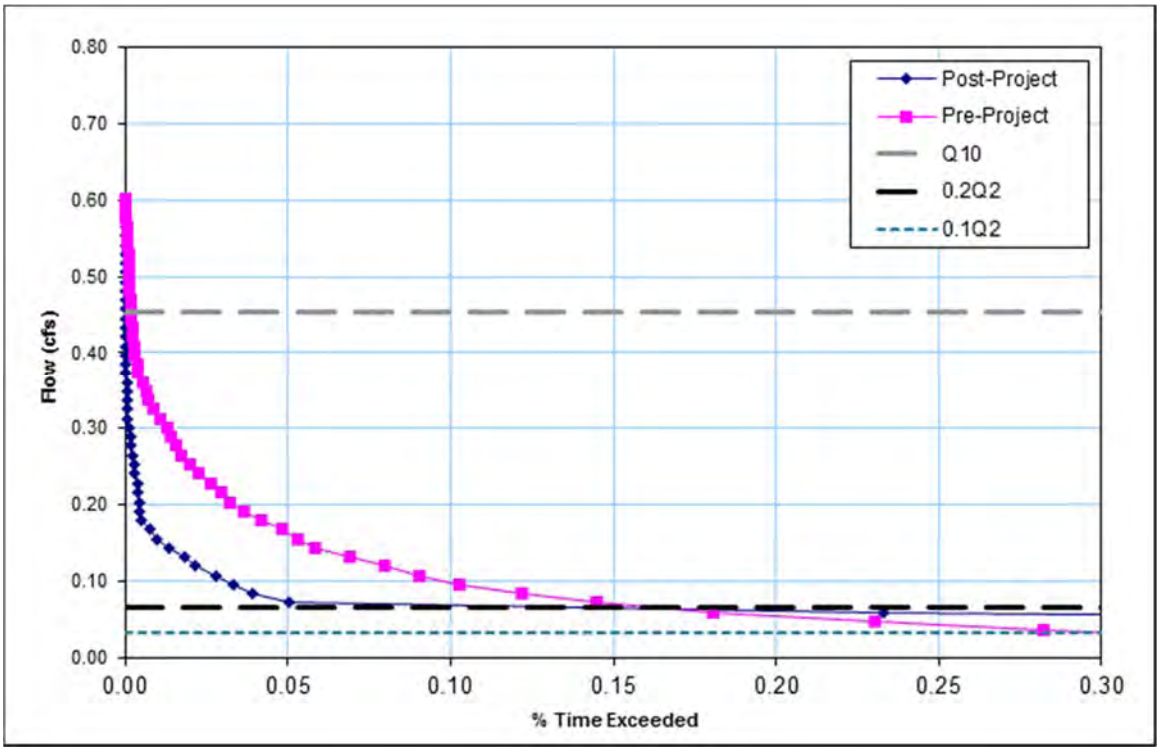


*Figure 15. Flow duration comparison for pre-project runoff and post-project outflows for Walden Park Commons IMP #1 (North)*

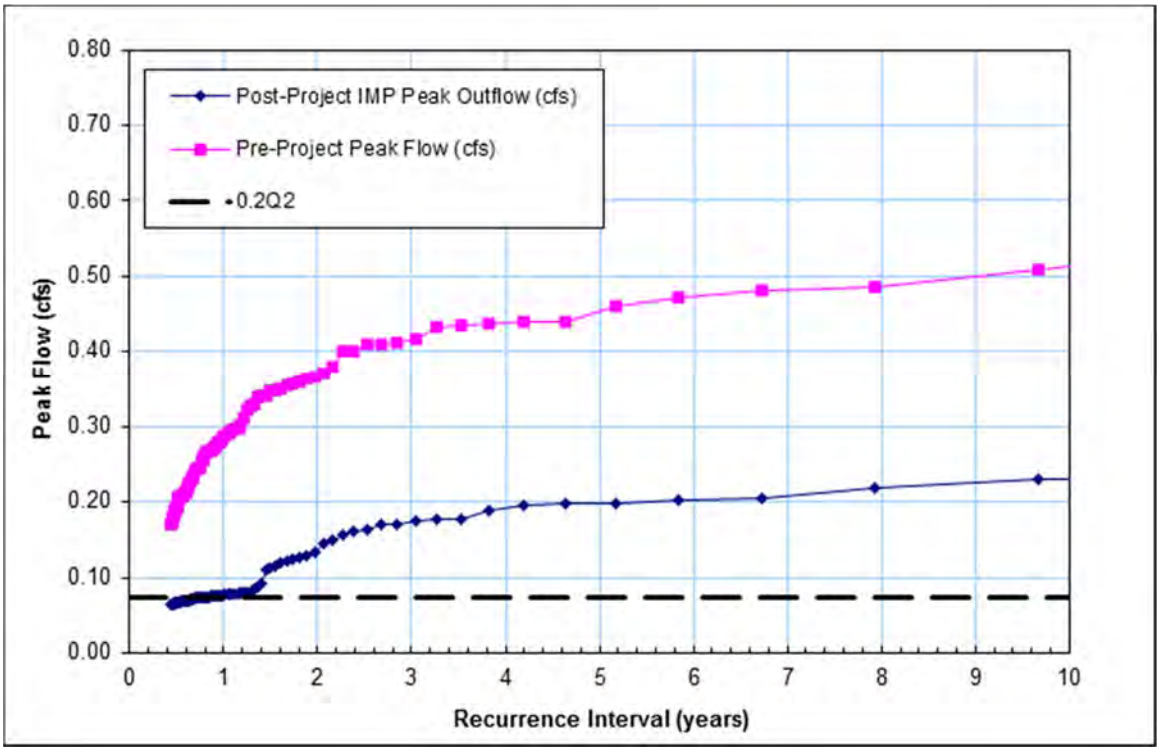


*Figure 16. Peak flow frequency comparison for pre-project runoff and post-project outflows for Walden Park Commons IMP #2 (South)*

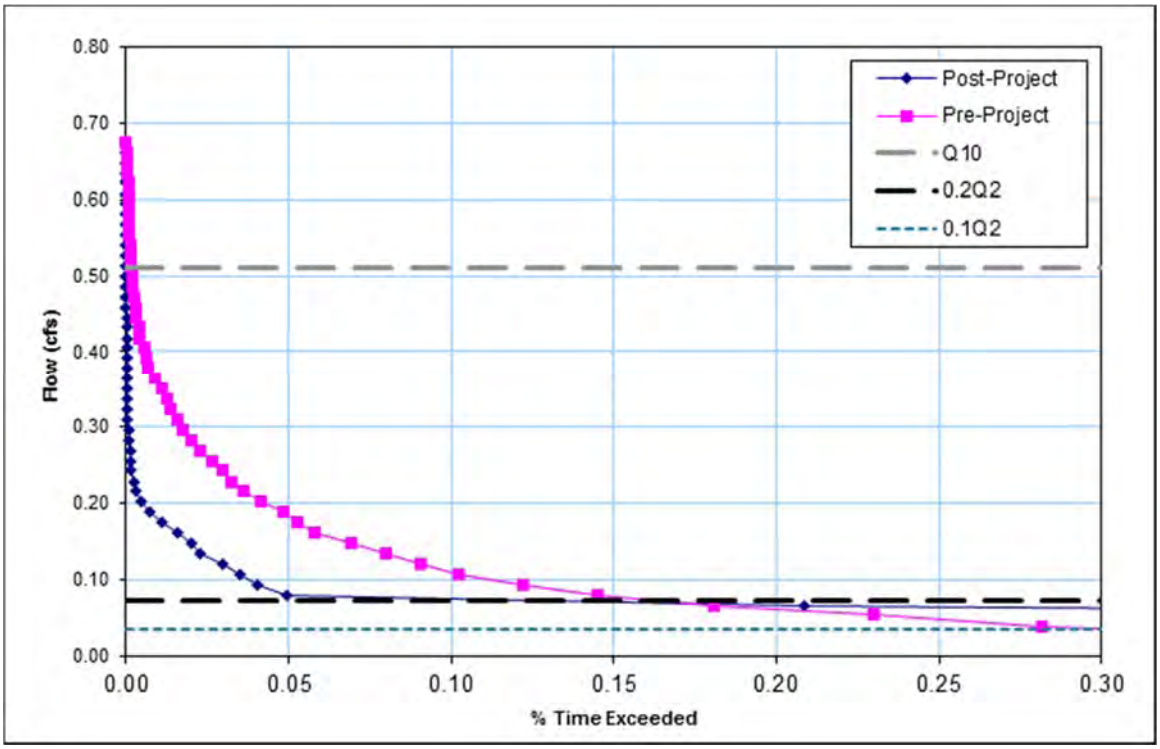


*Figure 17. Flow duration comparison for pre-project runoff and post-project outflows for Walden Park Commons IMP #2 (South)*

Attachment 7.1

# CONTRA COSTA

## Clean Water Program

*Outreach Plan*
*May 2013*

S. Groner Associates, Inc.
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*Oakland, CA 94612*

*Nick Laurrell*
*nlaurrell@sga-inc.net*
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S.GRONER ASSOCIATES, INC.

Dear Reader,

Public education has the potential to be better today than ever before. We have access to more channels of communication, more scientifically tested data on the nature and causes of human behavior, and more actionable information on specific audiences. Of course, this tremendous growth in one set of resources has been met with an unfortunate reality in government outreach budgets: they're shrinking.

What I am most proud of in the plan which you are about to read is that it hones the infinite possibilities of outreach into some key strategies by reconciling permit compliance and budget with our research findings. In analyzing data from more than 500 survey responses, four focus groups, countless interactions with the Public, and the wealth of information native to the members of the CCCWP Public Information and Participation as well as Management Committees, we have outlined a comprehensive program:

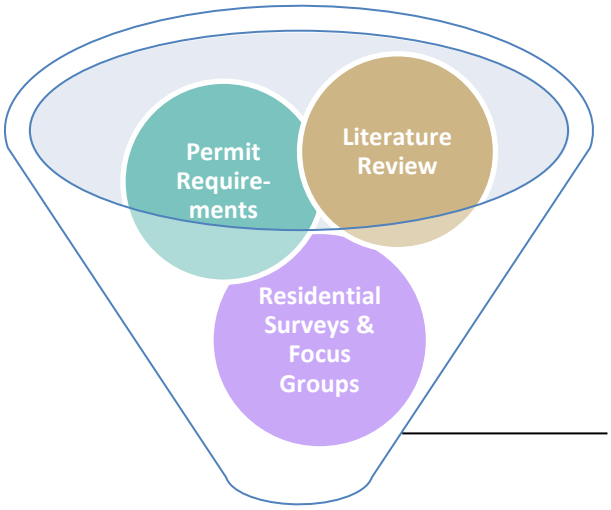
> A program that includes informed multi-lateral outreach strategies and online-offline outreach integration;
>
> A program with aggressive yet achievable numeric objectives designed to hold subsequent efforts accountable in protecting water;
>
> A program that will work.

I understand the scope and length of this plan can seem daunting. We've done our best to break up the data and findings into bite sized chunks and provide a clear summary of items in the beginning of the plan. Also, as difficult as it may be to believe when beginning a roughly 300 page plan, we have additional information for you upon request: raw data, focus group recordings and more.

Thank you for taking the time to review our plan. I hope you find as much value in reading it as we found in writing it.

Nick Laurrell
S. Groner Associates, Inc.
nlaurrell@sga-inc.net

# PLAN STRUCTURE & DEVELOPMENT PROCESS




*These sections are found in the Appendices which begin on page 79*

**Audience Analysis**

*This section begins on page 37*

**Program Approach**

*This section begins on page 4*

*Note: in the plan itself, the above sections are presented in reverse order, starting with the* ***Program Approach****, followed by the* ***Audience Analysis*** *that informed the development of the* ***Program Approach****, and finally in the Appendices which contain the various sections describing efforts that led to the* ***Audience Analysis*** *findings.*

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# PROGRAM APPROACH

## 1. INTRODUCTION & SECTION STRUCTURE

The ***Program Approach*** serves as a strategic and tactical implementation plan for accomplishing the Contra Costa Clean Water Program's (CCCWP) outreach goals and objectives (*note: throughout this plan, any reference to "Contra Costa" encompasses all the municipalities within the Contra Costa Clean Water Program unless otherwise noted*). Research and data are the basis for the recommendations provided across all sections of this program approach:

- ***Methodology*** - Community Based Social Marketing and proven social psychology principles serve as the foundation for all aspects of the approach including the measurement objectives. This information is gleaned from published literature in this field of study.
- ***Pollutants, Audience & Approach*** - Decisions regarding which pollutants to focus on are based on the Municipal Regional Permit. For these pollutants, information about which audiences to target and which messages to use are all based on the findings of the CCCWP 2013 regional phone survey and pesticide-specific focus groups. The complete write up and thorough analysis of the results can be found in the ***Audience Analysis*** section of this plan.
- ***Tactics*** - The tactics listed in the "Outreach Tactics" section, where applicable, are based on programs that have previously been tested and demonstrated positive results. This information was found in published literature, case studies, and results from programs that SGA has implemented with other municipalities.

This ***Program Approach*** will first outline the recommended overarching goals, specific objectives, strategic approach to campaign development, audience segmentation, and evaluation approach. It will then review the barriers, motivators, and target audiences associated with targeted Best Management Practices (BMP). The section concludes with a comprehensive overview of all campaign tactics for each promoted BMP.

## 2. GOAL

The overarching goal of the program is to protect water quality by successfully informing, engaging, and ultimately changing the behavior of Contra Costa residents.

## 3. OBJECTIVES

The program's objectives are specific, measurable targets that will collectively help to meet the overarching goals (as described above). These objectives are a measureable manifestation of the goals (for a full definition outlining the distinctions between goals, objectives, and tactics, please see ***Appendix A)***.

To meet the overall program goal, SGA recommends setting specific and measurable targets around four kinds of campaign objectives: Knowledge, Interpersonal Communication, Willingness, and Behavior Change.[1] Research has demonstrated that developing and measuring behavior change communication campaigns around these four objectives provides a broader view of impact than developing and measuring campaigns around the end goal of behavior change alone.

Targets for each type of objective have been developed for all three of the campaign's targeted Best Management Practices (BMP): (1) *try a non-toxic home remedy*, (2) *buy a less toxic alternative* and (3) *hire an eco-certified pest controller*. These specific changes in behavior were determined to have the highest ROI after rigorous assessment in the ***Audience Analysis*** section of this plan. For each one of these prioritized BMPs, we have developed one distinct ***Action Campaign***. In ***Table 3.1.*** below, we outline the specific tactics for each ***Action Campaign***. Both the campaigns and the tactics are described in detail in "Section 8: Outreach Tactics."

**Table 3.1.** Campaign Tactics

| Campaign | Tactics |
|---|---|
| **Overarching Campaign**<br>(To be applied across all Action Campaigns) | - Develop and Populate a Story Bank *(page 20)*<br>- Form Partnerships *(page 21)* |
| ***Action Campaign***:<br>At-Home Pesticide/Herbicide Alternative for Do-It-Yourselfers (DIYers) | - Create a Hands-on Workshop *(page 24)*<br>- Online Resources: Tip Ratings Website, Facebook Page, Email Follow-ups *(page 28)* |
| ***Action Campaign***:<br>Buy a Less Toxic Pesticide/Herbicide | - Employee Training *(page 30)*<br>- Coupon or Discount Program *(page 31)*<br>- Pop-Up Demonstration Booths *(page 31)* |
| ***Action Campaign***:<br>Hire an Eco Pest Operator | - Advertising Campaign *(page 34)*<br>- Pledge Video *(page 35)* |

[1] For a more detailed explanation of objectives and how they were selected, see ***Appendix A.***

As illustrated in ***Table 3.2.*** below, only one of the Action Campaigns includes targets for all types of campaign objectives. In order to be prudent about our resource allocation, SGA recommends taking this approach to make sure the program does not sacrifice impact for reach. In order to set realistic expectations about the impact the program can have, we need to prioritize those objectives which are most feasible to maximize program resources and most effectively spark change. Higher priority behaviors have more objectives, which will require more resources, both for implementation and evaluation. This distribution of resources is reflected in the tactics found in "Section 8: Outreach Tactics" of the ***Program Approach***.

See ***Table 3.2.*** on the following page for the campaign objectives.

**Table 3.2.** Campaign Objectives[2]

| ACTION CAMPAIGN: e.g. Desired Behavior | | Try a non-toxic alternative (e.g. home remedy) | Buy a less-toxic pesticide / herbicide alternative | Hire an eco-certified pest controller |
|---|---|---|---|---|
| | **POLLUTANT:** | ***Pesticides*** | ***Pesticides*** | ***Pesticides*** |
| | **AUDIENCE TYPE:** | ***Do it Yourself*** | ***Do it Yourself*** | ***Outsourced*** |
| **OBJECTIVES** *(in order from top to bottom: least to most difficult to influence)* | ***Engagement*** | Across all Action Campaigns, the program will seek to engage audiences, aiming for 134,000 people total[i]. Engagement is defined as any two-way interaction e.g. workshop participation, becoming a Facebook fan, etc. | | |
| | ***Knowledge*** | Relative to the control group (people who do not participate in the program), 26%[ii] more people (in a group of campaign participants of equal sample size) know about one of the 6-8 end-state behaviors *(awareness increase)* | Relative to the control group (people who do not participate in the program), 26% more people (in a group of campaign participants of equal sample size) rate less toxic pesticides/herbicides as more effective in treating pests/weeds (*attitudinal shift)* | Relative to the control group (people who do not participate in the program), 26% more people (in a group of campaign participants of equal sample size) rate eco certified pest controllers as more effective in treating pests (*attitudinal shift)* |
| | ***Interpersonal Communication (Normative)*** | A minimum of 9,720[iii] incidences of people discussing the use of a non-toxic alternative for pest and/or weed control | A minimum of 3,240 incidences of people discussing the use of a less toxic product for pest and/or weed control | A minimum of 3,240 incidences of people discussing eco certified pest controllers |
| | ***Willingness*** | People who engage with the campaign were more willing[iv] to try a non-toxic alternative relative to people who were not exposed | People who engage with the campaign have more than a 7.63 mean willingness score to purchase eco-friendly pesticides | N/A |
| | ***Behavior Change*** | Relative to the control group (people who do not participate in the program), 13%[v] more people (in a group of campaign participants of equal sample size) practice a non-toxic alternative | N/A | N/A |

[2] See ***Appendix A and Appendix L*** for a detailed description of how SGA developed the program objectives. Included are explanations for terms such as "end state behaviors" and "attitudinal shift."

# 4. OVERARCHING PROGRAM APPROACH

## 4.1. Framework & Structure

To maximize the use of program resources and more effectively promote behavior change, SGA recommends that the overall approach consist of a series of highly targeted single issue *Action Campaigns*. Each of these campaigns will focus on a specific action (i.e. BMP/behavior) that a target audience should perform with the end-goal of reducing stormwater pollution. In developing these campaigns, as is the custom with Community Based Social Marketing (CBSM), we will uncover the specific barriers and motivators associated with performing that behavior, and then tailor all messaging and programming in ways that increase the perceived motivators of that action and decrease the perceived barriers.

## 4.2. Tactical Approach

In designing and implementing program tactics, the *Action Campaigns* will employ a broad suite of both in-person and online efforts, as described later in "Section 8: Outreach Tactics". All proposed tactics outlined in this plan are based on innovative best practices in social psychology, marketing, and behavior change in order to set norms around each promoted action. Collectively,

**ACTION CAMPAIGNS:**
***The Science Behind Keeping it Simple***

To document sustainable behavior change, it is crucial to hone in on a specific message/action at a time. For Contra Costa residents, there are a variety of actions a resident can take to help protect water quality; these include picking up after their dog, properly disposing of pool water, reporting illegal dumping, etc. The options are numerous, and frankly, overwhelming to the average resident. Studies have shown that people easily become overwhelmed when presented with multiple options, leading to inaction.

This phenomenon of decision/action-paralysis is most famously depicted in the well-known "Jam Study" (Iyengar and Lepper 2000). In this study, a professor and her research assistants set up a booth of samples of Wilkin & Sons jams in a California supermarket. Every few hours, they switched from offering a selection of 24 jams to a group of six jams. On average, customers tasted two jams, regardless of the size of the assortment, and each one received a coupon good for $1 off one Wilkin & Sons jam.

Sixty percent of customers were drawn to the large assortment, while only 40 percent stopped by the small one; however, 30 percent of the people who had sampled from the small assortment decided to buy jam, while only 3 percent of those confronted with the two dozen jams purchased a jar. This study indicates that the presence of choice might be appealing as a theory, but in reality, people might find more choice to be debilitating.

The findings from the "Jam Study" are supported by similar studies of actions ranging from consumer behavior (Iyengar et. al., 2000) to public health campaigns (American Diabetes Association, 1995; Reger, Booth-Butterfield and Smith, 1998) to environmental interventions (Jonick, Anderson, Lin, Bruni, Schultz, Groner, Orrala, 2010). Consumer research has demonstrated that community members feel confused by the number of environmental behavior change messages to which they are exposed (Jonick and Anderson et. al., 2010).

By simplifying campaign messaging and requests and focusing on fewer high-impact actions, the Outreach Program will seek to remove the uncertainty caused by offering too wide an array of stormwater pollution-preventing behaviors.

these proposed program tactics can be divided into two primary categories: (1) *grassroots (i.e. face-to-face) outreach* and (2) *mass promotional efforts (i.e. online, media, etc.)*.

Grassroots elements will largely target specific communities, while mass promotional efforts will aim to reach the entire County. In general, grassroots efforts will target areas that boast the highest concentrations of those who satisfy the two criteria for being selected as a target outreach area: high willingness and mid-range current participation rate in the target behavior. In conducting outreach, the campaign will also focus on building a core group of supporters and champions to drive messaging and influence community-wide adoption of the promoted behaviors.

Over the life of the program, all tactics will be consistently assessed for impact and modified as needed based on their success in advancing individual program objectives.

## 5. EVALUATION APPROACH

The purpose of evaluation is to allow the program to assess where it stands relative to the objectives listed above. The number of objectives is directly correlated with the amount of evaluation that will be needed for any given ***Action Campaign***.

Assessment will be done through a combination of methods. The breakdown below provides a general framework of how evaluation tools will vary by objective.

- ***Engagement:*** Engagement is defined as any type of reciprocal relationship with our audience (e.g. conversation at a community booth, a workshop attendee). Progress towards this objective category will be done by tracking audience participation in all of the program activities (online and in person).
- ***Knowledge:*** The only way to assess knowledge, or awareness, is through self-reported survey responses.
- ***Interpersonal Communication (Normative):*** This objective category seeks to demonstrate that messages are spreading peer-to-peer. Tracking this will either be done through self-reported surveys or by specifically assessing peer-to-peer communication through the program's online channels (e.g. Facebook shares). Visual cues that indicate a norm is being diffused, either online or offline (e.g. installing a lawn sign), will also be counted.
- ***Willingness:*** Willingness has the strongest direct correlation with actual behavior change, based on generally accepted theoretical behavioral models (See Bamberg in ***Appendix K)***. Self-reported surveys will be used to track if it has increased.
- ***Behavior Change:*** Ultimately all of the programs are striving to reach this objective category. Tracking will also be done through the use of self-reported surveys.

Before the start of each ***Action Campaign,*** a customized evaluation plan will be developed to set both parameters (e.g. collect 200 surveys on the website) and timetables that specifically speak to the objectives for each desired behavior. Progress towards the program's objectives will be tracked as a fundamental part of the campaigns. A check in will be provided every 6 months and a full analysis will be provided once a year or on a schedule that is best suited to each specific campaign.

# 6. AUDIENCE APPROACH

## 6.1. Audience Segmentation by Characteristic

This program will apply a comprehensive approach to audience[3] segmentation and outreach based on current best practices in behavior change theory. As opposed to simply delivering messages and outreach strategies that target the adverse behaviors of the "polluting group," we also recommend leveraging the influence of other groups to promote positive social norms throughout the community. As recent research in the field has discovered, different members of the community each play different roles in supporting behavior change within the target audience (Hayden and Deng, 2012). In order to establish a set of social norms around engaging in the promoted behaviors, we will segment and target our audience according to the groups below.

- ***The Value Setters:*** These individuals make water protection values the normative value of the community through their attitudes, acts and conversations with other members of the community. These people are practicing the correct behavior but may or may not have been identified by the target audience (polluters) as being a trusted source of information. While they may not have been identified by the polluters, they, at the very least passively, influence others by modeling and discussing the correct behavior. The value setters are important in establishing a positive social norm.
- ***The Influencers:*** These are the people that the target audiences have identified as trusted sources of information. They may have positions that give them informal influence (like a child, spouse or peer) or in some cases, positions of formal authority (like religious leaders, government authorities and the heads of NGOs). They play an important role in influencing the behavior of the target audience. Based on the data that SGA has collected directly from Contra Costa residents, the only influencer that was identified was hardware/garden store employees relative to purchasing pesticides. All of the other "influencer" recommendations included in the plan are based on past experiences with other campaigns. This list will be an ongoing process and will continue to grow as the campaign progresses and the audience reveals who their trusted sources of information are.
- ***The Polluters:*** This is the group that is in need of adopting BMPs; the people who engage in the stormwater polluting behaviors.

Understanding that there are different audiences within a community is a prerequisite for marketing success. Without market segmentation, one is apt to create a generic message that treats all people as if they were the same person. Ultimately, the message resonates with no

[3] A complete description of results from Contra Costa's phone survey and focus groups, including analysis and conclusions, can be found in the *Audience Analysis* section of this document.

audience in particular. Applying this comprehensive approach to audience segmentation, messaging and outreach can truly establish a robust set of social norms to sustain the long-term practice of the targeted BMP across Contra Costa.

## 6.2. Audience Segmentation by Demographics and Geography

The foundation of the program's approach to outreach and public education is the robust data set collected during phone surveys and focus groups, as described in the ***Audience Analysis*** section of this report. In developing the program's approach and tactics, we relied heavily on this data to determine the target audience for each specific *Action Campaign* and identify the geographic area of focus for each campaign. For each *Action Campaign* listed in the following sections, all messaging and programming were developed around target audiences for particular behaviors.

# 7. POLLUTANT SPECIFIC APPROACH

This section outlines a complete list of potential outreach approaches to combatting individual pollutants across Contra Costa. Applying survey and focus group data described in the ***Audience Analysis***, we have developed strategies focused on target behaviors related to each pollutant, key target audiences, and the barriers and motivators associated with the desired behavior change for that pollutant. To reiterate, this is a list for all of the high priority pollutants affecting residential audiences and is not limited to only the pollutants SGA recommends focusing on at this point in time. Although several of these pollutant types and resulting BMPs are not recommended focus areas at present, they could be pursued at a later date as campaign tactics and outcomes are evaluated and modified over time.

The pollutants are listed in order of priority based on permit requirements, the return on investment and level of impact SGA sees in targeting each one. Given that programs do not come equipped with unlimited funds and resources, prioritizing the pollutants is necessary to be able to hone in on specific desired behaviors. Specific tactics are outlined in "Section 8: Outreach Tactics for the pollutant types and associated BMP that will be targeted in this campaign.

## 7.1. Pesticides

Based on data in the ***Audience Analysis*** and previous programmatic outcomes and priorities, combatting pesticides is the primary focus for the CCCWP. To most effectively combat pesticides in Contra Costa, we will focus our efforts around three specific promoted behaviors: (1) *trying a non-toxic home remedy*; (2) *buying a less toxic alternative*; and (3) *hiring eco-certified pest controllers.* Outreach will be tailored to the specific audience that was found to have the highest potential ROI, as uncovered in the ***Audience Analysis***. Tailoring messages and outreach to a specific audience not only increases the impact and effectiveness of program efforts, but also maximizes the use of limited resources. While outreach will be tailored to specific audiences, occasionally on a regional level, this does not exclude people from other areas of the Contra Costa from participating in the program.

One important factor to note for pesticide outreach is that while many more pesticides are becoming "safe" and "organic," this does not always mean they are safe for the planet or for water quality. The terms usually refer to safety from a family health perspective (e.g. kids and pets). This is a consideration that we will factor in when deciding how to move forward on issues related to these behaviors.

### *7.1.1. Desired Behavior: Try a Non-Toxic Alternative*

***Audience:*** The target audience for this behavior is women who garden and/or have kids or pets, and live in single-family households in the West and Central County (an estimated 36% of adult single family home dwellers in the two regions, based on survey responses, census data, and assumptions). This audience is typically made of middle-class and either middle aged or senior citizens. East County residents are also targeted due to a high number of DIYers. Women will be targeted for this campaign for several reasons. First, during the focus groups, women were more curious than men to share and learn new at-home methods for managing weeds and pests. Women were also found to be "less bothered" by weeds than men and were therefore more inclined to try less immediate non-toxic alternatives to managing weeds (whereas men were more inclined to immediately eliminate them with herbicides). Women were also more concerned about the negative health effects associated with pesticide use than men. Campaign messaging to this audience will focus on the use of non-toxic home remedies for the *prevention* as opposed to the immediate *elimination* of pests and weeds so as not to target people when they are in their most emotionally reactive state. West and Central County were selected as the target regions because these areas boast the highest percentage of residents who do their own gardening (while East and South County tend to outsource this activity more frequently). Focus group results also demonstrate that both East and West County residents in particular were interested in trying some of these pest management alternatives.

***Barriers:*** Lack of knowledge regarding non-toxic alternatives and remedies is a strong barrier for this group, as are concerns about the effectiveness of these remedies. Additionally, due to this group's reported "loathing" for bugs, women are oftentimes compelled to use highly noxious chemicals (particularly pyrethroids) out of a strong desire to eliminate the pest immediately.

***Motivators:*** The strongest motivator for this audience to forgo the use of pesticides in favor of non-toxic home remedies is the desire to protect their children and pets from toxic exposure. Other motivators include interacting with their community and peers by exchanging tips, in addition to the pride associated with being resourceful with creative household solutions to pest control.

### *7.1.2. Desired Behavior: Buy a Less Toxic Alternative*

***Audience:*** The target audiences for this promoted action include men who purchase herbicides and women who purchase pesticides living in single-family households in South County and West County. Single-family home dwellers are typically middle to senior aged citizens. For men, campaign messaging will focus on less-toxic alternatives to herbicides to appeal to their strong dislike for weeds, while the focus for women will be promoting less-toxic alternatives to pesticides in the elimination of pests due to female respondents' strong

dislike of insects. Program messaging for this campaign will focus on the purchase of less-toxic, as opposed to non-toxic alternatives for these behaviors because survey results found that when men are confronted with weeds, and when women are confronted with insects, both are extremely likely to turn to harsh chemicals to eliminate them immediately. Given this strong response, the campaign will aim to modify these negative behaviors, as opposed to replacing them completely with non-toxic home remedies, as promoted in the previous campaign (*see* ***7.1.1***). The campaign will focus on South County residents because this group was the most willing to buy less toxic products according to focus group data. East County residents are also targeted because focus group findings showed they generally purchase toxic products due to less awareness of alternatives.

***Barriers:*** There are numerous barriers to buying less toxic alternatives according to results from the phone surveys and focus groups. When encountered with a pest problem, residents can easily become overwhelmed and default to highly toxic products out of a need for an immediate and easy solution. Also, there is a persistent belief that "eco-friendly" products are more expensive. Similarly, there is a belief among this audience that less toxic products are less effective. Another barrier is that residents tend to rely on the advice of store employees who usually recommend the "name brands" (e.g. Raid, Roundup, etc.). Finally, this audience group expresses a lack of trust in eco-alternatives, including the bodies that are certifying them as non-toxic.

***Motivators:*** The strongest motivator for adopting the promoted behavior is the desire to protect their children and pets from toxic exposure.

### *7.1.3. Desired Behavior: Hire an Eco-Certified Pest Controller*

***Audience:*** The target audiences for this behavior are men and women living in single-family homes in East and South County who hire companies for "preventative/maintenance" spraying (an estimated 10% of all adult single family home dwellers in the two regions, based on survey responses). This group is typically made of middle to senior aged citizens. Survey results found that residents of these counties are more likely to outsource their lawn care due to their generally busier lifestyles (East County) and higher levels of disposable income (South County). Central County residents of the same demographic are also included as a target audience because focus group findings show that middle to higher income residents are more prone to outsourcing their pest management activities.

***Barriers:*** The primary barrier to hiring an eco-certified pest controller is a general lack of knowledge, in that customers assume the pest control companies only use safe chemicals, and they rarely inquire further. Residents also tend to believe that less or non-toxic products are less effective.

***Motivators:*** The strongest motivator for adopting the promoted behavior is the desire to protect their children and pets from toxic exposure.

## 7.2. Car Wash Pollutants

According to survey results, the people who are most willing to take their car to a commercial wash are those who are already doing so. While the target audience that we want to reach, those washing their car at home, are very unwilling to do so. Consequently, promoting behavior change around taking cars to a commercial wash may not seem to be an ideal best practice to target. There are, however, several considerations that make this best practice a candidate, as described below.

- ***Consideration #1 - Low Willingness Might Be Due to Lack of Awareness****:* Low willingness might be due to the fact that residents do not realize that taking their car to the commercial wash is better for maintaining water quality than at-home washing. If this were true, the campaign could focus on increasing knowledge and awareness around the benefits of commercial car washing and the negative effects to water quality due to at-home washing.
- ***Consideration #2 - Willingness Might Exist Around DIY Behaviors****:* While those who wash their car at home may not be willing to go to a commercial wash, they might be willing to change some of their at home car washing BMP to mitigate negative water quality effects (e.g. wash your car on top of your lawn so that the water does not run off; make sure that your hose has an on/off attachment). A campaign could then be built around modifying current habits as opposed to using commercial car washes, as willingness to engage in the latter is so low.

While direct evidence for these considerations did not come from questions asked in the survey, we were able to come to these findings by making educated inferences based on the data and previous experiences. Therefore, it is still recommended that efforts be focused around modifying at home car-washing techniques, given the limited opportunities and low levels of willingness around taking the car to a commercial wash.

### *7.2.1. Desired Behavior: Modify At-Home Car Wash Techniques*

In prioritizing behaviors, SGA recommends that modifying at home car washing techniques serve as the runner up after the pesticide BMP listed above. As such, we have developed a proposed list of tactics for this behavior which can be found in ***Appendix I.***

***Audience:*** The target audience for this promoted behavior is single-family home dwellers that wash their cars at home (an estimated 30% of all adult single family home dwellers based on survey responses).

***Barriers:*** The most significant barriers to engaging in this BMP include a general lack of awareness around the negative effects associated with their current behaviors, in addition to a lack of awareness around more environmentally friendly at-home wash techniques.

***Motivators:*** Potential motivators include the positive environmental effects related to modifying their at-home car wash techniques. Additionally, social pressures that could arise from using ecologically damaging car wash techniques in front of their neighbors; this type of norm may be a long ways off but is worth mentioning because of its power in influencing behavior.[4]

### *7.2.2. Desired Behavior: Take Car to a Commercial Wash*

While promoting commercial washes does not seem to be an ideal best practice to target, we have included an outline of the target audience and associated barriers and motivators in the event that the CCCWP decides to pursue this BMP at a later point in time.

***Audience:*** The target audience for this promoted behavior is residents who live in multifamily apartment units who do not currently take their cars to a commercial wash (an estimated 16% of all adult multifamily apartment dwellers based on survey responses), as this group is considerably more willing to do so than those who live in single family homes.

***Barriers:***[5] Potential barriers include the increased cost associated with commercial wash, concerns about effectiveness over at-home washing, in addition to a lack of awareness around the negative effects associated with at-home washing.

***Motivators:*** Potential motivators include the positive environmental effects related to commercial washing, the idea that outsourcing is more time effective (i.e. you can spend more time with friends and family instead of washing your car), and finally that professional car washes could be perceived as more effective than at-home washing.

## 7.3. Mercury & PCBs

At the time of data collection from residents, these particular pollutants were not included. In the event that these pollutants are pursued at a later date, it is recommended that data be gathered and analyzed in order to determine the best course of action and desired behavior to target. Desired outcomes to assess may include raising consumer awareness of household products containing mercury to encourage proper HHW disposal, raising awareness of contaminated fish to discourage consumption of certain fish species, or other similar objectives.

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[4] Research has also found that in the absence of peer-generated social norms, being constantly "bombarded with propaganda" about the value in adopting a specific behavior may lead to a social pressure that may be similar to that created by a peer (Hayden, p. 15).

[5] The barriers and motivators included in section 6.2.1 and 6.2.2 are based on educated assumptions and previous experience as specific questions around barriers and motivators related to these BMP were not specifically included in the survey.

## 7.4. Household Hazardous Waste (HHW)

Willingness to properly dispose of HHW is high and there is room for improvement (with only 53% properly disposing), which makes this behavior ideal for targeting; however, those that are not properly disposing are doing so in a trash can. While improper disposal of HHW in the trash could affect water quality (e.g. trash can tips over and spills on street), the link to stormwater pollution with trash disposal is not as direct as the other pollutants. It is because of this reason that proper HHW disposal is ranked in the middle of behaviors to target despite the audience's high willingness score.

## 7.5. Pet Waste (Bacteria)

Survey results indicate that there is already a strong social norm around picking up after pets, meaning that almost all pet owners (91.2%) are already engaging in the desired behavior. Additionally, of all of the pollutants studied, dog waste had the fewest statistically significant predictors that would help us identify the dog owners who are picking up relative to those who are not. Given these factors, SGA recommends not focusing on this pollutant. If however the program does decide to target this behavior in the future, potential outreach options could include promoting the best practices listed below.

### *7.5.1. Desired Behavior: Pick Up After Your Pet (In General)*

A campaign could be developed targeting the 8.7% of dog owners who reported that they never pick up after their pet. To do this, the program could strengthen the social norm around picking up by encouraging dog walkers to show that they have a bag when walking their dog at all times. This tactic may even require the promotion of a policy change so that people would be mandated to produce proof of a bag or risk being fined.

### *7.5.2. Desired Behavior: Pick Up After Your Pet (Immediately)*

Develop a campaign for the 38.9% of dog owners who delay picking up pet waste by encouraging them to pick it up immediately. The promotion of this behavior would likely be targeted at homeowners who allow their dogs to defecate in their yard.

To reiterate a previous point, the above potential approaches are not recommended courses of action and will not be further elaborated on in next section, ***Outreach Tactics***. We have

only provided the above analysis and potential approach in the event that this pollutant is pursued at a later date as campaign tactics and outcomes are evaluated and modified over time.

## 7.6. Litter

Over the years, the CCCWP has aggressively and successfully pursued litter prevention through various efforts and campaigns, such as *Litter Travels*. As a result of these previous efforts, we did not prioritize this pollutant or ask respondents about their littering behaviors in the phone survey. Litter will continue to be addressed through the Program's ongoing involvement with youth outreach efforts. Additional litter outreach programs will not be addressed in this plan. Instead, other behaviors and pollutants that have received less attention will be given priority.

## 8. OUTREACH TACTICS

The program's *Action Campaigns* will each focus around specific BMPs that the audience will be encouraged to take. Each campaign will revolve around promoting, assessing and conducting outreach around the following specific actions: (1) *try a non-toxic home remedy*, (2) *buy a less toxic alternative*, *and* (3) *hire an eco-certified pest controller.*

Tactics for all three *Action Campaigns* will be tailored to their corresponding target audiences and specific desired behavior, as described below. In addition to introducing entirely new outreach mechanisms, the proposed tactics will also seek to incorporate and build upon current efforts, such as the cccleanwater.org website, to leverage and maximize the use of limited resources. The tactics listed below provide a framework for moving forward, but as is a best practice in CBSM, the tactics will be modified based on interim program results that demonstrate their effectiveness. As such, the program may ramp up some of the tactics while scaling back, or eliminating other tactics completely.

SGA recommends that two overarching campaign tactics apply to all of the *Action Campaigns*. These two tactics, *(1) to develop a story bank and (2) to form partnerships*, are described below.

### *Develop and Populate a Story Bank*

We will develop a centralized "story bank" to capture anecdotes and testimonials to feed external marketing and communications efforts. As powerful mechanisms for illustrating important narratives, addressing misinformation, and rallying support around a campaign, we will collect residents' stories at multiple points of engagement throughout the campaigns (for example: from interviews and short surveys conducted during the workshops, from user-generated content on the campaign's social media sites, etc.). Story content will range from how the audience members' adoption of the promoted campaign behavior helped them protect their family's health to the effectiveness of the promoted action in eliminating weeds and pests.

These stories (and accompanying photos and/or videos whenever possible) will be carefully collected and then used as testimonial-based marketing in the Program's materials. Engaging stories accompanied with visuals will populate the various campaigns' social media sites, in printed collateral and advertisements, as anecdotes built into webinar presentations, and as side-bar stories featured in email send outs. The story bank will serve as a central content database from which all of the *Action Campaigns* described below will be able to simultaneously draw from and populate. SGA recommends using a story bank for all of the pesticide campaigns because all of the pesticide related BMP presented a re-occurring audience barrier that less toxic alternatives were not as effective as well as a mistrust of official certification entities. In this way, peer-to-peer story telling will serve as a powerful way of overcoming this barrier through credibility and social norms.

***Form Partnerships***

Involving partners is an excellent way to lend credibility to campaign messages. Credibility is particularly important for the messages and activities being promoted to combat pesticides, as many residents believe that home remedies and less-toxic alternatives are ineffective. For example, the campaign could partner with respected local experts in the field of biology or professional pest control operators to lend credibility to program recommendations.

Partnership development is also a strong mechanism for setting social norms. As one of the program's guiding principles is to set a normative behavior (i.e. looks like everyone else is doing this so I should do it too), every effort will also be made to show that people see other people like them encouraging them to participate in a behavior. This will help to ensure that the program messaging is not all coming top down (i.e. Contra Costa wants you to do this); but rather, that organizations and individuals like themselves are passing along program messages to their networks and friends, respectively. Program champions, or "early adopters," are partners of critical importance in helping to get a new program started in a community.

Partnerships are not only an effective avenue for lending credibility and setting social norms, but they also can lead to cost-effective marketing and message diffusion. Possible external partner avenues the program can tap into to help promote campaign messages:

1. Encourage other organizations to supplement their materials with Contra Costa's messaging (e.g. The nonprofit organization *Healthy Child, Healthy World* currently encourages members to host at-home parties that spread the message of how to protect children from toxins. There may be an opportunity to tailor the package that *Healthy Child, Healthy World* offers to Contra Costa residents by including a non-toxic pesticide/weed solution as one of the tips being promoted).
2. Place an article promoting campaign messages in a partner organization's newsletter (print or online).
3. Include a banner, button, or link about the campaign on the partner's website.
4. Encourage partners to promote the campaign on social media channels such as Facebook, Twitter, etc.

Partners that are of particular importance to specific *Action Campaigns* will be noted as such in the write-ups in the next section, which moves into specific *Action Campaigns*.

**Figure 8.1.** Action Campaigns by Region

## 8.1. Action Campaign: At-Home Pesticide/Herbicide Alternative for DIYers

***Audience:*** The target audience for this behavior is women who garden and/or have kids or pets. These women live in single-family households in the West[6] and Central County because of high home-ownership rates, high number of DIYers and a higher willingness to adopt the behavior in these areas of the County, based on survey results. These audiences are typically middle aged and middle class. East County residents are also targeted due a high number of DIYers. An estimated 26% of the single-family dwellers who have a lawn/garden in Contra Costa (includes men and women) use pesticides, based on our survey data. While the campaign will target specific key demographics because of their high willingness, it will still be inclusive of all pesticide users regardless of gender or geographic location within the County.

***Messaging Strategy:*** Campaign messages will seek to lower the perceived barriers and enhance the perceived motivators to engaging in the target behavior by:

- Emphasizing that the use of non-toxic alternatives will protect the health of their children and pets *(motivator: protect kids and pets);*
- Making a connection between keeping the yard looking lovely and using less toxic alternatives *(motivator: concern is to make sure the weeds don't take over);*
- Presenting information about efficacy (or lack thereof) of various non-toxic alternatives in a credible way *(barrier: difficulty trusting programs that automatically say a non-toxic alternative is effective);*
- Emphasizing that non-toxic alternatives can be just as effective as pesticides *(barrier: perception that they won't get the job done);*
- Raising awareness of non-toxic home remedies *(barrier: lack of knowledge of the remedies)*; and
- Promoting a sense of pride associated with being resourceful in applying creative household solutions to pest and weed control *(motivator: sense of community in swapping tips)*.

***Pitfalls to Avoid:***

- Information overload: Often, educational materials are layered with tons of steps, nuances and intricacies that can make even a person who is interested decide against trying it. The approach below describes how SGA plans on mitigating the slippery slope of information overload.

[6] West County focus group participants seemed especially keen to learn more about the non-toxic alternatives; however, it is important to note that based on phone survey results West County residents are also the most likely to do nothing when it comes to lawn care – 46% do nothing compared to the County average of 35%. If the Program needs to expand coverage area because of a limited response from West County, then SGA recommends reaching out to people in East County because they cited highest pesticide usage overall.

- Making it feel too "eco": Since people are generally wary of the effectiveness of less toxic alternatives, we don't want to focus solely on touting environmental concerns as a way of changing behavior.

***Campaign Approach:*** This *Action Campaign* will focus on promoting a set of specific at-home pesticide and weed management remedies in its messages and tactics. For this campaign, we will develop a list of 6-8 specific end-state behaviors to promote (final actions we wish our target audience to practice), all of which fit into the broader Integrated Pest Management (IPM) approach. It is important to promote specific and actionable end-state behaviors, which precede the ultimate end-state behavior[7]. By making recommended behaviors that residents find easy to understand and apply, this campaign will drive behavior change in the right direction, in line with IPM.

In order to determine this list of 6-8 specific end-state behaviors, we suggest collaborating with pesticide and pest management experts to evaluate each behavior according to the following three filters: (1) *the activity's level of impact*; (2) *the difficulty in performing the activity*; and (3) *the appropriateness of the activity for the target audience*. The last two filters help to determine the probability around the target audience actually engaging in the promoted action. The resulting list of 6-8 specific end-state behaviors will then be promoted by the suite of tactics described below.

### *8.1.1. Create a Hands-on Workshop*

The cornerstone of this *Action Campaign* will be the design and delivery of a series of hands-on workshops that will teach area residents how to control pests using at-home remedies. These workshops will overcome the barriers associated with lack of awareness and concerns over effectiveness by: (1) *demonstrating how non-toxic practices based on IPM can be effective ways to manage pests and weeds*; (2) *teaching participants between six to eight end-state behaviors for how to address outdoor pests and weeds*; and (3) *providing customized, recommendations based on lawn type*. The workshop curriculum will focus on the methodologies and practices around the desired end-state behaviors.

The curriculum will also appeal to audience motivators, such as of having a beautiful lawn (i.e. *Let us help you keep your lawn beautiful*…) while still achieving our desired end goal (…*the natural way*). As a result of this, the workshop curriculum may be a mix of the 6-8 end state behaviors as well as tips from a professional landscaper on garden/lawn design[8]. The

[7] McKenzie Mohr, Doug, Lee, Nancy, Schultz, Wesley, et al, Social Marketing to Protect the Environment: What Works (California: Sage Publications, 2012).
[8] A similar program in King County, Washington showed a 35% increase in workshop attendance after the addition of a garden design component (Mohr, Lee, Schultz, et al page 51).

workshops will also leverage the motivator of interacting with their community and peers by exchanging tips to encourage the diffusion of a social norm.

Steps for implementing the workshop series include:

1. ***Forge Strategic Partnerships*:** We will build strategic partnerships with relevant organizations to strengthen workshop credibility, gain access to additional knowledge-based resources in building the curriculum, secure guest speakers and instructors, and increase participation through partner organization's networks and affiliations. Potential partners include: the UC Cooperative Extension, Contra Costa Master Gardeners, Our Water Our World, the Institute of Urban Homesteading, the Bio-Integral Resource Center, etc. Finding and encouraging "early adopters" to participate in and champion these workshops will be especially important to ensure the program has advocates who are already well respected in their neighborhood.
2. ***Develop a Pilot:*** The workshop series will begin with the design and implementation of a short pilot in one area aimed at individuals currently performing pest management behaviors along the entire spectrum of options. The purpose of the pilot is to test assumptions and identify mechanisms for improvement (e.g. how do they respond to the curriculum, what promotional tactics were most effective in getting them there) before investing in a Countywide roll-out.
3. ***Implement Countywide:*** Roll-out the workshop series across Contra Costa, with a specific focus in conducting and promoting the workshops in West and Central County, since the program would likely have the highest impact in these areas. In implementing the workshop series across the County, we will engage in the following tactics:
    a. ***Participant Recruitment Strategy:*** Participants will be recruited for the workshops through existing networks, social media and email send outs (see "Section 8.1.2" below), targeted mailers, and door-to-door outreach[9] as needed. This may also include broader promotion such as media placements and advertisements.
    b. ***Provide Incentives:*** Incentive is a powerful tool for driving the adoption of new behaviors. The workshop series will apply this tool in several ways. The program may use incentives to initially draw people to the workshop (e.g. raffling off Home Depot gift cards, including elements about garden aesthetics in the curriculum) and also as a way of keeping workshop participants engaged after they attend the class. The latter of which may turn into a *points program* within the series where participants would be rewarded for practicing multiple BMP. These rewards might take the form of a free gardening class from a

[9] King County's program showed that door-to-door invitations received a 57% acceptance rate and about 60% of those who accepted actually showed up to the workshop (Mohr, Lee, Schulz, et al page 50)

master gardener at a local nursery or a gift card to local store. Participants could track the progress of their points online.

c. ***Pledge:*** Ask workshop participants to make a written commitment (if possible, public in front of the other attendees) on what they plan on doing after the class. Use this information as a prompt to follow up with the participants later.

d. ***Set Social Norms:*** Provide participants with public recognition of their attendance of the workshop by either by posting their name online, providing a sign to post in their front yard, giving them "badges" to wear or an online certificate of completion for participating in the workshop that they can post to their Facebook wall. By making these rewards visible to the larger community, we can begin to set social norms around participating in the workshop series and practicing the promoted behaviors. Actively ask workshop participants for referrals to their friends and neighbors. If necessary, encourage this behavior with incentives.

e. ***Maintain Active Engagement:*** To sustain behavior change over time, we would continue to engage workshop participants with specific tips throughout the year in the form of social media posts and an online newsletter (described in further detail in "Sections 8.1.2b. and 8.1.2c." below). This may also include reminders relative to the participant's specific commitment.

**Table 8.1.1.** Audience Roles for *Action Campaign*: At-Home Pesticide/Herbicide Alternative for DIYers - Create a Hands-on Workshop

| Value Setters | Influencers | Polluters |
|---|---|---|
| **Attend & champion** workshops<br><br>**Publicly announce** participation in the BMP by putting up yard signs or participating in an online points accrual system<br><br>**Provide** testimonials regarding effectiveness of non-toxic alternatives<br><br>**Recruit** neighbors to attend workshops<br><br>*Early adopters who have tried a non-toxic alternative or one or more of the 6-8 promoted BMP.* | **Spread the word** to polluters and encourage them to attend the workshops | **Attend** the workshops<br><br>**Take the pledge** and agree to make it public<br><br>**Take a survey** to determine changes in knowledge, willingness and behavior<br><br>*Anyone who uses pesticides or is not currently using all of the campaign's 6-8 promoted BMP.* |

### *8.1.2. Online Resources*

In addition to the "live" workshop, this campaign will also include an online space where residents can experience workshop principles, interact, and share content digitally. The online component will allow for a broader reach than the in-person workshops alone, while also creating a virtual space where workshop participants can continue to converse after the workshop ends. The focus of the online outreach will be a rating system for non-toxic alternatives (think a pared down version of Yelp.com or Food.com). The rating system will be supplemented by a Facebook page and email send outs. These social components of the campaign leverage the motivator around "swapping tips" and engaging with fellow community members.

### *8.1.2a. Online Tip Ratings Website*

Based on an initial scan of the social media landscape in Contra Costa (as well as throughout the State), there is not currently an online space that has been developed where residents can swap or rate eco-friendly pest and weed management tips. Despite the presence of other organizations working on similar pest/weed issues throughout the County, this particular outlet does not currently exist, which presents a unique opportunity to break new ground in this area.

The strength of the online tip ratings is that it specifically addresses both a barrier (credibility/efficacy of non-toxic alternatives) and a motivator (community feeling of swapping tips with neighbors) that the audience identified as salient. The tip ratings will be created on a micro website (with its own URL) separate from cccleanwater.org and will include the following:

1. ***Tip Ratings:*** We recommend populating the site with tips and methods that have been vetted by professionals (i.e. UC cooperative extension) and allowing them to be rated by criteria such as time involved, effectiveness, toxicity and skill level. Ratings will be contributed by the program and also by people who have tested them in their own homes. The ratings should help to offset the feeling that eco alternatives are being promoted simply because they are "greener," but not because they are effective. Transparency in showing that some strategies are indeed not as effective will go a long way in establishing credibility.
2. ***Virtual "Tip-Swapping":*** Individuals will also be allowed to contribute and "swap tips" on their own non-toxic alternatives. This tactic leverages the motivator of interpersonal interaction and idea sharing among neighbors and community members. This tactic also capitalizes on the perceived credibility of peers and community members in the delivery of campaign message, while also setting a social norm around the promoted behaviors as a result of this public forum.

3. ***Sharing Capabilities Embedded:*** The site and tips will also include seamless integration of social media sharing to encourage the audience to spread tips with their online networks.

In addition to being promoted through the workshops, the tips rating site will also require its own promotional tactics to drive traffic and get buzz going about the website. This promotion may include search engine optimization, Google ads, promotion through partner's online channels and media relations.

### *8.1.2b. Facebook Page*

The campaign will set up a Facebook page aimed at encouraging traffic to the tips rating site as well as to allow visitors of the tips rating site to stay engaged with the program. The primary topic area of the page will be centered on non-toxic alternatives, but may also include pesticide/herbicide related tips as they relate to the other *Action Campaigns* (i.e. buy a less toxic alternative & hire an eco-certified operator).

The Facebook page, along with the tips rating site, will serve as a key component in achieving the program's "interpersonal communication" objectives listed in ***Table 3.2.***

### *8.1.2c. Email Follow-Ups*

SGA also recommends using email as a tool to follow up with people who previously took a pledge in order to check on their progress toward fulfilling that pledge. The emails will be tailored to the recipient based on their level of engagement and audience profile. The goal is to encourage progress towards the 6-8 end-state behaviors that are discussed in the workshops. Emails may also be used periodically to drive traffic to the tips rating site and to promote upcoming workshops.

**Table 8.1.2.** Audience Roles for *Action Campaign*: At-Home Pesticide/Herbicide Alternative for DIYers – Online Resources

| Value Setters | Influencers | Polluters |
|---|---|---|
| **Seed** online rating site tips, with comments and ratings<br><br>**Provide** testimonials<br><br>**Join** our online networks | **Add credibility** to our messages by cross promoting & commenting on our online channels<br><br>*Online portals that belong to (1) organizations that have a following of homeowners (2) or* | **Visit** online channels<br><br>**Engage** with other residents by commenting and rating tips<br><br>**Join** our online networks |

| | | |
|---|---|---|
| **Share** messages/tips with their online networks<br><br>*Anyone who has tried a non-toxic alternative or one or more of the 6-8 promoted BMP, or is an advocate for these practices.* | *that are related to home care (3) that are gardening related (4) that are eco-focused.* | *Anyone who uses pesticides or is not currently using all of the campaign's 6-8 promoted BMP.* |

## 8.2. Action Campaign: Buy a Less Toxic Pesticide/Herbicide

***Audience:*** The target audiences for this promoted action include men who purchase herbicides and women who purchase pesticides living in single-family households in South County and West County. These audiences are typically middle-aged. Approximately 20% of residents in the two counties with a lawn purchase and use pesticides themselves.

***Messaging Strategy:*** For men, campaign messaging will focus on less-toxic alternatives to herbicides to appeal to their strong dislike for weeds, while the focus for women will be promoting less-toxic alternatives to pesticides in the elimination of pests due to female respondents' strong dislike of insects. Campaign messages around these behaviors will seek to lower the perceived barriers and enhance the perceived motivators by:

- Emphasizing that the use of less toxic alternatives will protect the health of their children and pets *(motivator: protect kids and pets);*
- Emphasizing that less toxic alternatives can be just as effective as pesticides *(barrier: they won't get the job done);* and
- Highlighting how you get what you pay for in terms of safety for kids and pets (*barrier: higher cost of less toxic alternatives).*

***Pitfalls to Avoid:***

- Making it feel too "eco": Since people are generally wary of the effectiveness of less toxic alternatives, we don't want to focus on touting environmental concerns as the default way of changing behavior.

***Campaign Approach:*** As survey results have demonstrated, area residents strongly question the effectiveness of less-toxic products and believe that they are considerably more expensive than the more traditional pesticide products. Additionally, since this particular audience is not especially knowledgeable of pesticides or potential alternatives, based on the survey results, the audience indicated that they rely heavily on recommendations of store

employees where the products are sold. Store employees, however, will typically promote the most popular, and hence most toxic, brand name pesticide products[10].

With this pattern in mind, we suggest targeting store employees as a way to reach the target audience. Like the workshop series described above, our recommendation is to pilot the trainings in select stores before rolling out across the County. We also recommend offering monetary discounts to help address the cost barrier associated with purchasing less toxic products and pop up demonstration booths to help assuage the fear that less toxic is not effective.

### *8.2.1. Employee Training*

Fortunately, there are a number of groups that are already conducting employee training on this issue across the County, such as the *Our Water, Our World* (OWOW) program. By partnering with OWOW, we will be able to leverage their extensive experience, resources and contacts in this arena. In conducting employee training, we may work with OWOW to modify specific components of the existing OWOW methodology and curriculum to meet the specific needs of Contra Costa based on what we gleaned for the survey results (*see* ***Audience Analysis)***. In working with OWOW, outreach will focus on empowering store employees to safeguard the health of their customers, while also demonstrating the effectiveness of less toxic alternatives.

**Table 8.2.1.** Audience Roles for *Action Campaign*: Buy a Less Toxic Pesticide/Herbicide – Employee Training

| Value Setters | Influencers | Polluters |
|---|---|---|
| N/A | **Take responsibility** for recommendations being given to consumers<br><br>**Explain** options clearly when asked for assistance in stores<br><br>*Store employees of any establishment that sells pesticides, especially home* | N/A |

[10] This is an assumption based on the anecdotal feedback received from the audience during the focus groups.

| | | |
|---|---|---|
| | *improvement stores, were identified by the polluters as a group that influences their pesticide purchases* | |

### *8.2.2. Coupon or Discount Program*

In addition to being perceived as less effective, less toxic alternatives were also perceived as being more expensive, based on our survey results. Research into Home Depot pesticide options indicate that, in most cases, this assumption is correct - less toxic alternatives cost roughly double the price of their toxic counterparts. To help overcome the increased cost barrier, we recommend developing a coupon or discount program for first-time buyers of less toxic alternatives. Coupons would be provided to residents who agree to provide their testimony (good or bad) on their experience using the product and its effectiveness. These testimonies would then feed our "story bank" to support future market efforts (i.e. campaign messages, program materials, etc.). We recommend the coupon program work in tandem with OWOW's efforts and that it be jointly financed by the campaign, partnering home improvement stores and nurseries as well as select manufactures of less toxic alternatives.

**Table 8.2.2.** Audience Roles for *Action Campaign*: Buy a Less Toxic Pesticide/Herbicide – Coupon or Discount Program

| Value Setters | Influencers | Polluters |
|---|---|---|
| **Provide** testimonials regarding effectiveness of less toxic products<br><br>**Spread the word** about the program to their networks<br><br>*Anyone who has tried a less toxic pesticide or advocates for less toxic pesticides.* | **Encourage** polluters to give less toxic alternatives a try by sharing opportunities for obtaining coupons<br><br>*Home improvement store employees.* | **Use** coupons<br><br>**Provide** testimonials on their experiences using product and its effectiveness<br><br>**Take a survey** to determine changes in knowledge and willingness |

### *8.2.3. Pop-Up Demonstration Booths*

To overcome the barrier of the perceived ineffectiveness of less toxic products, the campaign will also include a "pop-up" demonstration booth series to be conducted on an as needed basis. The booths would be manned by a campaign representative who would give a presentation comparing the effectiveness of conventional pesticides to eco pesticides so that residents can see the differences for themselves. Demonstrations would include but are not limited to:

- ***The "Pick the Product" Game:*** The demonstrator would bring out two small potted plants filled with weeds. One of the pots would have been treated with a traditional toxic pesticide, while the other would have been treated with a less toxic product a day earlier. Residents would then be asked to guess which pot was treated with the toxic product, and which was treated with the less toxic product. Those who answered correctly would be given a prize (such as a coupon for a less toxic product, or a sample of the product).
- ***The Yard Comparison:*** To illustrate the effectiveness of less toxic products in eliminating pests, the demonstrator would show residents a series of real photos of Contra Costa resident's backyards and gardens (photos would be gathered from potential photo contests, social media submissions, and the *Bringing Back the Natives & Bay Friendly* garden tours). All of the featured grounds would be well groomed and lush, but some would have been maintained by less toxic products, while others would have been maintained using toxic products. Like the game described above, residents would be asked to guess which yard was treated with what product type. Those who answer correctly would be given a prize.

The booths would be set up at various home improvement stores, nurseries, and community events across South County. In addition to in-person booths these "can you tell the difference?" type pictures can also be used as a series in our online channels and for promotional materials.

**Table 8.2.3.** Audience Roles for *Action Campaign*: Buy a Less Toxic Pesticide/Herbicide – Pop-up Demonstration Booths

| Value Setters | Influencers | Polluters |
|---|---|---|
| **Volunteer** to help staff booths at events<br><br>**Provide** photos of their own lawns | **Spread the word** about locations and events that will host the booths | **Answer** questions posed during the demonstrations or online<br><br>**Take a survey** to determine |

| | | |
|---|---|---|
| or gardens that were maintained by less toxic products<br><br>*Anyone who has tried a less toxic pesticide or advocates for less toxic pesticides.* | **Challenge** polluters to play the games at booths<br><br>*Organizations that have a following of homeowners, that are related to home care, that are gardening related, and that are eco-focused.* | changes in knowledge and willingness<br><br>*Anyone who currently purchases conventional pesticides.* |

## 8.3. Action Campaign: Hire an Eco Pest Operator

***Audience:*** The target audience for this behavior is men and women living in single family homes in East and South County who currently hire companies for "preventative/maintenance" spraying with special focus paid to the residents that hire pest control companies to spray the outside of the home (i.e. perimeter and lawn, since this is the area that most impacts water quality). These outsourcers make up approximately 18% of the people in Contra Costa who have a lawn, and they are typically middle-aged. In East and South County, these figures are up to 28% and 24%, respectively. Central County residents of the same demographic are also included as a target audience because focus group findings show that middle to higher income residents are more prone to outsourcing their pest management activities.

***Messaging Strategy:*** Campaign messages will seek to lower the perceived barriers and enhance the perceived motivators to engaging in the target behavior by:

- Emphasizing that the use of an eco pest operator can be a more effective way of protecting the health of their children and pets *(motivator: protect kids and pets);*
- Emphasizing that an eco pest operator can be just as effective as conventional pest control company *(barrier: they won't get the job done);* and
- Highlight that even the conventional pest operators themselves oftentimes lack awareness around the real toxicity of their products (*barrier: misperception that the pest controllers are professionals and would only use chemicals that are "safe")*

***Pitfalls to Avoid:***

- Making it feel too "eco": Because people are generally wary of the effectiveness of less toxic alternatives, we don't want to focus solely on environmental concerns as a way of changing behavior.
- Focusing too heavily on pests that only require indoor spraying since this does not contribute as directly to water quality issues.
- Trying to target the people who may be in an emotionally reactive state with their pest situation and therefore not receptive to listening to messages about any (potentially less effective) alternatives. People who fall in this category are likely the

same individuals that are looking to immediately eradicate pests such as bed bugs (reactive to a problem) as opposed to something such as spiders (may be a more preventative perspective).

***Campaign Approach:*** The focus of this campaign is to raise awareness around the types of products pest operators are actually using. This campaign will also highlight how even the pest operators themselves oftentimes lack awareness around the real toxicity of their products. To raise awareness around this issue, this campaign will utilize advertising, strategic partnerships and multimedia as the primary tactics. In implementing these activities, campaign messaging will also balance the dual and opposing concerns of message impact on one end, and the risk of retaliation from pesticide-using operators on the other.

Unlike many other BMPs (such as "pick up after your pet" or "don't litter"), which have no "opposers," our messages confront the negative behaviors of an entire industry. Keeping this reality in mind when framing messages will be important in warding off potential libel charges or other forms of retaliation from companies. Maintaining awareness of this reality is also important in setting appropriate expectations, as our "competitor" is equipped with million-dollar advertising budgets, compared to the limited resources of this outreach program. As a result, it is especially critical for this *Action Campaign* to carefully and efficiently maximize the use of program resources. Our approach would also seek to partner with established organizations, such as *Eco Wise Certified*, to cross promote materials.

### *8.3.1. Advertising Campaign*

The advertising campaign messaging will focus on exposing the truth of what commercial pest operators are using and how the operators themselves are not sure whether or not they are hazardous to their client's health. To leverage the motivator around protecting the health of family members and pets, the advertisement might read *"No lawn is more important than family. Hire an eco-certified pest controller*," accompanied by a picture of children and a pet. Another option would be to focus on the efficacy of eco alternatives with an ad that reads "*Can you tell the difference?"* with an image of two side-by-side images of bugs that are exterminated by a conventional and a less toxic pest control operator.

These advertisements will be placed in areas where residents are more likely to outsource their pest control to exterminators. Survey results found that residents in South and East County are far more likely to use pest control operators compared to other regions. We therefore recommend placing a greater proportion of advertisements in South and East County to increase overall campaign impact. The advertisements will be placed seasonally during the time when people are most likely to call to request pest control or weed abatement services (spring and early summer).

Recommended outlets to target ad placements include, but are not limited to:

***Online:*** Using pay-per-click (PPC) internet advertising, we will promote campaign messages and direct traffic to the cccleanwater.org website. For this advertising mode, we will identify and bid on a set of keyword phrases relevant to our target market in order to have campaign ads appear. Pay-per-click advertising can be extremely effective if done correctly, but in order to succeed, it is important to identify the keywords that will bring the best results. In selecting keywords, we will identify singular terms that are highly relevant and focused on the target behavior. Cost is another consideration in selecting keywords, as phrases and terms vary in price based on demand. As a result, we will conduct a thorough online analysis using Google's keyword tool and results from the ***Audience Analysis*** to identify a set of targeted keywords that are within program budget. The success of the selected keywords will be monitored, evaluated, and refined over time.

In addition to search terms, SGA also recommends placing ads on sites where people go to find service ratings, including exterminators, such as Yelp.com and yellowpages.com.

***Newspapers:*** Newspapers are still valuable vehicles for carrying targeted campaign advertisements. This is especially true in East County, one of the two target locations for this *Action Campaign*, as East County residents more than doubled their neighbors in the other three regions when it came to using newspapers as a resource for BMP information.

The *Contra Costa Times* remains dominant in the County, and they publish a community newspaper for several distinct areas of Contra Costa. Several independent papers also exist throughout the County. Contra Costa's community publications include The *East Valley Times*, *San Ramon Valley Times*, *Tri-Valley Times,* and *West Valley Times*. Additionally, independent papers are published in *Richmond (The Channel)* and *The San Ramon Valley Sentinel*. Ads will be placed in regional papers as well as independent publications in the target area (East and South County).

**Table 8.3.1.** Audience Roles for *Action Campaign*: Hire an Eco Pest Operator – Advertising Campaign

| Value Setters | Influencers | Polluters |
|---|---|---|
| **Testimonials** from others who have tried it and found success to appear in messaging<br><br>*Anyone who has requested less toxic sprays/interventions from their pest control operators or is an advocate for this practice.* | **Testimonials** from pest control operator or bug expert to appear in messaging<br><br>*Organizations that have a following of homeowners, that are related to home care, that are gardening related, and that are eco-focused.* | **View and click** ads<br><br>**Take a survey** to determine changes in knowledge<br><br>*Anyone who has hired a pest control operator to spray their home.* |

### *8.3.2. Pledge Video*

The final component of this *Action Campaign* will be the production of a short impactful video prompting residents to "take a closer look" at the practices and products used by their pest control operator. All advertising traffic will be driven to site hosting the video. The video will reveal the "startling truth" about the lack of awareness many operators have with regard to the toxicity of their products.

At the end of the video, a prompt will ask the viewer to commit to questioning their (potential) pest controller about the types of chemicals with 1 or 2 specific questions or perhaps 1 or 2 clauses that the pest controller needs to have in their contract. If the viewer commits to the change, a certificate will then pop up thanking them for taking action. They will then be asked if they would like to post their certificate and a link to the video to their Facebook wall. By posting this pledge to their Facebook wall, the viewer simultaneously receives recognition for their actions, while also helping to develop a social norm around the action by publically promoting the behavior.

**Table 8.3.2.** Audience Roles for *Action Campaign*: Hire an Eco Pest Operator – Pledge Video

| Value Setters | Influencers | Polluters |
|---|---|---|
| **Take the Pledge** to reinforce positive behavior<br><br>**Share** the video with their networks<br><br>**Publicly** acknowledge taking the pledge<br><br>*Anyone who has requested less toxic sprays/interventions from their pest control operators* | **Share** the video through their existing networks<br><br>*Organizations that have a following of homeowners, that are related to home care, that are gardening related, and that are eco-focused.* | **View** the video and **take the pledge**<br><br>*Anyone who has hired a pest control operator to spray the outside of their home (perimeter or lawn)* |

# AUDIENCE ANALYSIS

## 1. BACKGROUND

The long-term strategic plan for Contra Costa Clean Water Program (CCCWP) is grounded in a solid body of data that has been gathered about Contra Costa residents. This ***Audience Analysis*** section presents integrated findings from the data analysis, and will serve as an anchor that can be referenced throughout the life of the Program. It describes various audience segments in detail, identifies worthwhile behavior changes to target, and recommends messaging approaches for effectively reaching the audience. An in-depth analysis focusing on lawn and garden pest management is included as well, since pesticides are a pollutant of high priority for the County. Findings from this section can be implemented immediately in designing a pesticide-use reduction campaign.

Contra Costa can be geographically divided into four distinct regions. All the data were collected and analyzed with respect to the regional breakdowns as defined in the table below:

***Table 1.*** Regional Breakdowns

| Region | Cities |
|---|---|
| Central | Clayton, Concord, Martinez, Pleasant Hill, Walnut Creek, and the Unincorporated communities of, Clyde, Contra Costa Centre, Mt. View, Pacheco, and Vine Hill |
| East | Antioch, Brentwood, Oakley, Pittsburg, and the Unincorporated communities of Bay Point, Bethel Island, Byron, Discovery Bay, and Knightsen |
| South | Danville, Lafayette, Moraga, Orinda, San Ramon, and the Unincorporated communities of Alamo, Blackhawk, and Diablo |
| West | El Cerrito, Hercules, Pinole, Richmond, San Pablo, and the Unincorporated communities of Bayview, Crockett, East Richmond Heights, El Sobrante, Kensington, Montalvin, North Richmond, Port Costa, Rodeo, and Tara Hills |

The information gathered for this analysis came through three main methods:

1. Literature Review
2. Resident Phone Survey
3. Regional Focus Groups

## 1.1. Literature Review

Multiple behaviors impact the many pollutants that contribute to stormwater pollution. To address such a broad topic, the first step was to conduct an extensive literature review (See ***Appendix C***) that could begin to hone in on priority Best Management Practices (BMP) and audience segments within the County. Sources of literature included research studies, past programs and campaign results, annual reports, and U.S. census data. The literature review was conducted in December of 2012. The initial findings were then used to drive the design of the survey tool and focus groups.

## 1.2. Resident Phone Survey

To build on information obtained from the literature review, we designed a survey that asked residents about current engagement in behaviors, and their willingness to engage in certain encouraged behaviors. The results of this survey paint a clear picture of where County residents currently stand in regard to four topics in particular: household hazardous waste disposal, pest management, dog waste disposal, and automobile cleaning. Also collected from residents was information about their methods of finding information on the various topics, as well as technology usage rates and demographic information. The surveys were conducted by phone in February of 2013, with a random sample of the target audience: residents of Contra Costa. All four regions of the County were equally represented, and the total number of responses totaled five hundred and eight residents. For more information about the survey research methods employed, please refer to ("Section 2: Survey and Focus Group Methodology").

## 1.3. Regional Focus Groups

Focus group discussions were conducted in each region to explore in-depth attitudes and behaviors of County residents. We asked about outdoor lawn and garden pest management activities we wish to encourage as well as activities we wish to discourage. Pest management was the only topic addressed in the discussion in order to truly get to the bottom of rational and irrational thought processes, emotions, product purchasing decisions, awareness of health consequences, and more - all leading to our ability to identify exact barriers and motivators of specific behaviors. The discussions provided valuable qualitative information about what issues participants see to be important. Also, the discussion shed light on how residents in the

four regions speak either similarly or differently about the topic. The four focus groups were conducted in February of 2013 in public locations kindly provided by geographically-centric host cities in each region.

Developing a complete and scientifically sound understanding of the target audience is a crucial first step in designing and implementing a successful outreach program and subsequent campaigns. The following analysis is formatted in a way that presents several actionable takeaways, which can be confidently used in future outreach efforts aiming to improve water quality by targeting the residential audience of Contra Costa.

# 2. SURVEY AND FOCUS GROUP METHODOLOGY

The following section details the process by which the focus groups and the phone surveys were conducted.

## 2.1. Procedures

### *2.1.1. Phone Survey Procedures*

Phone numbers were gathered from a purchased list of listed household numbers. A 50% gender split was used, and quotas were set to obtain equal representation from the four regions of the County.

Trained phone survey interviewers introduced the survey as the "Contra Costa Community Survey", which they explained was designed to gather information that would aid in planning future programs for Contra Costa residents. The survey was introduced in these broad terms to avoid sample bias- e.g., had the survey been introduced as the "Contra Costa Clean Water Survey", people already interested in water or environmental issues may have been more willing to take it, giving us a sample of folks already engaged in the desirable behaviors. Instead of this, we aimed for a broad sample representative of Contra Costa residents overall.

If respondents refused to complete the full survey, they were asked to complete a 30 second refusal survey, which included a subset of questions from the full survey. The refusal survey is available in ***Appendix E***. If they agreed to complete the full survey, interviewers first assessed eligibility criteria. To be eligible to participate, respondents had to be at least 18 years of age, a resident of Contra Costa, and able to complete the survey in English or Spanish. If a respondent was not eligible to participate, the interviewer thanked her/him and concluded the interview. If the eligibility criterion was met, interviewers proceeded with the survey, reading each question aloud to the respondent and recording responses using a Computer-Assisted Telephone Interviewing system. The interview continued with the key content questions. At the conclusion of the interview, participants were asked if they would be interested in participating in a focus group in their region. A quota of 10 respondents per region of Contra Costa was set and additional respondents were not recruited after the quota was met.

### *2.1.2. Focus Groups Procedures*

As described above, focus group participants were recruited from the pool of survey respondents. A total of 10 respondents per County region were recruited. The week of the scheduled focus groups, all 40 participants were called to confirm their intent to participate,

provide additional instruction, and offer the opportunity to address any questions. For each region, 6-8 respondents were confirmed.

In February 2013, a total of 4 focus groups were conducted. One group was conducted in each region of the County, so facilities differed. However, all were conducted inside of public buildings (two City Halls, a library, and a community recreation center). The time for focus groups came after work hours on two weekdays, and then a morning and afternoon on a weekend day. A pair of trained focus group facilitators greeted participants and signed them in. Participants sat in chairs around a table for the duration of each group discussion.

The facilitators began by introducing themselves and the broad purpose of the project. To avoid response bias, the explanation of purpose focused on "experiences with lawn and garden care" rather than specifically concentrating on pesticides. Permission to record audio was obtained, and a digital recording was started. The facilitator then outlined the ground rules for the group, and began with an icebreaker to get people comfortable. One facilitator asked content questions, lead the discussion, and moderated fairness in sharing, while the other facilitator took notes and searched for underlying themes and non-verbal communications. At the end, facilitators summarized the discussion for the group and revealed their true identities. Participants were then paid $100 each for their time. Including sign in and payment procedures, each group lasted 1.5-2 hours. Audio recordings were later transcribed verbatim.

## 2.2 Materials

### *2.2.1. Survey Materials*

An 8-minute survey was developed to assess current engagement in behaviors that could lead to stormwater pollution, willingness to participate in stormwater BMPs in the future, technology use, and methods of obtaining information. The survey was designed with impact in mind: what behaviors could potentially have the greatest impact on minimizing pollution entering the storm drain system? What will be the best methods for reaching County residents when the campaign launches? Based on the Contra Costa literature review, a select group of priority pollutants was identified. The survey questions were designed to assess the set of behaviors that result in these particular pollutants entering the storm drain system, which included car washing methods, dog waste disposal, pesticide use, and household hazardous waste disposal. As mentioned, for each behavior, three main parameters were assessed: practices related to BMP or BMP alternatives, frequency of participation in the BMP or BMP alternative, and likelihood of future or continuing participation in the BMP. The full survey is available in ***Appendix D***.

### *2.2.2. Focus Group Materials*

A semi-structured script was created as a guide for the focus group facilitators. The script outlined the following topics that facilitators were instructed to cover: introduction, ground rules, icebreaker, and content questions. Facilitators tailored the script as needed while conveying/obtaining the key pieces of information. Audio recording equipment was on hand to produce a high quality transcription used for analysis.

# 3. DEMOGRAPHICS

## 3.1. Demographic Characteristics

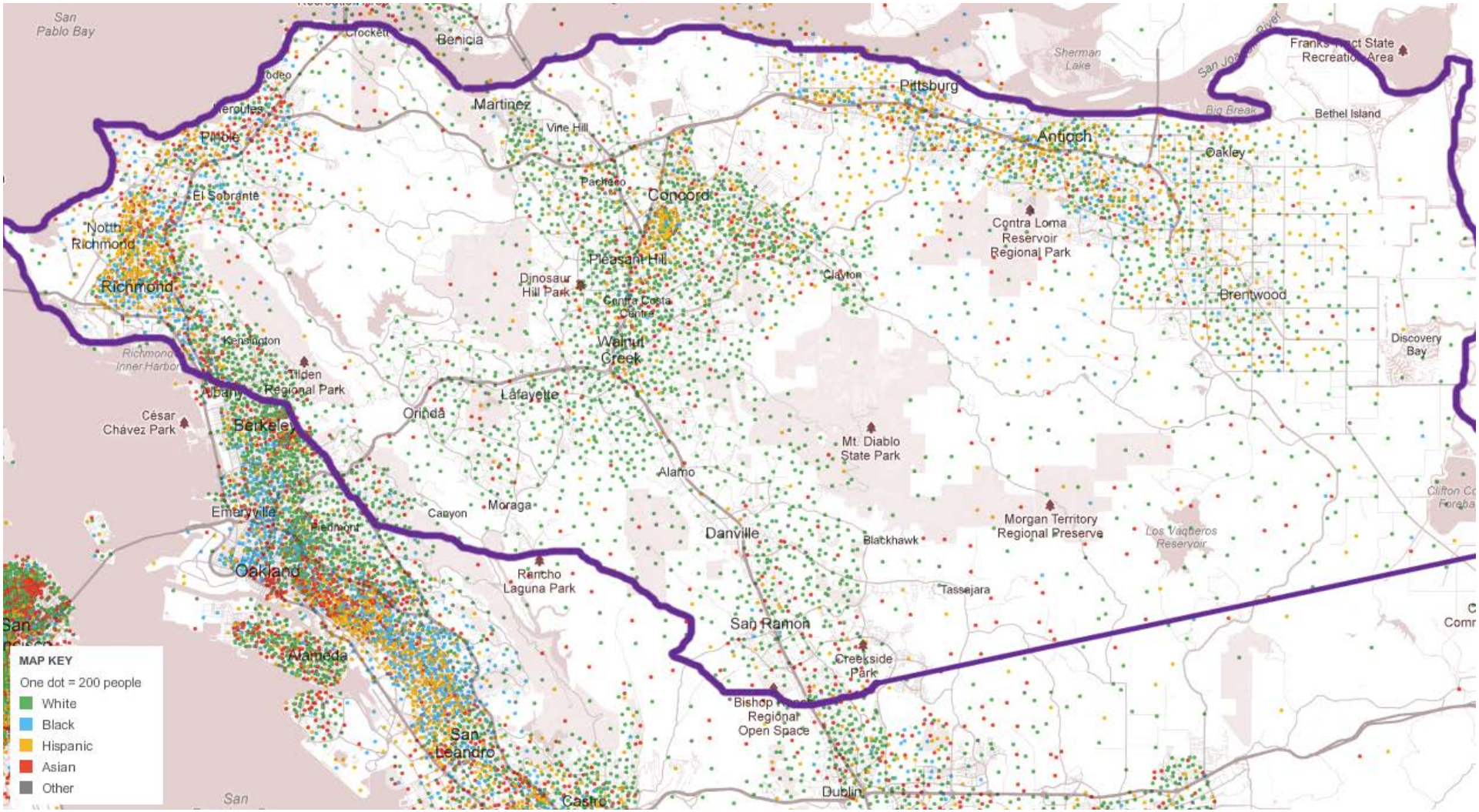
According to the United States Census in 2010, Contra Costa spanned 715.94 square miles and was home to approximately 1,066,096 residents, representing 2.8% of California's total population. To draw a few comparisons to California as a whole, Contra Costa residents have considerably higher homeownership rates, years of education, household incomes, and slightly more residents aged 65 and over. Program strategies and messages reflect these data.

***Table 3.1.*** Demographic, Social Housing, and Economic Characteristics

| Demographic, Social, Housing, and Economic Characteristics | State of California | Contra Costa County |
|---|---|---|
| **Age** | % | % |
| Under 18 | 25.2 | 25.0 |
| Over 65 | 11.3 | 12.3 |
| **Gender** | % | % |
| Female | 50.3 | 51.2 |
| Male | 49.7 | 48.8 |
| **Ethnicity** | % | % |
| Caucasian | 61.8 | 63.2 |
| Black or African American | 6.1 | 9.1 |
| Asian | 13.1 | 14.3 |
| Native American | 0.8 | 0.4 |
| Native Hawaiian | 0.4 | 0.5 |
| Hispanic or Latino[a] | 37.2 | 23.9 |
| Two or more races | 3.9 | 4.8 |
| **Education** | % | % |
| High school diploma | 80.8 | 88.5 |
| Bachelor's degree or higher | 19.3 | 38.4 |
| **Primary Language** | % | % |
| English | 56.8 | 67.2 |
| Spanish | 28.6 | 17.4 |
| Other Indo-European languages | 4.3 | 5.5 |
| Asian and Pacific Island languages | 9.5 | 8.9 |
| Other languages | 0.9 | 0.9 |
| **Housing** | | |
| Homeownership rate | 56.7% | 68.3% |
| Median home value | $421,600 | $490,200 |
| Persons Living in detached single family units | 58.2% | 66.6% |
| **Economic** | | |
| Per capita income past year | $29,634 | $38,141 |
| Median household income | $61,632 | $79,135 |
| Income below poverty level | 14.4% | 9.9% |

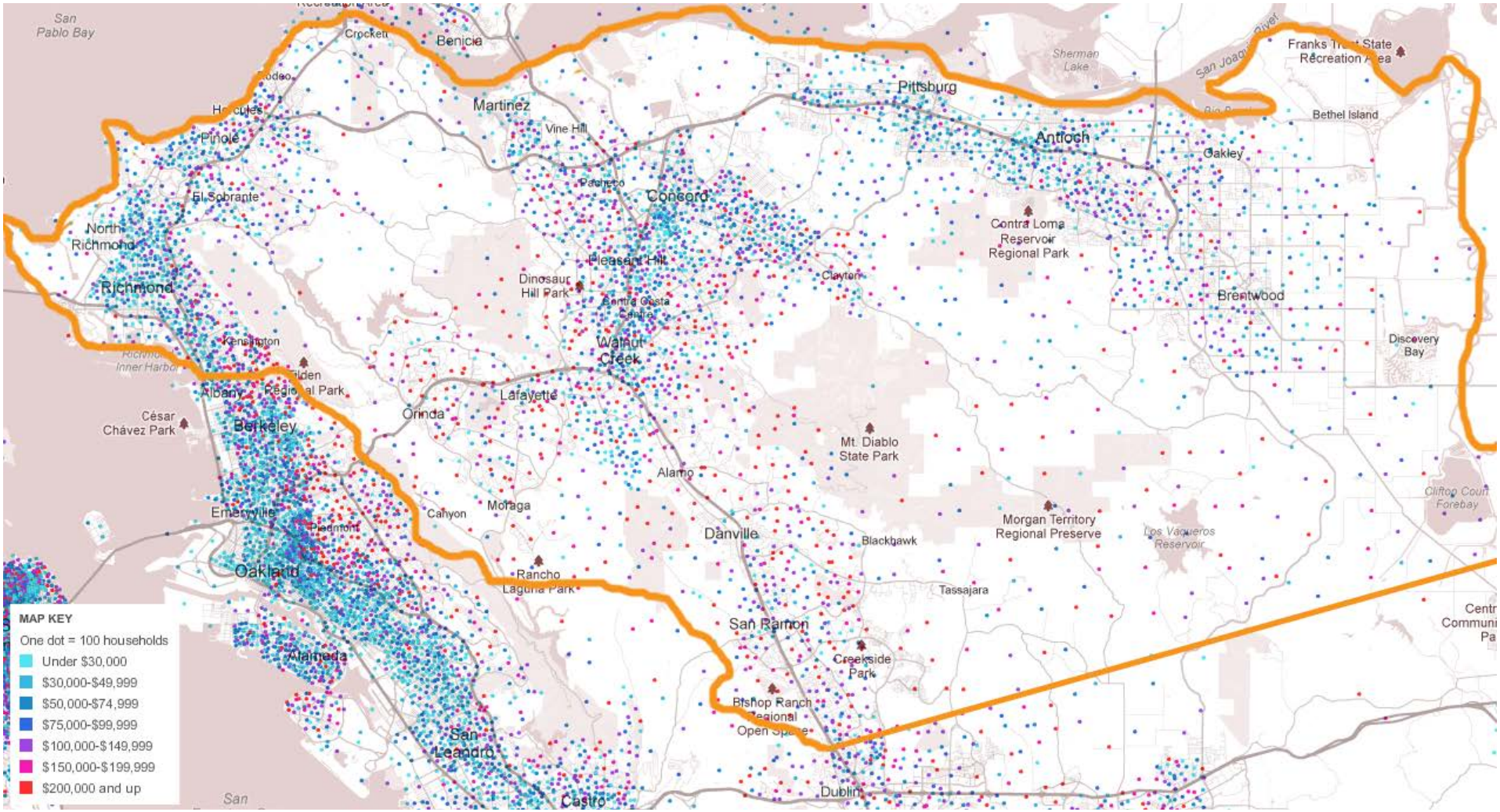
[a]Persons of hispanic or Latino origin may be of any race
Source: 2011 United States Census

***Figure 3.2.*** Distribution of Racial and Ethnic Groups




Source: 2005-9 American Community Survey, Census Bureau; socialexplorer.com

***Figure 3.3.*** Distribution of Household Income




Source: 2005-9 American Community Survey, Census Bureau; socialexplorer.com

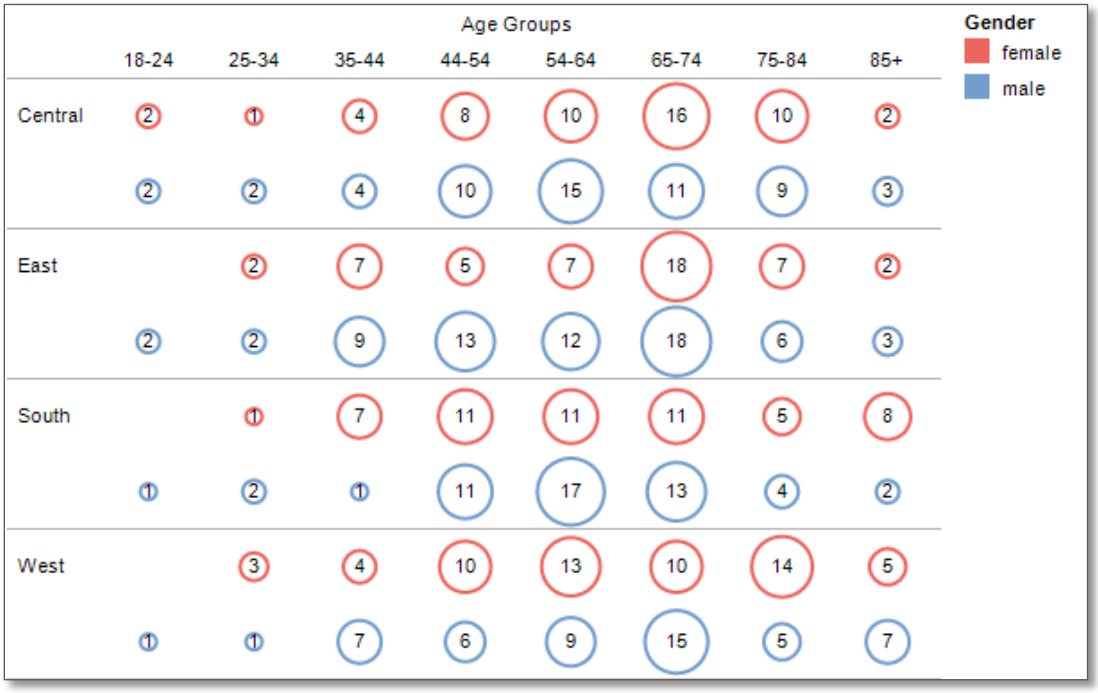
## 3.2. Resident Phone Survey Respondents

In fielding the phone survey, a total of 14,283 Contra Costa households were called. Of the 1,399 that answered the phone, 508 yielded completed surveys (36%), 642 refused to take the survey (46%), 170 had language comprehension problems (12%), and the remainder did not qualify (6%) due to age, location, or non-resident status. Of the refusing residents, 6 agreed to complete the 30-second Refusal Survey. Of the 508 completed surveys, only 21 were completed in Spanish (4%).

### *3.2.1. Gender and Age Distribution*

The sample had a slightly higher proportion of females (52%) to males (48%), and this is consistent with census data for the gender breakdown within the County. The survey excluded residents under the age of 18, and the mean age of survey participants was 62.2 ± 16.1 years old. The range of ages was 19 to 97. ***Figure 3.2.1*** shows a detailed gender and age distribution of the survey sample.

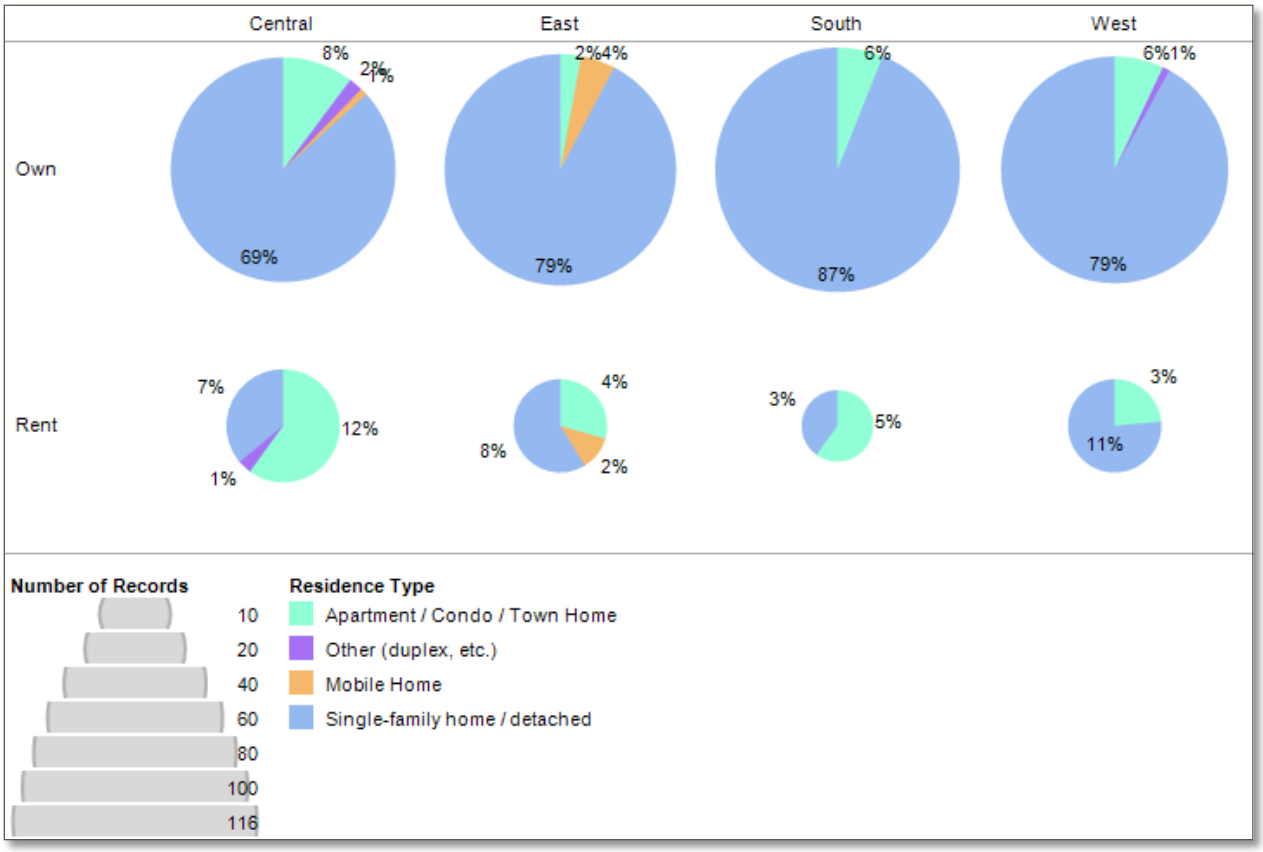
***Figure 3.2.1.*** Survey Respondents Gender and Age Distribution



### *3.2.2. Residence Type Distribution*

The majority of survey participants reported living in single-family/detached homes (86%), which is higher than the County average. The next most common response was multi-family residences such as apartments, condos, and townhouses (11%); very few lived in mobile homes (2%). The remaining participants reported "other type of residence" (1%). Homeowners made up the majority of the overall sample (86%), and renters were in the minority (14%). Of the home owners, only a small fraction lived in residence types other than single-family/detached homes (8%), whereas of home renters, nearly half (48%) lived in a residence that was not a single-family/detached home. The pie chart below (***Figure 3.2.2***) describes the breakdown in greater detail: size indicates number of people, colors indicate type of residence, and percentage labels describe population segment proportions within the region.

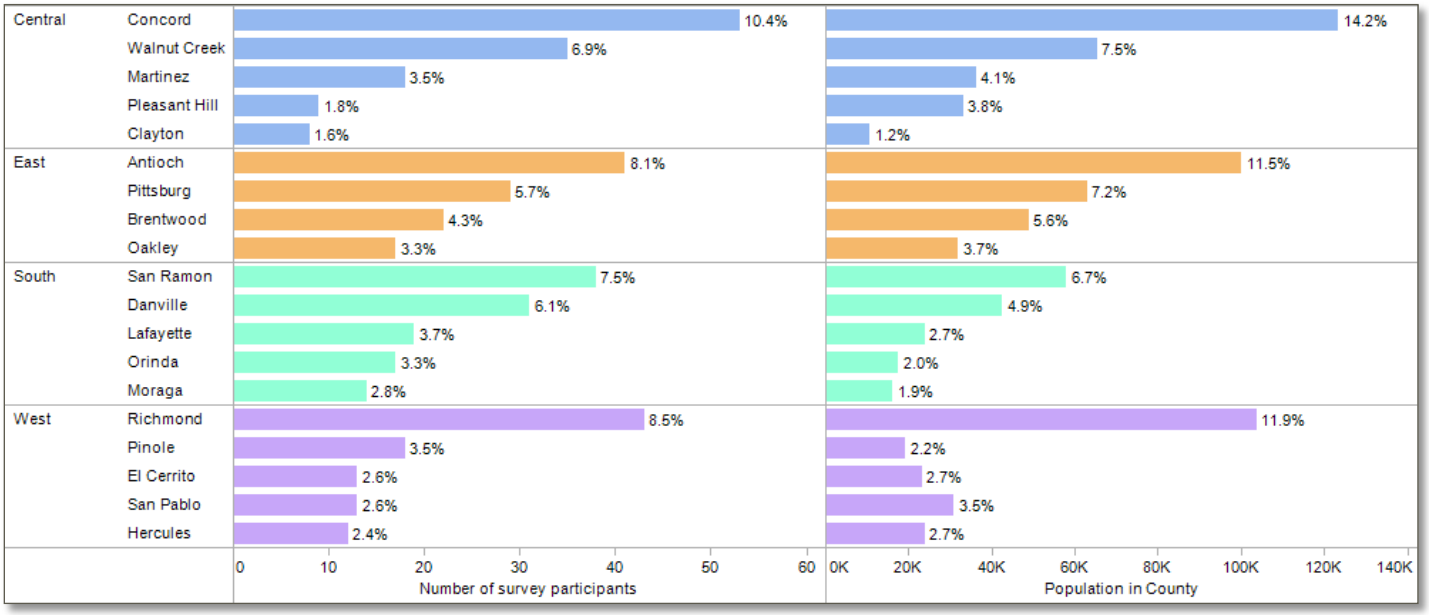
***Figure 3.2.2*** Residence Type Distribution



### *3.2.3. Regional Distribution*

Each region of the County (Central, East, South, and West) was represented by an equal number of survey responses. ***Figure 3.2.3*** shows the number of survey responses from each city, with percentage of all responses compared against population percentages within the County. The survey participant percentages differed from city population percentages by no more than 3.8% for any one city, indicating a close proportional representation of cities across the County. Unincorporated area populations are not included.

***Figure 3.2.3.*** Comparing Survey Response and Population Proportions




### *3.2.4. Language Distribution*

The vast majority of survey participants reported English to be their first language (91%). The only other language claimed by more than three participants to be their first language was Spanish (6%). Other first languages reported (3%) included: Mandarin, Russian, Farsi, Portuguese, Japanese, and Tagalog. Contra Costa is ethnically diverse, with 32.8% of County residents speaking a language other than English at home according to 2011 Census data (***Table 1***). It is of note that while both English and Spanish language surveys were available, the vast majority of the surveys were conducted in English (96%). These data suggest that many may be bilingual. U.S. Census data shows that while 17.4% speak Spanish at home, less than half (8.1%) report speaking English less than "very well".

## 3.3. Focus Group Participants

One focus group session was held for each of the four regions in Contra Costa. A total of 29 residents participated, and each focus group was composed of 7-8 participants. While all regions were represented by nearly equal numbers of participants, all cities within the County were not necessarily equally represented. Also, some participants came from unincorporated areas of East, South, and West County.

***Figure 3.3.*** Focus Group Participants Gender and Age Distribution

Participants were recruited from among residents who completed a phone survey and reported that they did have a garden or yard. Thus, screening and recruiting were completed during the survey administration. The topic of the discussion was deliberately withheld from residents recruited for the focus groups, in order to maintain an unbiased sample.

Females (59%) outnumbered males (41%) in every focus group session. There were 10 participants in the 54-64 age group, followed by 7 in both the 44-54 and 65-74 age groups. There were very few participants in other age groups, with 3 from ages 35-44 and 1 each in the age groups of 24-34 and 75-85.

# 4. IDENTIFYING BEHAVIORS TO TARGET

There are a multitude of activities that can cause stormwater pollution, ranging from home car washing to leaving pet waste on the ground. Research suggests, however, that though messaging focused on a specific behavior can be beneficial, it is essential that residents not be overloaded with multiple, sometimes competing messaging on several types of pollutants. Behavioral studies have shown that too many choices may lead to decision paralysis. In the case of stormwater, rather than attempting to address a multitude of behaviors over a period of time, promoting a limited number of behaviors may encourage greater engagement by residents. A scientific justification for this tendency is discussed at length in ***Appendix J***.

## 4.1. Stepwise Approach to Selecting Target Behaviors

In addition to continuing basic general awareness outreach, CCCWP will focus on annual assessments to determine which set of pollution-preventing actions should be promoted. Once identified, CCCWP will follow a repeatable, step-wise approach to addressing these behaviors. The steps are as follows:

***Step One:*** Examine and prioritize key pollutants in Contra Costa according to the level of harm they pose to the environment. Pollutants rated medium to high are then analyzed according to their anthropogenic sources (i.e. the human behaviors that lead to the discharge of those pollutants).

***Step Two:*** Determine which behaviors will produce the largest return on investment (ROI). ROI is predicted by assessing two factors: (1) *the number of people performing that action*; and (2) *the likelihood that those people would change that action*. In determining ROI, it is important however to balance impact vs. ease of adoption. There is a balance between having people do an action that is easy to perform, yet produces minimal impact.

***Step Three:*** Analyze potential behaviors against external opportunities and needs. For example, a behavior being actively promoted by an external agency might provide an opportunity to cross-promote that behavior. External needs may include the consideration of "hot button issues" that have come to the forefront as a result of media attention or request from an elected official. Selecting targeted behaviors according to this process allows CCCWP to maximize resources by focusing on only the most widely performed, potentially high impact actions. Once the targeted behaviors have been identified, they will be promoted by delivering targeted CCCWP messages that elevate the motivators and decrease the barriers associated with performing that action. Many of these motivators are outlined in "Section 6.1: Focus Group Findings: Current Outdoor Lawn and Garden Pest Management Behaviors & Attitudes." Decreasing barriers and increasing motivators is the cornerstone of the Community Based Social Marketing approach, which is explained in detail in ***Appendix J.***

## 4.2. Identifying Pollutant Sources

As described above, the first step in determining target behaviors is to examine and prioritize key pollutants. At the writing of this analysis, Contra Costa does not have a prioritized list of pollutants determined by the Regional Water Board. While it is recognized that every pollutant is a priority, a starting point must be found for strategic and resources allocation purposes. For the time being, ***Table 4.2*** can be used. Displayed are key permit pollutants ranked for Contra Costa, and it shows that pesticides are a high priority pollutant, suggesting that addressing behaviors related to pesticides should be given a higher priority relative to a pollutant such as Pharmaceuticals.

***Table 4.2.*** Rank of Key Permit Pollutants

| Estimated Priority | Pollutant |
|---|---|
| HIGH | Pesticides & Fertilizers (also Legacy Pesticides) |
| HIGH | Litter |
| HIGH | Household Hazardous Waste |
| HIGH | Automotive Pollutants |
| HIGH | Mercury |
| HIGH | PCBs |
| MEDIUM | Pet Waste |
| MEDIUM | Car Wash Runoff |
| MEDIUM | Illicit Discharges |
| MEDIUM | Copper |
| LOW | Industrial Pollution |
| LOW | Commercial Building Pollution (and Waste Storage Areas) |
| LOW | Pool, Spa, and Fountain Maintenance |
| LOW | Fats, Oil, and Grease |
| LOW | Pharmaceuticals |

## 4.3. Determining Which Behaviors Have the Highest ROI

The next step in determining the Contra Costa Clean Water Program's (CCCWP) targeted behaviors is to analyze the specific actions that influence water quality. The 2013 CCCWP Resident Phone Survey gathered data to address whether residents are already performing behaviors protective of water quality and the extent to which they are willing to do so. Research has shown that one's reported willingness to participate in a given target behavior is highly predictive of behavior change (Ajzen, 1991). Prioritization based on willingness to participate, perceived efficacy at preventing pollution and the potential impact of key pollutants has provided a more focused list of behaviors on which CCCWP will focus on over the next few years. These behaviors included: taking a car to the car wash, disposing of HHW at an HHW center, using eco-friendly pesticides or hiring eco-friendly pest management operators to manage lawn/garden pests, and picking up dog waste immediately. These BMPs are listed in ***Table 4.3***.

***Table 4.3.*** BMP Comparisons for Prioritization

| Action | % already doing | Mean willingness score[a] | Target pollutant |
|---|---|---|---|
| Take car to car wash | 57% | 7.12 | Excess runoff, grease, metals, hydrocarbons |
| Dispose of HHW at an HHW center | 52% | 8.23 | Fertilizer, pesticide, paint, oil |
| Pick up after dog immediately | 51% | 6.89 | Bacteria |
| Use eco-friendly pesticide to manage lawn/garden pests[b] | 3% | 7.63 | Pesticides |
| Hire eco-friendly pest management operator[c] | N/A | 4.65 | Pesticides |

[a]Scale=1-10
[b]An additional 3% used traps
[c]21% hired a company, but the survey did not obtain data on whether the company was eco-friendly or not.

## 4.4. Items of Significance by BMP

We also ran a set of inferential statistical tests to draw stronger conclusions about the key BMP, complementing the information provided by the more straightforward descriptive analyses reported in ***Figure 4.3*** above. Please note that the references to "p" in parentheses refer to the statistical confidence level of the result that is being discussed. For instance,

p<.01 means we can be 99% confident of the finding being discussed, and p<.0001 means that we can be 99.99% confident. Also note the references to "n", which refer to the sample size or simply number of individuals included in a given analysis. The set of inferential tests explored the relationship among each BMP and the following factors: demographics (age, gender, home ownership status, residence type), region, and frequency of technology use (email, internet, blogs, Facebook, YouTube, texting). For each BMP, we examined three separate outcomes:

- Likelihood of performing the BMP (versus not performing it)
  E.g., How do factors such as frequency of email use, frequency of text messaging, and gender affect the likelihood of taking HHW to an HHW center?
- Willingness to perform the BMP in the future
  E.g., Among car owners, to what extent does home ownership status influence their future willingness to take their car to the car wash?
- Willingness to perform the BMP in the future among individuals not already engaging in the BMP
  E.g., Among dog owners who do not pick up after their dog immediately, to what extent do demographic factors such as age and gender influence their future willingness to pick up immediately?

Key results of inferential tests are reported below. Results for pesticide use are reported in "Section 6: Spotlight on Pesticides."

### *4.4.1. Region Was Not a Strong Predictor for Specific BMP Behaviors*

The way in which the County regions were sub-divided into four regions did not end up being a significant predictor of the audience's behavior, relative to certain BMPs. There was some variability noted in various pockets of the County but because they did not neatly break up by region, the statistical analyses did not uncover any noteworthy patterns by East, West, Central or South. However, this is not the case for pesticide usage, which is discussed in "Section 6: Spotlight on Pesticides."

For example, ***Figure 4.4.1*** below shows the average rate of residents who report, by zip code, picking up dog waste immediately every time. The following map, ***Figure 4.4.1b***, shows, by zip code, the average score describing residents' willingness to pick up dog waste immediately. While the information can be informative, it is clear that region, as we have defined it, is not a predictor of the polluting behavior. Note: sample sizes are small and vary by zip code in the maps below.

***Figure 4.4.1.*** Average Rate of Residents who Report Picking Up Dog Waste Immediately Every Time

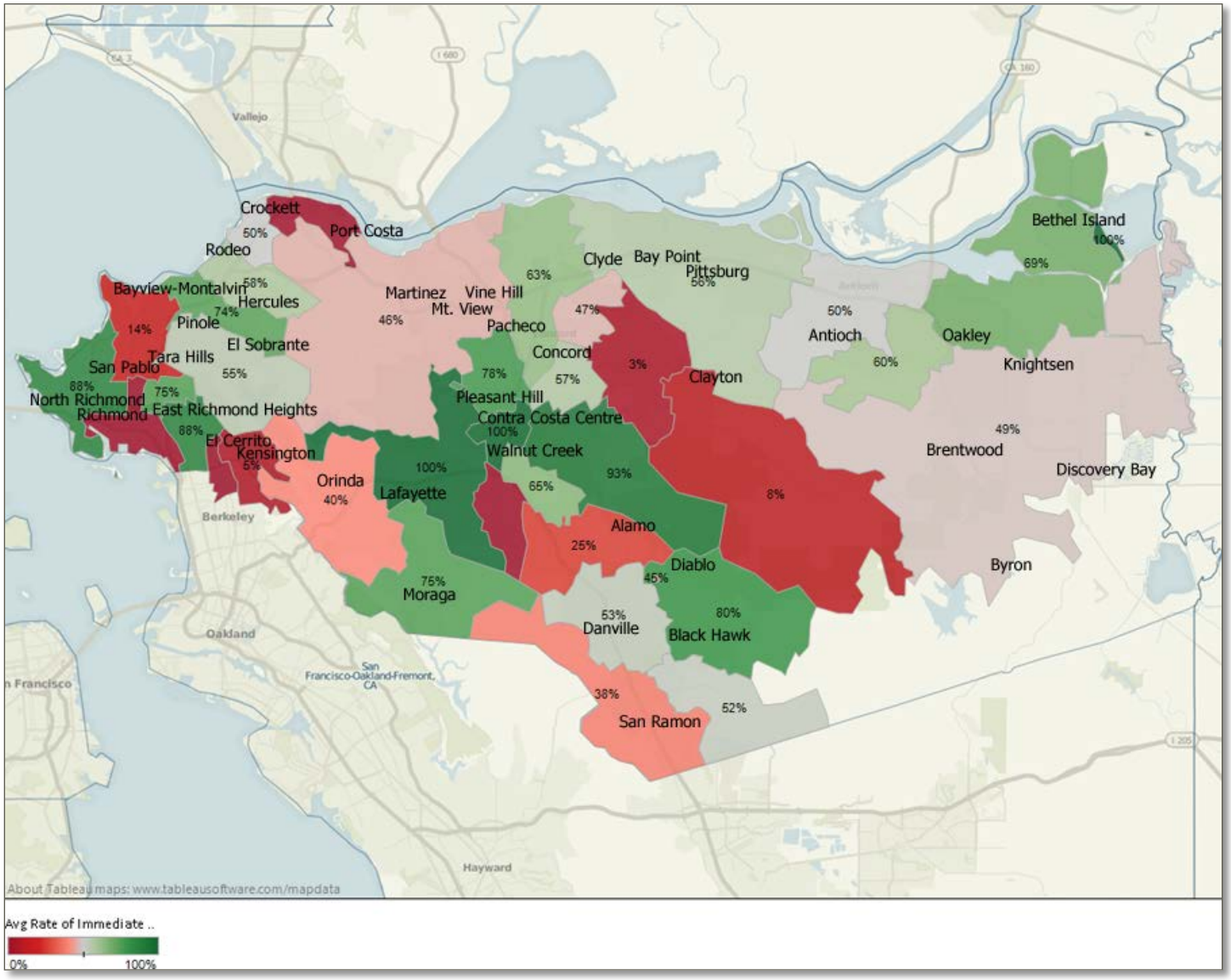
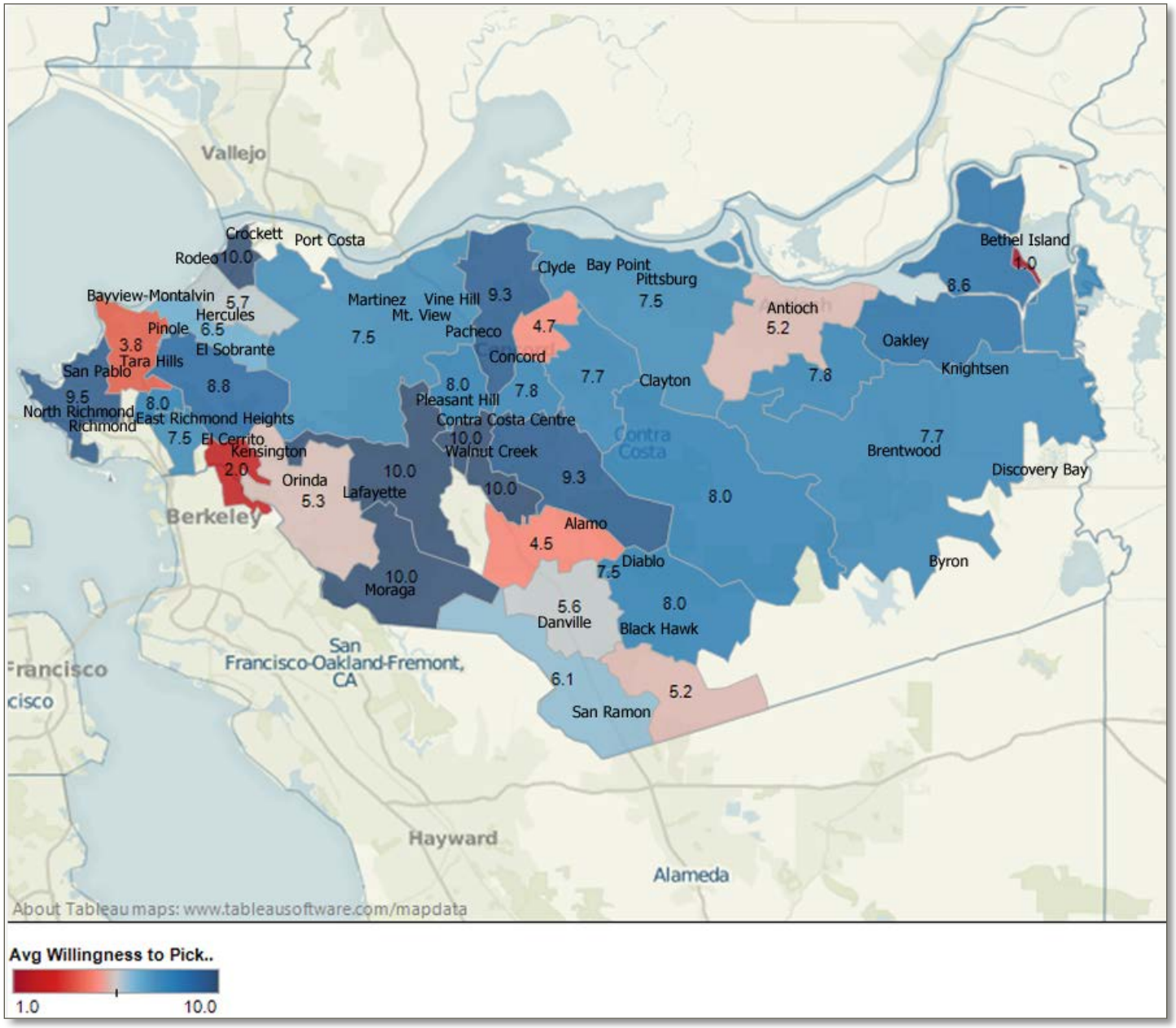


***Figure 4.4.1b.*** Average Score of Residents' Willingness to Pick Up Dog Waste Immediately Every Time



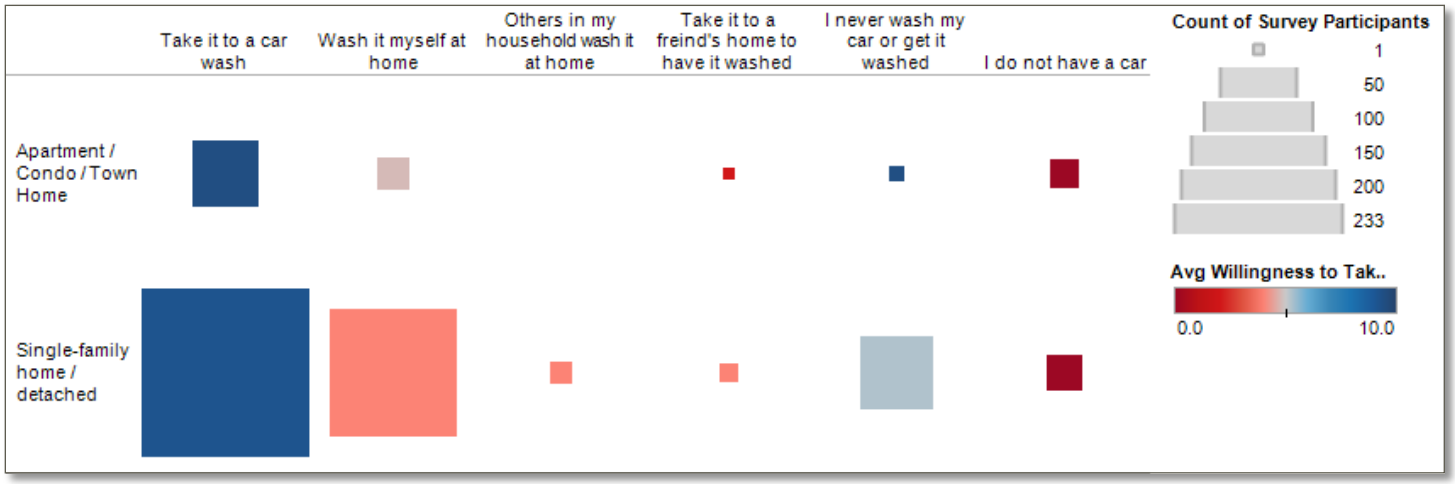

### *4.4.2. Multi-Unit Tenants Willing, But Already Going to Commercial Car Washes*

People who live in multi-unit apartments were more willing ($p<.02$) to take their car to a commercial car wash than residents who live in single family homes, however, the willingness

comes from residents already taking their cars to a commercial car wash. 65% of multi-unit dwellers in the survey reported taking their car to a car wash already; only 16% reported washing their car at home (this may be due in part to the fact that multi-unit tenants have less access to driveway and sidewalk space near a hose, which is how single family home dwellers typically wash their cars), and that group reported an average 4.8 willingness score for taking their car to a commercial car wash, indicating a relatively low level of willingness to take cars to be washed at a commercial car wash. Of single-family home dwellers in the survey, 55% already take their car to a car wash; 31% wash their cars at home, and that group reported an even lower willingness score of 4.0.

The visual "heatmap", ***Figure 4.4.2*** below, shows resident groups broken down by primary method for washing car from left to right across the chart (x-axis) and residence type from the top to the bottom of the chart (y-axis). The size of the squares indicates relative number (count) of participants in each group, as indicated in the pyramid legend in the upper right-hand corner of the chart. The color indicates the average willingness to take the car to a commercial car wash, on a scale from 0-10.

***Figure 4.4.2.*** Current Car Wash Behavior by Residence Type, and Willingness to Perform Desired Behavior



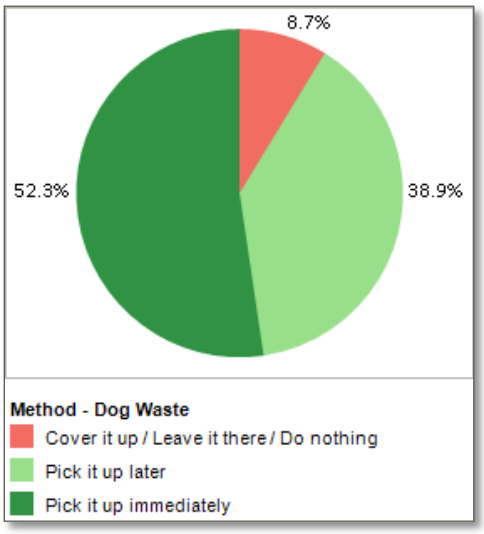

### *4.4.3. Homeowners & Single Family Home Dwellers More Inclined to Recycle HHW*

Relative to multi-family home residents, single-family home residents were 2.11 times more likely to take their HHW materials to a recycling center. Relative to renters, owners were 3.42 times more likely to take their HHW materials to a recycling center. It is unclear whether this is due to the fact that people who live in and own single family homes are likely to use more toxic waste (e.g. fertilizers, paints, etc) or simply because multi-family residents are unaware that items they are using constitute as hazardous waste (e.g. cleaners,

medications, nail polish, etc). An additional possibility may be that single-family home residents and homeowners are more familiar with or aware of HHW disposal locations. However, awareness may only be part of the issue; other studies exploring topics such as illegal dumping have found that renters are more likely to illegally dump items compared to homeowners[11].

### *4.4.4. Not Much to Chew Over About Dog Waste*

***Figure 4.4.4.*** Current Dog Waste Pickup Behavior



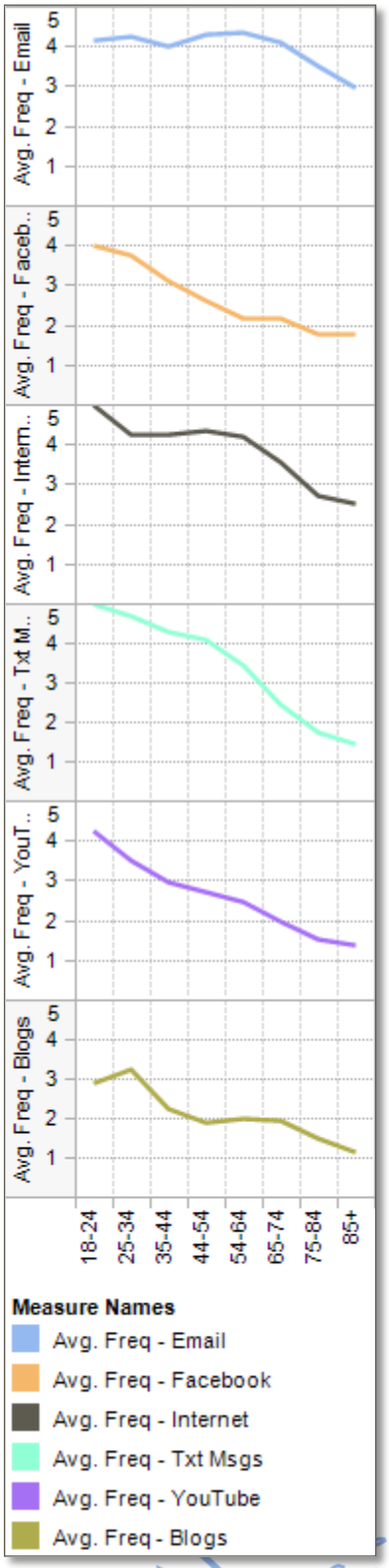

Of all of the pollutants studied, dog waste had the fewest statistically significant predictors about the people who are and who are not regularly picking up after their dog. Survey results indicated that 91.2% of dog owners reported picking up after their dog either immediately (52.3%) or later (38.9%) which leaves only 8.7% of all dog owners who reported that they never pick up after their dog. This makes it a difficult BMP to target because the segment of polluting dog owners is small. It was noticed that of survey participants reported to be polluters, all were single-family homeowners. However, with such a small sample (n=14), it is difficult to draw a meaningful conclusion. Therefore the Program is left with no choice other than to send out blanketed messages to all dog owners in hopes of reaching the polluters. Many people are already participating in the correct behavior, so while the number of polluters in need of behavior change is not large, a dog waste campaign can leverage the power of perpetuating already established social norms in order to change behavior.

[11] According to the New South Wales report on illegal dumping comparing multi- unit dwellers to homeowners. A link to the report is included in ***Appendix K***.

# 5. TOOLS FOR REACHING THE AUDIENCE

There are myriad promotional tools (e.g. advertisements, PR, social media, etc) at the marketer's disposal to reach an audience, but as with other elements of this plan, selecting the tools that have the highest impact should be given first priority. Impact in this case is defined by the tools Contra Costa residents have stated they are most likely to turn to and engage with to obtain information. The phone survey asked about promotional tools in two regards. First, respondents were asked to rate their inclination to engage with specific tech tools including the internet, social media and cell phones. Second, the survey included questions relative to how people get their information about certain targeted BMP behaviors and pollutants of interest. These BMP included car washing, household hazardous waste (HHW) disposal, gardening and lawn care and dog related issues.

***Figure 5.1.*** Tech Usage Frequencies by Age Group




## 5.1. Promotion for General Audience

The General Audience consists all of the people living in the County regardless of regional area, status as a polluter or non-polluter or how likely they are to engage in specific BMP. The value in examining promotional tactics as they relate to the general audience is to provide the CCCWP with a "big picture" snapshot of how the County as a whole prefers to receive information since this will be needed when the Program needs to disseminate information to a broad Countywide audience.

### *5.1.1. Email is King (Especially with Homeowners)*

Despite the advent of social media platforms and smart phone apps, getting information via email still remains ahead of the pack with 79.9% of people checking their email at minimum a few times per month. An important caveat is that email does not come equipped with the interactive capabilities that are possible in social media platforms so the comparison may not be like comparing apples to apples; however, as a tool for just disseminating information, it is still on top.

Factoring in age, the data also showed that age was significantly associated (p=.05) with higher frequency of email use. However, relative to the other technology platforms, the association of age with email was somewhat weaker. (See ***Table 5.1*** for tech usage trends by age group, where frequencies of 1 = never, 2 = a few times per year, 3 = a few times per month, 4 = a few times per week, and 5 = daily). In other words, whereas the correlation between age and Facebook use, for example, was very tightly coupled, the correlation between age and email was not as strong. This indicates that older folks are accessing email at higher rates than the other technological platforms. One notable difference between email usage and population type can be seen between homeowners and renters with email usage being significantly higher (p=.03) amongst homeowners (83.3%) compared to renters (65.2%). This pattern was consistent across all of the regions in the County, which diverged from the other platforms that showed some variation from region to region. This suggests that email could be a reliable blanket tool for reaching the Contra Costa audience.

### *5.1.2. Social Media: YouTube for Men and Youth, Facebook Used Daily*

Of the three social media platforms that the 2013 phone survey asked about, YouTube came out on top with 41.1% of residents citing that they used it at least a few times per month. Facebook was not far behind with 38.2% and blogs trailed at 26.8%.

The data pointed to the fact that men were significantly more likely to use YouTube, across all of the regions, than women (p=.02). However, more women used Facebook regularly than did men. Age was also a factor here with increasing age significantly related to lower likelihood of YouTube usage (p<.0001). This suggests that YouTube would not be ideally suited for older audiences, whereas younger groups would be more likely to access this platform.

It is important to note that of the people who use YouTube, most used it only a few times per month (16.9%), while of the people who use Facebook most people used it daily (17.9%). This will help to inform how each is used as a tactic because while YouTube may have a larger reach in terms of numbers, people are mostly engaging with it sporadically and it can therefore serve as a way to get a one-time big message out to a lot of people. On the other hand, Facebook may have slightly less people plugged into it but those people are using it on a daily basis; the latter of the two platforms being a much more efficient way to get information out to people on a consistent basis, albeit a smaller number of people.

### *5.1.3. Texting Popular with a Younger Crowd, Renters*

Just fewer than half of County residents, 43.5% to be exact, used text messaging at least a few times per week. Even fewer people used apps on their smart phones (32.3%) although a higher percentage of men used apps than women. A small fraction of County residents (14%) did not own a cell phone but this percentage was higher amongst renters, with 26% reporting

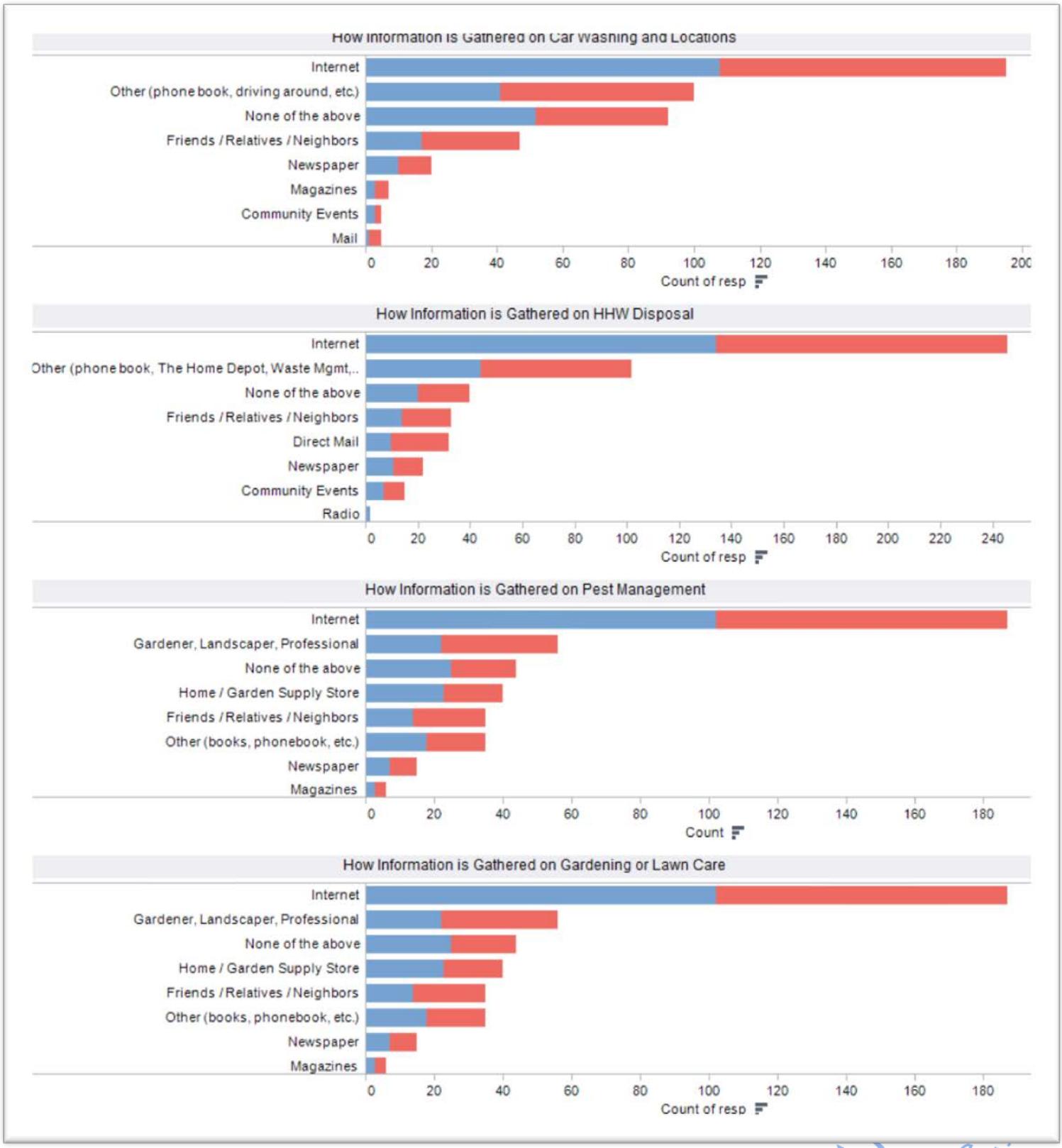
that they did not own a cell phone. Despite the low cell phone ownership, more renters engaged in texting (64.7%) than did homeowners (57.1%). Furthermore, unlike email, which skews older, text messaging showed that increasing age was significantly correlated with lower usage of cell phones for texting ($p<.001$).

### *5.1.4. Internet Leaves All Others in the Dust*

More than three quarters (78.2%) of County residents cited using the internet for searching more than once a month, and of those almost half (48.8%) cited using it daily. This is in line with the national average, which according to an April 2012 Pew report found that 78% of Americans used the internet regularly[12]. It is therefore no surprise that the internet also led as the primary way County residents reported getting information about specific BMP or pollutants; more so than television (0.5%), newspaper and other tools. ***Figure 5.1.4*** below displays primary methods of information gathering associated with the four BMPs of interest.

[12] http://www.pewinternet.org/Reports/2012/Digital-differences.aspx?src=prc-headline

***Figure 5.1.4.*** Methods of Gathering Information



### *5.1.5. A Quarter of Respondents Want to Talk to Someone*

Second to going online to find information, across all of the BMPs, 25% of respondents cited their inclination to go to another person directly to get information. This preference varied depending on the BMP. People were most inclined to talk to someone when it came to getting information about dog care with 43% of dog owners citing that the either turned to their vet, pet supply store or someone they knew (i.e. friend, relative, neighbor) to get answers. People were least inclined to talk to someone when it came to getting information about car washing with only 11% of respondents stating that they would ask someone they knew or an auto supply store clerk.

In terms of HHW and garden care information, these two fell squarely in the middle at 26% and 25%, respectively. When it came to HHW, respondents stated that in addition to people they knew and community events, they were likely to contact their trash company, the City/County or go to a phone book to get the information they need about proper disposal. Similarly with garden care people were likely to rely on the same avenues as for HHW, including gardeners and lawn care professionals.

### *5.1.6. Internet Users More Willing to Take Their Car to a Commercial Car Wash*

Among the 208 car owners who didn't take their cars to the car wash, the frequency of Internet usage had a slight positive association with willingness to take cars to car wash. This suggests that Internet marketing may be useful for reaching a segment of folks not currently engaged in the BMP who are willing to engage. The same marginal result was found for car owners who specifically use the internet to find information specific to car washing (as opposed to just regular internet use).

## 5.2. Promotion to Regional Audiences

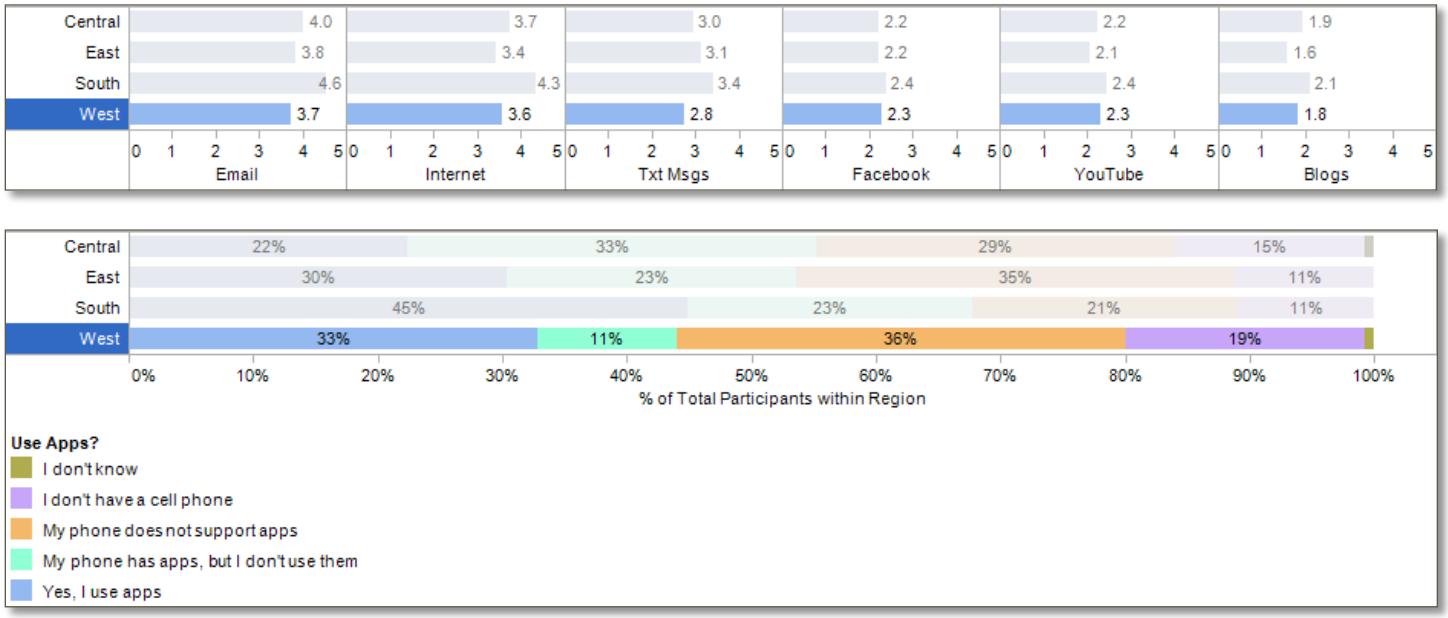
Exploring preferred promotional tactics by region is an opportunity to provide the CCCWP with a deeper understanding of how the target audience varies based on geography. Statistical Analysis of Variance (ANOVA) testing revealed that region was an especially strong predictor of the survey questions that related to "using the internet to search for things" and "checking email." These two variables, as well as others, will be explored below to help paint a vivid picture of tech usage across the County's regional pockets.

### *5.2.1. West Has Lower Tech Access but Relatively High Usage*

While the survey did not explicitly ask respondents if they had regular access to the Internet, it did question whether or not they owned cell phones. More than three quarters of the people (80.8%) who live in West County stated that they do own a cell phone, and while this number may seem high it is important to note that this is the lowest cell ownership number compared to the other County regions and lower than the entire County average (86%).

Despite this fact, West County does not lag very far behind in terms of their use of online platforms or cell technology. In particular, West County leads the pack in frequency of YouTube views (at least a few times per week) and is only second to South County (highest cell ownership) in app usage. West County is neck to neck with other regions in Facebook usage & texting but does lag in email usage (68.8% compared to the County average of 75.8%).

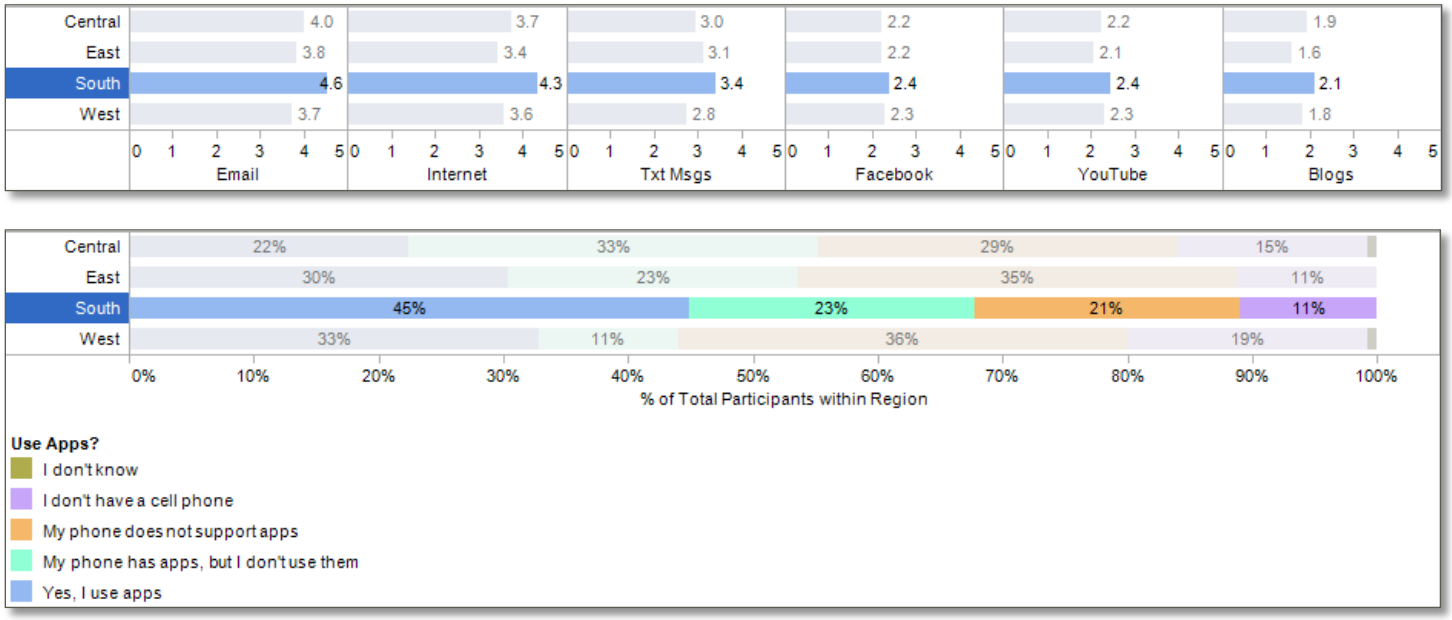
***Figure 5.2.1.*** West County Tech Usage and App Usage




### *5.2.2. South Leads in Internet Access, Email & Cell, But Less So in Social Media*

South County leads in terms of online and cell phone technologies. South County residents reported the highest frequency of searching for things online (82.7% compared to the County average of 65.8%) and checking email (90.1% compared to the County average of 75.8%). In addition, South County residents reported using text messaging and apps significantly more than the other regions. However, social media channels such as YouTube and Facebook did not vary by region; in fact, this is where usage of online platforms tends to equalize across the entire County.

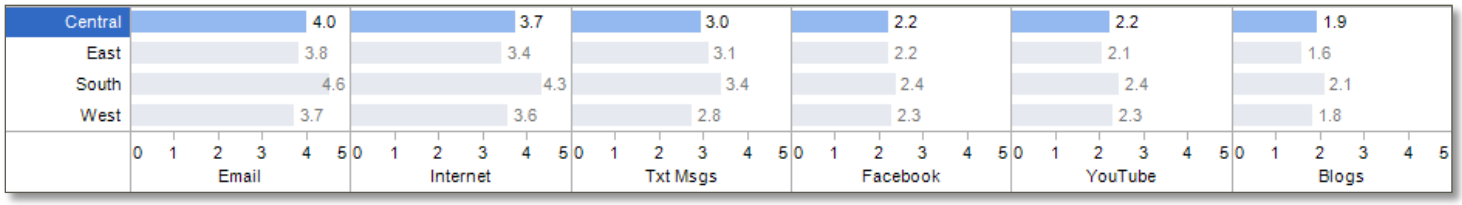
***Figure 5.2.2.*** South County Tech Usage and App Usage

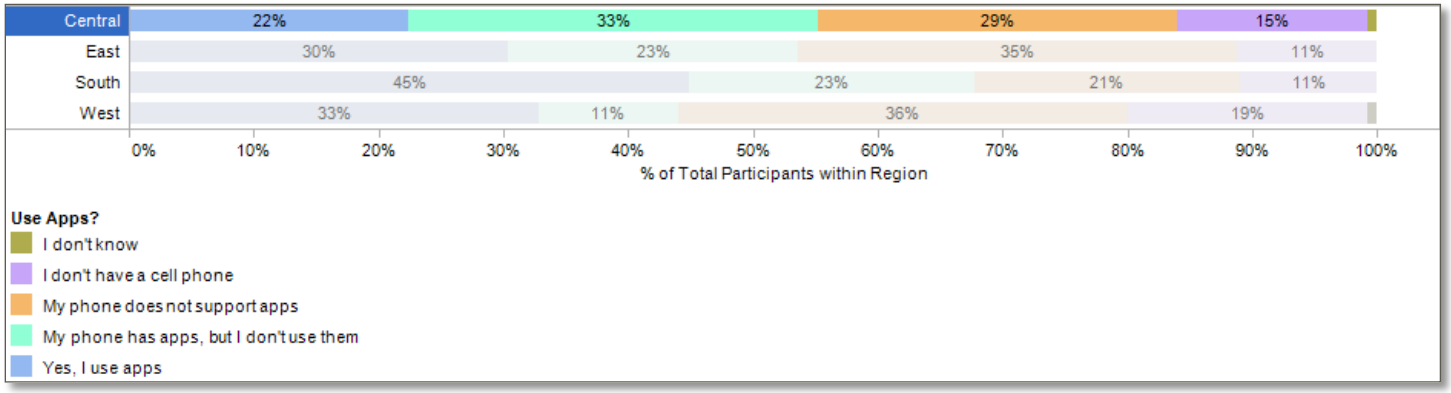



### *5.2.3. Central County Right Behind South County, But Lags in Cell Phone Usage*

In half of the technologies inquired about, Central County came in second to South County in terms of frequency of usage. These platforms included email use, internet use, YouTube, and blogs. The exceptions were that with Facebook, there was a fairly even spread across the entire County. Also, with cell usage (including apps and texting), Central County residents cited lower participation than both East and South County. In fact, Central County residents had the lowest app usage of all of the regions in the County (22.4% compared to the County average of 32.3%). Text messaging was higher but still second to last, only two percentage points ahead of West County, in terms of usage which is likely related to the fact that cell ownership in the Central region is the third lowest in the County. This suggests that with the exception of social media, Central County residents used internet technologies moderately more often than did residents of the other regions, and that they did not use cell phone technologies heavily.

***Figure 5.2.3.*** Central County Tech Usage and App Usage

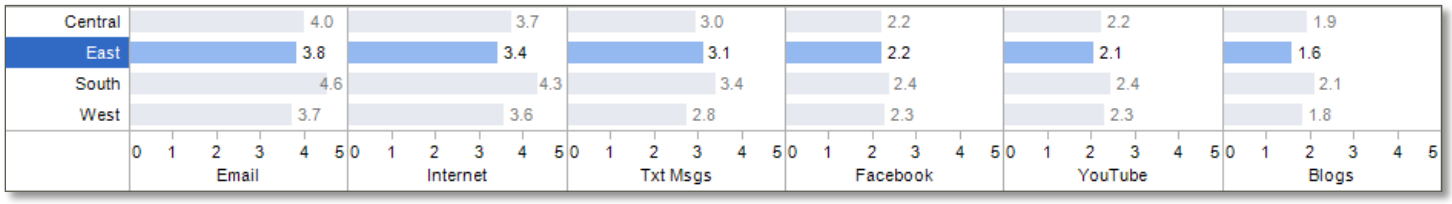


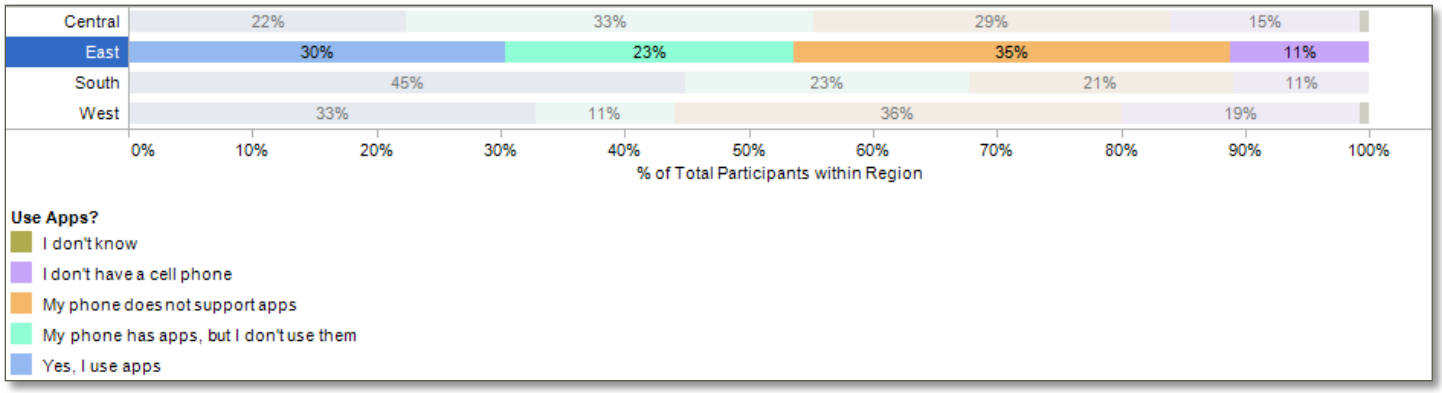




### *5.2.4. East County Skews Left of Average Tech Usage… Except for Texting*

East County was just below the County average for many of the social media and web usage questions the survey asked about: YouTube, searching for things online and especially reading blogs (18.4% did so a few times per month compared to the County average of 26.8%). Using Facebook and apps was close to average. The one technology that East County residents lead the pack with was texting, with 55.0% of people averaging at least a few texts per week; compared to the more technologically savvy residents of South County, which was at 58.4% and the Countywide average of 43.5% times per week.

***Figure 5.2.4.*** East County Tech Usage and App Usage






### *5.2.5. Phone Books Still Used By Some Regions (Especially Central County)*

A small fraction of the total survey respondents (8%) filled in phone book as an option in the "Other" category when asked where they go to get information about garden care and Household Hazardous Waste (HHW) disposal. Of this 8% of respondents, more than a third (35%) were from Central County, and West County accounted for the second largest group with 23%. South County had the smallest group of respondents with only 9% (of the 8%) offering up a phone book as a source for information.

### *5.2.6. Newspapers Low on the List, but Higher in East County*

Newspapers ranked relatively low in their use as a resource to get information about specific BMP with an average of only 3% of respondents citing that they read newspapers for this purpose. Newspapers were only slightly ahead of television, radio and magazines which all lagged at the end in showing up as a resource for people to turn to with BMP questions. Furthermore, newspapers, while low in their overall ability to serve as a resource, were higher than all of the mass communication channels the survey inquired about. Residents of East County more than doubled their neighbors in the other three regions when it came to using newspapers as a resource for BMP information.

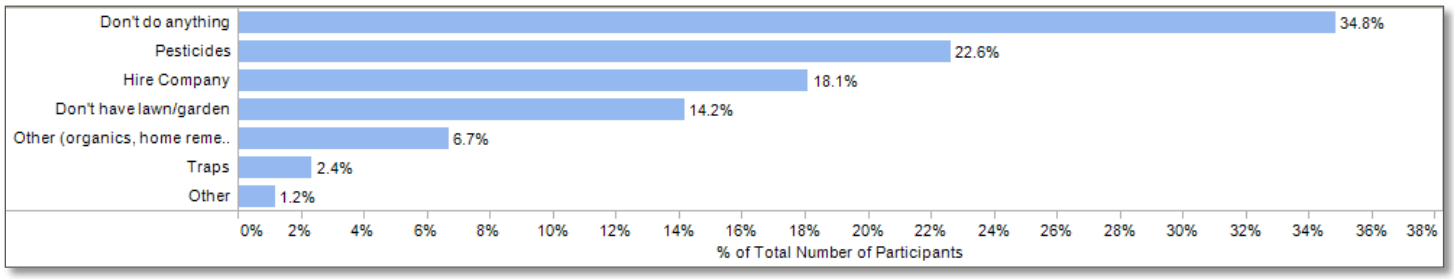
# 6. SPOTLIGHT ON PESTICIDES

Pesticides are a pollutant of high priority in Contra Costa. Information about outdoor lawn and garden pest management was collected through both the Resident Survey as well as the Regional Focus Groups.

The phone surveys explored current residents' levels of engagement in behaviors and willingness to engage in certain encouraged behaviors; one of the four pollutants included in the survey was pesticides. The focus groups concentrated solely on the motivators, barriers, and attitudes behind several outdoor lawn and garden pest management behaviors. The actionable sections below detail qualitative focus group findings, quantitative survey findings, recommendations for developing messaging, and tactical recommendations – all with the goal of serving to inform the municipalities within the CCCWP in subsequent pesticide reduction outreach campaigns.

The survey asked respondents what they did to manage pests in their lawn/garden. This survey question served as a screening question for focus group recruitment: only participants who reported having a lawn or garden were invited to participate in the focus groups. Responses are described and shown below in ***Figure 6.*** In response to the survey question, the most common response was doing nothing to manage the situation, which was reported by 35.3% of the sample. 22.9% of the sample primarily used pesticides to manage lawn and garden pests. 18.3% hired a company to manage the situation, but the survey did not gather data about whether the companies were eco-friendly or not. An additional 2.4% used traps to manage outdoor lawn and garden pests, and 1.2% employed "other" method, many of which involved natural remedies such as coffee grounds, and eco-friendly pesticides.

***Figure 6.*** Current Pest Management Behaviors




## 6.1. Focus Group Findings: Current Outdoor Lawn and Garden Pest Management Behaviors & Attitudes

Due to a wide breadth of topics and the requirement for brevity, the resident phone surveys deliberately did not seek to learn about motivators, barriers, and attitudes of specific

behavior. The focus groups, on the other hand, covered just one high priority pollutant, pesticides, and discussions lasted anywhere from one hour to an hour and a half. Therefore, we could hone in on specific pest management behaviors and learn about the motivators, barriers, and attitudes behind them. The findings from this sub-section (6.1) are all qualitative; they are rooted in the directly observed quotes, emotions, and non-verbal cues of County residents.

### *6.1.1. The Spectrum of Pest Management Profiles*

Generally speaking, participants were all similar in not being confident about their knowledge of the specific harmful effects of chemical pesticides. Most made the direct connection of keeping pesticides away from fruit trees or vegetable gardens – where food is produced for human consumption. In other ways, participants were quite different, and we found that they typically fit one of several distinct "profiles".

On one end of the spectrum, we found those who reported drastically overusing chemicals. This first group of participants revealed that they knew the least about the types of chemicals being used or the proper methods to use and dispose of pesticide products. Their typical behavior included spraying pesticides regularly, or "preventatively" – regardless of whether or not there were pests. This group could be split into two camps: the "Don't Cares," who had very little desire to learn more – they showed only mild interest in the discussion and were content to continue what they were doing; and a second camp, the "Don't Knows," who demonstrated surprise at the existence of alternative pest management methods ("I had never thought of that…"), and they showed a curiosity to learn more – for these people, lack of awareness is truly the barrier. Each focus group had at least one person that fit each of the two profiles.

On the opposite end of the spectrum, we found conscientious participants who took ownership in their garden or household and were very knowledgeable about the various pest management options out there – these are the "MVPs". For the most part, they used some form of Integrated Pest Management (IPM). At times they would still turn to using pesticides as a last resort, but only after trying other methods and researching to understand the implications of using one product over another, which aligns with the Integrated Pest Management (IPM) methodology.

Between the two poles, we had "Conspiracy Theorists" who spread false rumors, "Know-it-alls" who have influence over neighbors but not always the right information, "Older Gentlemen" who are concerned with maintaining green lawns and standards of living, "Do-gooders" who mean well and just need direction, "Check-the-box" types who take little pride in the work but just want to get it done for the sake of getting it done and possibly keeping up with neighbors, and "Bystanders" who simply do not have lawn or pest problems.

### *6.1.2. Pesticides thought to be quick, easy, and reliable*

The most common chemicals reported to be used by focus group participants were Roundup, Raid, and Ortho. The major motivator for focus group participants who used insecticides or pesticides was the product effectiveness and longevity. The general sentiment was that pesticides are the one method sure to work. Even participants who were aware of the harmful effects of chemical sprays felt the time and labor saved by using pesticides outweighed any incremental damage to the environment. Those who used insecticides frequently were more expressive in their fear of their space becoming "invaded" by critters than those who were less protective of their property, and this fear often drove them to find what is considered the quickest and most effective solution.

### *6.1.3. Pest control professionals a last option, but preceding effort varies widely*

The majority of participants only called pest control experts as a last resort after they determined that they could not manage the "infestation" themselves; Varying widely across participants was the point where they made this determination; individuals were influenced by several different factors (availability of time, do-it-yourself (DIY) interest, general awareness, level of education, economic situation, severity of infestation, etc.). In each focus group, there would be one or two people who have pest control companies visit their house to conduct "preventative spraying" on a routine schedule. These same people had rarely ever considered the fact that other alternatives existed. Most in this subgroup expressed interest in learning about home remedies and other possible pest control solutions.

### *6.1.4. Eco-friendly alternatives used by green thumbs and animal-lovers*

Of the participants who had heard of or tried eco-friendly alternatives, most perceived them to be not as effective as name brand sprays. However, when it came to home remedies, most participants were eager to share their knowledge on effective alternatives such as using cinnamon or baking soda to control ants. Also, many of the women were curious to share and learn new methods. Participants that expressed love for their animals were normally not as bothered by pests or bugs in their garden as many of the participants who did not own any animals. The focus groups expressed both negative and positive views on bugs and insects. Those who were more knowledgeable about gardening believed that bugs and insects were healthy for the garden. However, they were viewed as pests when they "invaded" their houses. Rodents, on the other hand, were almost always viewed negatively because they could be "damaging" to their garden or property. Several people had strong negative opinions about rats; one gentleman who took much pride in having a well-kept garden conveyed that "they are not tolerated at all."

### *6.1.5. Income, occupation, and convenience are major influences on pest management choices*

Variations in participants' attitudes towards pest management and the use of harmful chemicals seemed to be correlated with income and occupation. Those who gardened, often middle class and older residents, expressed that they took pride in being able to independently manage their garden as much as possible without hiring gardeners unless they had large jobs. Participants who led busier lives, worked more, and had less free time (characteristic of residents of East County) seemed to be more likely to hire lawn and garden service operators than doing labor themselves. These same participants often turned to using chemical sprays as a quick method to address weeds because for them, alternatives such as pulling weeds by hand were seen as a "chore." Residents living in wealthier communities, characteristic of South County, also often reported hiring a service for their landscaping, garden, and/or lawn and hiring pest management services like Terminix on a regular basis. West County participants expressed that the residents desired beautiful lawns, but due to the high renter's population and high cost of landscaping projects, there was a lack of resources for proper lawn and garden upkeep. Those residents with very small yards (and therefore were not significantly affected by pest problems) tended to put little time and effort into caring for their yards, and were less aware of proper usage of chemicals and alternatives.

### *6.1.6. Eco-certified products little known, less trusted*

While few participants had heard of or tried using eco-certified and organic sprays, many (including ones who had not reported knowing or trying them) were skeptical of their effectiveness. Several questioned the various governing bodies and companies producing certifications and product labeling. Nearly all made the assumption that such products would be significantly more expensive than "regular" products. Participants of South County were the only group who collectively expressed willingness in considering purchasing eco-certified products and possibly paying more for them.

### *6.1.7. Eco-friendly Alternatives*

West and East County had the most numbers of participants who were unaware of eco-friendly alternatives. When eco-friendly alternatives were brought up, those participants who had never heard or tried them seemed to have a genuine interest in trying a safer option and swapping home remedies with each other. Participants in Central County, many of whom had pet cats or chickens, named their pets to be the best home remedies for managing pests such as rodents or aphids.

### *6.1.8. Men hate weeds, Women hate bugs, Professionals seldom questioned*

Typically, male participants expressed a strong dislike for weeds, and women did not mind them so much – several went so far as to say pulling them by hand was "therapeutic". Typically, women had a strong dislike for insects, and men did not seem to mind the insects as much. The strong views held by women concerning not allowing pests such as roaches, ants, or spiders in or around their house made them very likely to call a service for pest management to remedy the situation. None knew or asked what chemicals were being used by the professionals; some said they were reassured by the professionals that the chemicals were "safe"; many doubted that the professionals themselves knew what they were spraying. Some men who gardened frequently were more knowledgeable about products that may or may not be biodegradable. For men, pride in their lawn or garden seemed to be a dominant reason for their desire to use herbicides on weeds. For women, fear of insects inside the house was the dominant reason for their need to use insecticides both inside and outside the house.

### *6.1.9. Women less inclined to turn first to pesticides. But when they do, they go all the way*

Women seemed more opposed to using harsh chemicals to manage their lawns and gardens compared to men. Women were also more prone to first looking into more eco-friendly alternatives or common household remedies to address issues with pests relative to men. Women who reported having small gardens found it feasible to use alternatives to chemicals for managing pests in the garden. Despite all of this, several married women reported that their husbands usually take the lead in managing pest and weeds. Female focus group participants had very strong negative views on chemicals and expressed that they were "scary." This opinion could be a reason why women were more likely to pull weeds or simple home remedies such as "soapy water mix" or "baking soda" than men. On the other hand, men in the focus groups had a more neutral standpoint to using chemicals and believed that it was justifiable to spray in moderation. However, women who used chemical sprays to manage their weeds or pests often turned to Hardware or Garden store employees for recommendations and often were lead to using harsh, but "effective" chemical sprays. Women seemed less inclined than men to remember the names of the products they used; a few used the term "industrial strength" to describe the products recommended to them by store employees.

### *6.1.10. The Health of Children and Pets Matter (The Environment? Not so Much)*

Focus group participants who had pets were much more aware of the harmful effects of chemicals. Those who owned pets such as chickens, cats, or dogs also found their animals to

be an effective and natural way of managing pests. Also, pet owners were more aware of the effect of poisons in the ecosystem and were more likely to use traps to control pests and rodents rather than poisons. Those participants who had young children or household members with health problems, such as asthma or allergies, were also more cautious about using chemicals in or around their property and expressed more interest in using non-toxic alternatives. Participants who hired a pest management service were more concerned about the effects of the chemical indoors rather than outdoors, and they sought the reassurance of the professional sprayer to tell them "don't worry, it's safe." The rare few participants who were more knowledgeable about chemicals expressed fear over the consequences of using such chemicals on their health and the environment. Participants generally believed that harsh chemicals could be poisonous and cause cancer. Approximately one participant per focus group made the connection between water quality, including run-off, and concern about chemicals used for pest management. Other environmental concerns regarding the use of chemicals included toxic buildup and air quality, but these connections were rarely brought up without any prompting.

#### *6.1.11. Disposal Well Understood*

Whenever the topic turned to disposing of leftover pesticides or containers, most participants demonstrated knowledge about taking extra care to dispose properly by taking the items to a local household hazardous waste center. Those who knew the locations by heart showed pride in this fact, and others sought their knowledge, especially upon hearing that HHW centers often give away free items such as leftover paint.

#### *6.1.12. In the Neighborhood: HOA Rules Apply Pressure, Neighbors Do Not*

Typically, focus group participants did not actively monitor or pay attention to their neighbor's gardening or pest management behaviors. They believed that they were being respectful to their neighbors by not encroaching on their beliefs and that this would be a sensitive topic to bring up. However, those participants who lived in more densely populated communities expressed that they felt pressured by homeowners' associations or other neighbors to keep their lawn and gardens a certain way, which made them more prone to using chemicals. More than all other regions, South County participants expressed either the most neutral or positive views towards their neighbor's lawn or garden care and pest management practices. In the West County, there was a substantial desire for community; several older participants expressed a longing or nostalgia for times when neighbors held closer relationships with one another.

#### *6.1.13. Listen to the People!*

Towards the end of each focus group session, once all questions were answered and the discussions had run their course, the great majority of participants expressed gratitude towards and admiration for the CCCWP. They found it refreshing that the CCCWP municipalities would put in effort and resources to hear from residents before developing a program. Many people lingered to continue having discussions, and several asked for ways to get more involved or to learn more. Residents seemed more than willing to play a role if given the opportunity. The more conscientious "MVPs" could make great community champions in a future outreach campaign.

## 6.2. Predictors of Pesticide Usage

While the section above provides a qualitative look of the focus group respondents, the section below is based on statistical findings that were significant from the phone survey questions that asked about pest management. Most of the conclusions are somewhat redundant since the focus groups already helped to shed light on them; nevertheless, they help to reinforce some of the more anecdotal focus group results with some hard data.

#### *6.2.1. Women More Likely to Practice (or be willing to try) Pro-Environmental Behaviors*

Logistic regression and chi square analyses supported the notion that females were 1.77 times less likely to use pesticides than were their male counterparts ($p<.0001$). Additionally, women were significantly more likely to be willing to use an eco-friendly pesticide in the future, scoring an average of 0.64 points higher than men ($p<.03$).

#### *6.2.2. Outsourcing Pest Control Depends on Region*

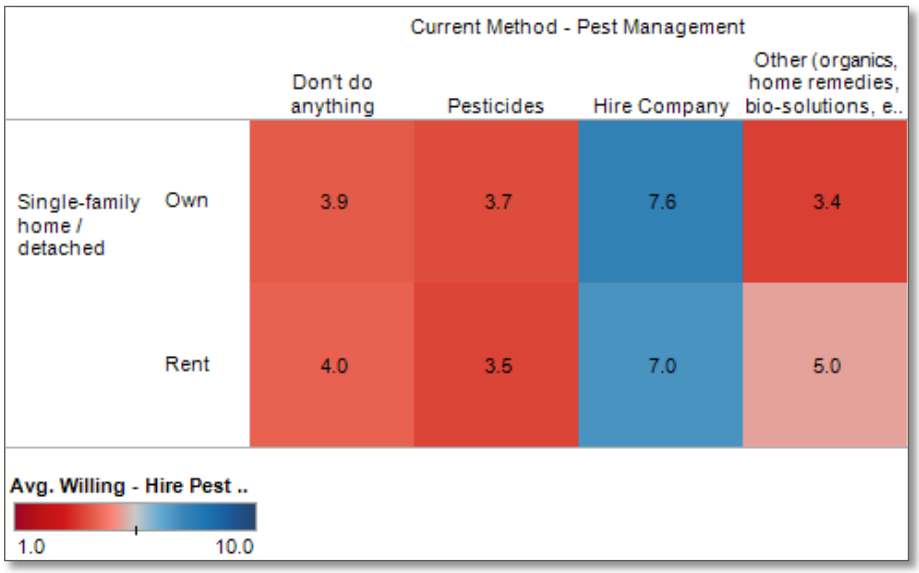
Whether an individual outsourced their pest control issues or tackled them alone was primarily determined by where they lived within the County. Significantly more residents of East County (31%) and South County (28%) reported outsourcing pest control. On the other hand, a very small percentage of West County residents outsourced at only 9% and Central County fell somewhere in the middle with 16%.

### *6.2.3. Internet Users More Willing to Use Eco, Multi-Family Tenants Not Interested*

Frequency of internet, email, blog, Facebook, and YouTube use were all significant predictors of willingness to use eco-friendly pesticides. This may suggest that individuals using technologies frequently may be prime targets for the campaign. It is important to note that it is possible, and in fact likely, that a 3rd variable, for instance, income or education (frequently associated with technology use) is responsible for the observed association. If true, then higher incomes and/or more years of education would be associated with higher willingness to use eco-friendly pesticides. A significant finding was that residents who live in multi-family establishments are 2.11 times less willing to use eco-friendly pesticides compared to people who live in single-family homes.

### *6.2.4. Switching to Eco-Friendly Operator More Likely Than Starting to Use One*

***Figure 6.2.4.*** Current Pest Management Methods and Willingness of Single-family Home Owners and Renters to Perform Desired Behavior




When asked about willingness to hire an eco-friendly pest management operator the next time the participant needs to take action, average willingness scores were very low for residents who do not normally hire a company. Participants who currently hire a company to manage pests report they would be willing to consider an eco-friendly operator the next time. It is assumed that the reason is that it may not be a big change from their perspective – it is easier to modify an existing behavior than to start a brand new one. The visual "heatmap"

above shows willingness and unwillingness amongst single-family home residents, based on their current method of pest management.

## 6.3. Messaging Recommendations

In developing messaging for any ensuing pesticide outreach in Contra Costa, the following are findings to be considered actionable:

### *6.3.1. Messaging is Not a One Size Fits All*

There is a wide spectrum of relationships with pesticide uses in the County ranging from people who use whatever it is that the pesticide company tells them to use, all the way to people who have performed extensive research and employ multi-lateral non-toxic solutions. Factoring in the regional differences inherent to Contra Costa, it should be stressed that no single message is going to effectively persuade all or even a majority of residents. Consequently, employing multiple messages targeted to the identified sub audiences is recommended.

### *6.3.2. Do Not Seek to Establish Danger of Pesticides*

Across the board, no one believes that pesticides and chemicals are benign. Even those who regularly employ aggressive chemical solutions to pest (as well as other) home problems do acknowledge that "these chemicals aren't good for me." As such, messaging does not need to hinge on raising awareness related to the potential harmful effects of chemicals on the environment and public health. This is not to suggest that messaging should never discuss the effects of toxic chemicals, rather, that messaging seeking to establish the connection between chemicals and negative consequences is redundant.

### *6.3.3. Focus on the Kids, Avoid Focus on Water and Ambiguous Messaging*

With the potential exception of East County, water and the protection of water would not be an effective motivator. The connection was very rarely made without some prompting, and messaging aiming to emphasize it would face an uphill battle. Likewise, *Our Water Our World* was not identified by any participant as a known entity or a persuasive message – most expressed confusion and assumed it was a generic environmental slogan. Alternatively, public health related to children and pets is clearly a strong motivator in people caring for either or both.

### *6.3.4. Talk Bugs with Women & Talk Weeds with Men*

Men and women have different triggers regarding pesticides so it may be beneficial to run separate messaging for each group. Women have an acute emotional reaction to specific "bugs" entering their living space. When this invasion is noted, even women who are otherwise adverse to using pesticides will rapidly progress into the use of "nuclear options" as one focus group respondent said. Ants, spiders, rats, and gophers are the prime offenders. This underscores another area of potential messaging focus: toxic solutions are thought to be more effective than natural/non-toxic remedies. Alternatively, men are less concerned about "bugs" inside as they are weeds on their lawns and crop destroying pests on their vegetables and gardens.

Messaging for females should work with acknowledging emotional impact of big invasion so as to first form trust with audience. Then offer practical alternatives. Similarly with males, begin with acknowledging the pride of a man and his lawn/vegetables then move into practical alternatives.

### *6.3.5. Beware of RoundUp*

The weed killer, RoundUp, bills itself as a non-harmful weed killer. While the political ramifications of running a campaign to counter a concerted effort on the part of RoundUp, may be detrimental, it should be noted that public misconceptions regarding the degradation process of chemicals in RoundUp is a potential barrier. Additionally, as more and more pesticide providers key into the growing anti-chemical public sentiment, more pesticide providers may begin presenting harmful toxic chemical laden options as non-harmful.

One actionable recommendation is to name specific brands as offenders. It is not recommended to broadcast specific chemicals such as Pyrethroids as it is unlikely the public will remember those names. It should be noted that selecting this course of aggressive messaging should be done with careful consideration of external factors.

### *6.3.6. Create a Forum for Swapping Home Remedies*

While there is widespread confusion regarding effective non-toxic remedies for dealing with pests, the vast majority of people do want to know about potential non-toxic solutions. Messaging which features non-toxic solutions may be effective, particularly with women. Furthermore, people like to share, swap, and tell stories about home remedies. Therefore, developing crowd-sourced information is of value. The cursory research indicates that the cause of this interest would be cost savings. However, with focus group participants from all

levels of income and locations demonstrating the same desire to discuss home remedies, the more likely cause of this interest is the ease of using something which is already around the house (as opposed to having to go out and buy something) and the basic human desire to communicate and discuss problems, solutions, and stories.

### *6.3.7. Leverage the Distrust for Exterminators and Encourage Switch to Eco-Operators*

Residents in South, Central and East County are likely to hire pest management professionals, and there is reported willingness to switching to hiring an eco-friendly company. Therefore, a viable messaging platform can be built on encouraging residents to hire professionals who employ non-toxic mechanisms such as non-pyrethroid sprays; a "Know what you're hiring" type of campaign. It should also be noted that most people hiring these services either did not like the exterminators themselves or did not feel comfortable with perimeter sprays "going all over the place." Potential messaging in this arena should play on dissatisfaction with level of expertise of exterminators and general mistrust of companies saying that "chemicals are safe for kids." Focus messaging on educated hiring: *e.g. "the exterminators don't live in your home, you do. Make sure that they use the right pesticides and chemicals so your kids and pets remain safe."*

### *6.3.8. Avoid the Bees Angle*

Rightly or wrongly, a lot of people connect the overuse of pesticides to the deterioration of bee populations. While this is an interesting finding, it is unlikely that any messaging hinging on this fact would effectively deal with the emotional reactions of bugs in the house or on valued exterior garden areas. This is because bees do not engender the emotional impact of invasion, which so often leads to the use of harmful pesticides.

### *6.3.9. Champions*

"MVPs", model citizens as they relate to responsible pest management, were found in each of the focus groups conducted (approximately one per group). Assuming they represent roughly 10-15% of the general lawn owning population of Contra Costa, there is a powerful, untapped resource waiting to be given a role, if first identified. These are folks who have a sense of pride in their hobby, and a culture of responsibility and stewardship. While others may have gaps in knowledge, resources, these "MVPs" do not. Therefore, in creating a sustainable, persisting solution, this group of people could be relied upon to teach, debunk rumors, and champion the cause. Focus on first identifying these people before treating them as experts who can weigh in on messaging, help disseminate information to the public, or develop teaching workshops.

## 7. LIMITATIONS & STRENGTHS

The results of the survey and focus groups should be viewed in light of a few limitations. One limitation of the survey was that the average age of respondents was 62.2 ± 16.1 years old, considerably older than the mean age of the County 38.3 ± 0.1 years old. This is mostly due to the fact that residents under the age of 18 (25% of the County population) were not eligible to take the survey. Additionally, only individuals with landline telephone numbers were contacted, so people who have only cell phones were not contacted – typically a younger population. This may limit the generalizability of the findings. For our purposes, our target audience is typically older than the County average, so skewing towards an older population is less of a limitation than initially considered. Administering surveys by phone is more economical than surveying in-person. phone surveys allowed us to use random-digit dialing to ensure a random sample and access otherwise difficult-to-reach populations.

The study had several strengths of note. First, we took a two-pronged approach by leveraging surveys and focus groups. Surveys were administered by phone, which is more economical than surveying in-person. Also, phone surveys allowed us to use random-digit dialing to ensure a random sample and access otherwise difficult-to-reach populations. The surveys provided a large sample size, which enabled inferential statistical testing that dug into the empirical relationships among our key BMP. We were able to draw conclusions and provide program recommendations with a high degree of confidence – much higher than traditional "status update" phone surveys. The way our survey was designed went the extra mile to facilitate program planning. Second, the focus groups dove into the emotional details related to pesticides; content that cannot be captured by surveys. Therefore the research was able to address the big picture as well as pesticide-specific components. Another strength came through dividing the County into regions, and then ensuring equal coverage across regions for survey responses and holding focus group sessions in all regions. This approach guaranteed that residents in all parts of the County, including unincorporated areas, had chances to be represented.

# APPENDIX A: DEFINITION OF GOALS, STRATEGY, OBJECTIVES & TACTICS

| | |
|---|---|
| **Goals** | Goals are required to set the program's big picture view. Goals are usually characterized by the following:<br>• Lofty<br>• Difficult to measure<br>• Nebulous<br><br>*Ex 1: I want to be a better basketball player*<br><br>*Ex 2: Change behaviors to protect water quality* |
| **Strategy** | Strategy is the general approach that will be used in order to help the program reach its goals.<br><br>*Ex 1: I'm going to cut back the time I spend playing on all other sports and focus solely on sharpening my basketball skills.*<br><br>*Ex 2: Do a series of Action Campaigns focused around specific end state behaviors such as "get people to try a non-toxic pest/weed alternative"* |
| **Objectives** | Objectives are necessary in order to see if the Education Program has come any closer to reaching the goals. Whereas goals are hard to pin down, objectives should be very specific. Objectives are usually characterized by the following:<br>▪ Numerics driven<br>▪ Specific and measurable<br><br>*Ex 1: I'm going to improve my free throw percentage by 20%*<br><br>*Ex 2: 26% more people know about one of the 6-8 end-state nontoxic alternatives relative to those who didn't participate in the campaign*<br><br>Contra Costa's four campaign objectives categories (Knowledge, Interpersonal Communication, Willingness and Behavior Change) are modeled around the community based social marketing methodology and research that has demonstrated the efficacy in using these four categories as measures of success (Hayden & Deng).<br><br>All objectives for the Contra Costa plan were created using the recommended SMART approach (Specific, Measurable, Attainable, Relevant and Time Sensitive). While there are several variables that differentiate programs, and there currently exists no industry standard for calculating exact numeric objectives (see Weinreich, Nedra K & National Social Marketing Center), we have established our objectives by focusing on a few key factors. Those factors are budget, population of target audience, and time duration of program. We have researched programs with similar budgets and similar end state behaviors to use as guiding posts in an effort to create meaningful numbers that are challenging yet achievable. ***Appendix L*** outlines the process taken in determining the objectives outlined on ***Table 3.2.*** on page 7.<br><br>Another characteristic of Contra Costa's objectives, and a CBSM best practice, is that objectives are focused around end-state behaviors (Mohr, Lee, Schultz, et al, page 6). End state behaviors are defined as those that are not divisible by other activities and that address the desired action (i.e. take more public transit is not an end-state behavior, whereas use the bus at least once every week is an end-state behavior). |

| | |
|---|---|
| | As a final note, a point of importance related to the "Knowledge" objective is that research has shown that attitudes are more difficult to change than awareness (Bamberg & Guido, page 16). Knowledge is factual and irrefutable, while attitudes may be open to interpretation. Because the audience have already demonstrated a bias towards thinking that eco pest alternatives may not be as effective, it is important to consider the "Knowledge" objectives as a combination of both awareness and attitude. |
| **Tactics** | Tactics are where the rubber meets the road. Tactics are the specific interventions that a program will do in order to help reach the objective. Tactics are usually characterized by the following:<br>▪ Tools to get to the objectives<br><br>*Ex 1: I'm going to practice my free throw shooting for 20 minutes a day and watch lots of professional basketball games.*<br><br>*Ex 2: Conduct hands-on workshops* |

# APPENDIX B: MUNICIPAL REGIONAL PERMIT REQUIREMENTS

## Stormwater Permit Requirements categorized by Pollutant Type

***General Watershed***

MRP C.5
MRP C.7.a
MRP C.7.c
MRP C.7.d
MRP C.7.e
MRP C.7.f
MRP C.7.g
MRP C.7.h
MRP C.8.f

***Litter (Youth)***

MRP C.5.c
MRP C.7.b
MRP C.7.c
MRP C.7.e
MRP C.7.g
MRP C.10.b

***Pesticides (Home Gardeners)***

MRP C.7.b
MRP C.7.c
MRP C.7.e
MRP C.9.h
MRP C.9.h.iii
MRP C.15.b.vi.(1)(b)

***Pesticides (commercial: pest control experts, suppliers, hardware stores, nurseries, landscape maintenance)***

MRP C.9.h.v
MRP C.15.b.vi.(1)(a,c,d)

***Automotive Pollutants (DIYers)***

MRP C.7.c
MRP C.7.e

***Car Wash Runoff (Residents)***

MRP C.7.c
MRP C.7.e
MRP C.15.b.iii.iv

***Pool and Spa Maintenance (pool owners - private or shared)***

MRP C.7.e
MRP C.15.b.v.(d)

***Toxic Chemicals and Copper (Pool/spa maintenance professionals, property managers)***

MRP C.15.b.v.(d)

***Pet Waste***

MRP C.7.c

***Mercury (General Public)***

MRP C.11.a

***Mercury (Medical facilities)***

MRP C.11.a

***PCBs (Angler communities)***

MRP C.12.i
MRP C.7.c

***Pharmaceuticals (General Public, Seniors?)***

MRP C.7.c

***Toxic Substances (mobile businesses)***

MRP C.5.d.ii

***Copper, Trash, Hazardous Waste (Construction industry)***

MRP C.3.a.i
MRP C.6.d.ii(3)
MRP C.13.a

## San Francisco Bay Region - MRP Stormwater Permit Requirements

*December 1, 2009 San Francisco Bay Regional Water Quality Control Board Municipal Regional Permit (MRP) R2-2009-0074*

### C.3. New Development and Redevelopment and C.3.a. New Development and Redevelopment Performance Standard Implementation

***Target Audience***

Low Impact Development audiences (LID) - development and redevelopment projects, municipal staff, developers, contractors, construction site operators, and owner/builders

***Specific Pollutants***

- Copper
- Trash (Litter)
- Hazardous Waste
- Pesticides
- Fertilizers
- Litter
- Swimming pool water
- Cleaning products
- Soluble and insoluble
- stormwater runoff pollutant discharges

***Requirements***

(5) Provide outreach adequate to implement the requirements of Provision
C.3, including providing education materials to municipal staff, developers, contractors, construction site operators, and owner/builders,
early in the planning process and as appropriate.

***Ways to Comply***

Contra Costa should already be fully implemented because it has been required in the Permittees' existing stormwater permits.

4/2013: The primary resource is the Program's Stormwater C.3 Guidebook. Several fact sheets have also been developed when new requirements were being implemented.

***Frequency***

Immediate for C.3.a.i.(1)-(5)

(The following may already have been implemented: ii. Implementation Level – Most of the elements of this task should already be fully implemented because they are required in the Permittees' existing stormwater permits. Due Dates for Full Implementation – Immediate for C.3.a.i.(1)-(5), May 1, 2010 for C.3.a.i.(6)-(7), and ecember 1, 2010 for

C.3.a.i.(8). For Vallejo Permittees: December 1, 2010 for C.3.a.i.(1)-(8))

2011 Annual Report should include a summary of methods of implementation

## C.5. Illicit Discharge Detection and Elimination and C.5.c. Spill and Dumping Response, Complaint Response, and Frequency of Inspections

***Target Audience***
General Public

***Specific Pollutants***
All

***Requirements***
Permittees shall have a central contact point, including a phone number for complaints and spill reporting, and publicize this number to both internal Permittee staff and the public. If 911 is selected, also maintain and publicize a staffed, non-emergency phone number with voicemail, which is checked during normal business hours. Permittees shall develop a spill/dumping response flow chart and phone tree or contact list for internal use that shows the various responsible agencies and their contacts, who would be involved in illicit discharge incident response that goes beyond the Permittees immediate capabilities. The list shall be maintained and updated as changes occur.

***Way to Comply***

(1) Permittees shall conduct reactive inspections in response to complaints and follow-up inspections as needed to ensure that corrective measures have been implemented to achieve and maintain compliance.
(2) Permittees will have the phone number and contact information available and integrated into training and outreach both to Permittee staff and the public by July 1, 2010.
(3) 4/2013: This a muncipal-level task and should be in place.

***Frequency***
One time set up, inspections and follow-up inspections as needed

## C.5. Illicit Discharge Detection and Elimination and C.5.d.ii Control of Mobile Sources

***Target Audience***

Mobile Businesses (ie. automobile washing, power washing, steam cleaning, and carpet cleaning)

***Specific Pollutants***

- Automotive Pollutants
- Toxic Substances
- Cleaning products
- Fats, Oil, Grease (FOG)
- Others

***Requirements***

(1) Task Description – The purpose of this section is to establish oversight and control of pollutants associated with mobile business sources.

(2) Each Permittee shall develop and implement a program to reduce the discharge of pollutants from mobile businesses.

(3) Outreach to mobile businesses operating within the Permittee's jurisdiction with minimum standards and BMP requirements and local ordinances through an outreach and education strategy.

***Way to Comply***

(1) Permittees should cooperate regionally in developing and implementing their programs

(2) 4/2013: Work on this task is ongoing

***Frequency***

N/A

## C.6. Construction Site Control and C.6.d.ii Plan Approval Process

***Target Audience***

(1) Construction site operators/developers

(2) Specific Pollutants

(3) Sediments

(4) Other discharges associated with construction activities in the Construction General Permit: Erosion Control, Run-on and Run-off Control, Sediment Control, Active Treatment Systems (as necessary), Good Site Management, and Non Stormwater Management.

***Requirements***

Provide construction stormwater management educational materials to site operators/developers, as appropriate.

***Way to Comply***

4/2013: The materials developed are old and need updating. Efforts to do this have been delayed due to other competing priorities. Ideally, this could be a BASMAA task. The BASMAA Development Committee has recognized this need but no one was willing to take the lead.

***Frequency***

Before approval and issuance of local grading permits

## C.6.e. Inspections and ii. Implementation Level (3) Contents of Inspections

***Target Audience***
Construction site operators/developers

***Specific Pollutants***
- Sediments
- Other discharges associated with construction activities in the Construction General Permit: Erosion Control, Run-on and Run-off Control, Sediment Control, Active Treatment Systems (as necessary), Good Site Management, and Non Stormwater Management.

***Requirements***
Inspections shall focus on the adequacy and effectiveness of the site specific BMP implemented for the six categories listed in C.6.c.i. Permittees shall require timely corrections of all actual and potential problems observed. Inspections of construction sites shall include, but are not limited to, the following:

(1) Education on stormwater pollution prevention, as needed.

***Way to Comply***
4/2013: See comment above

***Frequency***
N/A

## C.7. Public Information and Outreach and C.7.a. Storm Drain Inlet Marking

***Target Audience***
General Public

***Specific Pollutants***
All

***Requirements***
Task Description - Permittees shall mark and maintain at least 80 percent of municipally-maintained storm drain inlets with an appropriate stormwater pollution prevention message, such as “No dumping, drains to Bay” or equivalent.

***Way to Comply***
Mark and maintain at least 80 percent of municipally-maintained storm drain inlets with an appropriate stormwater pollution prevention message, such as “No dumping, drains to Bay” or equivalent. If storm drain marking can be conducted as a volunteer activity, it has additional public involvement value.

***Frequency***
Inspected and maintained at least once per 5-year permit term.

## C.7.b. Advertising Campaigns

***Target Audience***
Any

***Specific Pollutants***
Litter Pesticides

***Requirements***

(2) Task Description - Permittees shall participate in or contribute to advertising campaigns on trash/litter in waterways and pesticides with the goal of significantly increasing overall awareness of stormwater runoff pollution prevention messages and behavior changes in target audience.

(3) Implementation Level - Target a broad audience with two separate advertising campaigns, one focused on reducing trash/litter in waterways and one focused on reducing the impact of urban pesticides. The advertising campaigns may be coordinated regionally or County-wide.

(4) Permittees shall conduct a pre-campaign survey and a post-campaign survey to identify and quantify the audiences' knowledge, trends, and Permittees shall conduct a pre-campaign survey and a post-campaign survey to identify and quantify the audiences' knowledge, trends, and attitudes and/or practices; and to measure the overall population's awareness of the messages and behavior changes achieved by the two advertising campaigns. These surveys may be done regionally or Countywide.

***Way to Comply***

(1) Foundational Planning Surveys & Evaluative Surveys will help identify and quantify the audiences' knowledge, trends, and attitudes and/or practices; and to measure the overall population awareness of the messages and behavioral changes.

(2) Use of various electronic and/or print media on trash/litter in waterways and pesticides. The Bay Area Management Agencies Association (BASMAA) already implements an advertising campaign on behalf of the Permittees.

***Frequency***
Pre-campaign survey and a post-campaign surveys

## C.7.c. Media Relations – Use of Free Media

***Target Audience***
Any

***Specific Pollutants***
- Litter
- Pesticides
- Motor Oil
- Car Wash Runoff
- Pet Waste

***Requirements***
Task Description - Permittees shall participate in or contribute to a media relations campaign. Maximize use of free media/media coverage with the objective of significantly increasing the overall awareness of stormwater pollution prevention messages and associated behavior change in target audiences, and to achieve public goals.

***Way to Comply***
Public service media time is available and allow the Permittees to leverage expensive media purchases to achieve broader outreach goals.

***Frequency***
Conduct a minimum of six pitches (e.g., press releases, public service announcements, and/or other means) per year at the County-wide program, regional, and/or local levels.

## C.7.d. Stormwater Point of Contact

***Target Audience***
General Public

***Specific Pollutants***
- Litter
- Pesticides
- Motor Oil
- Car Wash Runoff
- Pet Waste

***Requirements***
Task Description – Permittees shall individually or collectively create and maintain a point of contact, e.g., phone number or website, to provide the public with information on watershed characteristics and stormwater pollution prevention alternatives.

Implementation Level – Maintain and publicize one point of contact for information on stormwater issues. Permittees may combine this function with the complaint/spill contact required in C.5.

***Way to Comply***

Permittees already have existing published stormwater point of contacts.

***Frequency***
Ongoing

## C.7.e. Public Outreach Events

***Target Audience***
Do-it-yourselfers

***Specific Pollutants***
- Motor Oil
- Automotive Pollutants
- Cleaning Products

***Requirements***
Task Description – Participate in and/or host events such as fairs, shows, workshops, (e.g., community events, street fairs, and farmers' markets), to reach a broad spectrum of the community with both general and specific stormwater runoff pollution prevention messages. Pollution prevention messages shall include encouraging residents to (1) wash cars at commercial car washing facilities, (2) use minimal detergent when washing cars, and (3) divert the car washing runoff to landscaped area.

***Way to Comply***
Previously: Staffing tables or booths at fairs, street fairs or other community events are a long-established outreach mechanism employed by Permittees to reach large numbers of citizens with stormwater pollution prevention information in an efficient and convenient manner. These have been ongoing in the Region for several municipal stormwater permit cycles and are MEP outreach actions. Permittees shall continue with such outreach events utilizing appropriate outreach materials, such as printed materials, newsletter/journal articles, and videos. Permittees shall also utilize existing community outreach events such as the Bringing Back the Natives Garden Tour.

Now:

Future:

Should a public outreach event contain significant citizen involvement elements, the Permittee may claim credit for both Public Outreach Events (C.7.e.) and Citizen Involvement Events (C.7.g.).

***Frequency***
8 events annually (population >250,000)

## C.7.f. Watershed Stewardship Collaborative Efforts

***Target Audience***
General Public, via collaboration with Community Groups

***Specific Pollutants***
- Litter
- Others

***Requirements***
(1) Task Description – Permittees shall individually or collectively encourage and support watershed stewardship collaborative efforts of community groups such as the Contra Costa Watershed Forum, the Santa Clara Basin Watershed Management Initiative, "friends of creek" groups, and other organizations that benefit the health of the watershed such as the Bay-Friendly Landscaping and Gardening Coalition. If no such organizations exist, encourage and support development of grassroots watershed groups or engagement of an existing group, such as a neighborhood association, in watershed stewardship activities.
(2) Coordinate with existing groups to further stewardship efforts.

***Way to Comply***
Previously: Citizen involvement and volunteer
Efforts both accomplish needed creek cleanups and restorations, and serve to raise awareness and provide outreach opportunities. These have been ongoing in the Region for several municipal stormwater permit cycles and are MEP outreach actions.

Now: Foundational Planning - Stakeholder Analysis

Future:

***Frequency***
Annually demonstrate effort

## C.7.g. Citizen Involvement Events

***Target Audience***
General

***Specific Pollutants***
- Litter
- Others

***Requirements***

Task Description – Permittees shall individually or collectively, support citizen involvement events, which provide the opportunity for citizens to directly participate in water quality and aquatic habitat improvement, such as creek/shore clean-ups, adopt-an-inlet/creek/beach programs, volunteer monitoring, service learning activities such as storm drain inlet marking, community riparian

restoration activities, community grants, other participation and/or host volunteer activities.

***Way to Comply***
Previously:

Now:

Future:

Should a citizen involvement event contain significant public outreach elements, the Permittee may claim credit for both Citizen Involvement Events (C.7.g.) and Public Outreach Events (C.7.e.).

***Frequency***
5 events annually (population > 250,000)

## C.7.h. School-Age Children Outreach

***Target Audience***
School-Age Children

***Specific Pollutants***
All

***Requirements***
Task Description – Permittees shall individually or collectively implement outreach activities designed to increase awareness of stormwater and/or watershed message(s) in school-age children (K through 12).

***Way to Comply***
Previously:

Now: Youth Outreach Program 2013

Future:

***Frequency***
Implement annually and demonstrate effectiveness of efforts through assessment.

## C.7.i. Outreach to Municipal Officials

***Target Audience***
Municipal Officials

***Specific Pollutants***

All

***Requirements***
Task Description – Permittees shall conduct outreach to municipal officials. One alternative means of accomplishing

this is through the use of the Nonpoint Education for Municipal Officials program (NEMO) to significantly increase overall awareness of stormwater and/or watershed message(s) among regional municipal officials.

***Way to Comply***
4/2013: The Program's 2012 Community Clean Water Initiative involved numerous presentations and information to municipal officials. We have determined that this activity essentially met this requirement.

***Frequency***
At least once per permit cycle, or more often. Permittees shall summarize efforts in the 2013 Annual Report.

## C.8. Water Quality Monitoring and C.8.f.ii Citizen Monitoring and Participation

***Target Audience***
General Public

***Specific Pollutants***
All

***Requirements***
(1) CWA section 101(e) and 40 CFR Part 25 broadly require public participation in all programs established pursuant to the CWA, to foster public awareness of environmental issues and decision-making processes.
(2) Make reasonable efforts to seek out citizen and stakeholder information and comment regarding waterbody function and quality report on efforts

***Way to Comply***
(1) Support current and future creek stewardship efforts by providing a framework for citizens and Permittees to share their collective knowledge of creek conditions; and encourage Permittees to use and report data collected by creek groups and other third-parties when the data are of acceptable quality.
(2) 4/2013: The activities implemented in compliance with C.7.b.,e, f, g, and h., and C.8.f substantively fullfill this requirement.

***Frequency***
N/A

## C.9.h. Public Outreach and i. Point of Purchase Outreach

***Target Audience***

(1) Home improvement stores
(2) Gardening stores
(3) Pool supplies stores
(4) Grocery stores
(5) Hardware stores

***Specific Pollutants***

Pesticides

***Requirements***

The Permittees shall:

(1) Conduct outreach to consumers at the point of purchase;
(2) Provide targeted information on proper pesticide use and disposal, potential adverse impacts on water quality, and less toxic methods of pest prevention and control; and
(3) Participate in and provide resources for the "Our Water, Our World" program or a functionally equivalent pesticide use reduction outreach program.

***Way to Comply***

(1) Permittees who participate in a regional effort to comply with C.9.h.i. may reference a report that summarizes these actions.
(2) May be done jointly with other Permittees, such as through CASQA or BASMAA and/or the Urban Pesticide Pollution Prevention Project or the Bay-Friendly Landscaping and Gardening Coalition).
(3) 4/2013: We support OWOW which is focused on the point of purchase contact with consumers.

***Frequency***

N/A

## C.9.h. Public Outreach and iii. Pest Control Contracting Outreach

***Target Audience***

Residents who use contractors for structural or landscape pest control

***Specific Pollutants***

Pesticides

***Requirements***

Pest Control Contracting Outreach: The Permittees shall conduct outreach to residents who use or contract for structural or landscape pest control and shall:

(1) Provide targeted information on proper pesticide use and disposal, potential adverse impacts on water quality, and less toxic methods of pest prevention and control, including IPM;
(2) Incorporate IPM messages into general outreach;

(3) Provide information to residents about "Our Water, Our World" or functionally equivalent program;
(4) Provide information to residents about EcoWise Certified IPM certification in Structural Pest Management, or functionally equivalent certification program; and
(5) Coordinate with household hazardous-waste programs to facilitate appropriate pesticide waste disposal, conduct education and outreach, and promote appropriate disposal.

***Way to Comply***

1. Provide targeted information on proper pesticide use and disposal, potential adverse impacts on water quality, and less toxic methods of pest prevention and control, including IPM;
2. Incorporate IPM messages into general outreach;
3. Provide information to residents about "Our Water, Our World" or functionally equivalent program;
4. Provide information to residents about EcoWise Certified IPM certification in Structural Pest Management, or functionally equivalent certification program; and
5. Coordinate with household hazardous-waste programs to facilitate appropriate pesticide waste disposal, conduct education and outreach, and promote appropriate disposal.

(4) May be done jointly with other Permittees, such as through CASQA or BASMAA and/or the Urban Pesticide Pollution Prevention Project or the Bay-Friendly Landscaping and Gardening Coalition).

***Frequency***

N/A

## C.9.h. Public Outreach and v. Outreach to Pest Control Operators

***Target Audience***

Pest control operators (PCOs) and landscapers

***Specific Pollutants***

Pesticides

***Requirements***

v. Outreach to Pest Control Operators: The Permittees shall conduct outreach to pest control operators (PCOs) and landscapers; Permittees are encouraged to work with DPR, County agricultural commissioners, UC-IPM, BASMAA, the Urban Pesticide Committee, the EcoWise Certified Program (or functionally equivalent certification program), the Bio-integral Resource Center and others to promote IPM to PCOs and landscapers.

***Way to Comply***

(1) Permittees are encouraged to work with DPR, County agricultural commissioners, UC-IPM, BASMAA, the Urban Pesticide Committee, the EcoWise Certified

Program (or functionally equivalent certification program), the Bio-integral Resource Center and others to promote IPM to PCOs and landscapers

(2) May be done jointly with other Permittees, such as through CASQA or BASMAA and/or the Urban Pesticide Pollution Prevention Project or the Bay-Friendly Landscaping and Gardening Coalition.

***Frequency***
N/A

## C.10.b.i, ii. Trash Hot Spot Selection and Clean Up

***Target Audience***
General Public

***Specific Pollutants***
Litter

***Requirements***

(1) Hot Spot Cleanup and Definition – The Permittees shall cleanup selected Trash Hot Spots to a level of "no visual impact" at least one time per year for the term of the permit. Trash Hot Spots shall be at least 100 yards of creek length or 200 yards of shoreline length.

(2) Hot Spot Selection - Trash Hot Spots must be cleaned up as an interim measure until complete abatement of trash loads occurs. Volume of material removed is measured, along with dominant types of trash removed. Photographs are recorded both before and after cleanup, to add to the record and verify cleanup.

***Way to Comply***
Hold a clean-up event?

***Frequency***
N/A

## C.11. Mercury Controls and C.11.a. Mercury Collection and Recycling Implemented throughout the Region

***Target Audience***

(1) General Public
(2) Retail stores

***Specific Pollutants***
Mercury

***Requirements***
The Permittees shall promote, facilitate, and/or participate in collection and recycling of mercury containing devices and equipment at the consumer level (e.g., thermometers, thermostats, switches, bulbs). Mercury is found in a wide variety of consumer products (e.g., fluorescent bulbs,

thermometers, etc) that are subject to recycling requirements. These recycling efforts are already happening throughout the Region, and Provision C.11.a requires promotion, facilitation and/or participation in these region-wide recycling efforts to increase effectiveness and public participation.

***Way to Comply***

4/2013: More could be done on this. Outreach also provided by HHW facilities and agencies

***Frequency***

N/A

## C.12. PCBs Controls and C.12.i. Development of a Risk Reduction Program Implemented throughout the Region

***Target Audience***

(1) Angler communities
(2) Fish consumers

***Specific Pollutants***

Sediment-bound PCBs

***Requirements***

(1) Task Description – The Permittees shall develop and implement or participate in effective programs to reduce PCBs-related risks to humans and quantify the resulting risk reductions from these activities.
(2) Provision C.12.i. requires actions that manage human health risk due to mercury and PCBs. These may include efforts to communicate the health risks of eating Bay fish and other efforts aimed at high risk-communities.

***Way to Comply***

The risk reduction activities shall include investigating ways to address public health impacts of PCBs in San Francisco Bay/Delta fish, including activities that reduce actual and potential exposure of health impacts to those people and communities most likely to be affected by PCBs in San Francisco Bay-caught fish, such as subsistence fishers and their families. Such strategies should include public participation in developing effective programs in order to ensure their effectiveness. The Permittees may include studies needed to establish effective exposure reduction activities and risk communication messages as part of their planning. The risk reduction activities may be performed by a third party if the Permittees wish to provide funding for this purpose. This requirement may be satisfied by a combination of related efforts through the Regional Monitoring Program or other similar collaborative efforts.

***Frequency***

N/A

## C.13. Copper Controls and C.13.a.ii(3) Manage Waste Generated from Cleaning and Treating of Copper Architectural Features, Including Copper Roofs, during Construction and Post-Construction.

***Target Audience***
N/A

***Specific Pollutants***
N/A

***Requirements***
(1) The Permittees shall ensure that local ordinance authority is established to prohibit the discharge of wastewater to storm drains generated from the installation, cleaning, treating, and washing of the surface of copper architectural features, including copper roofs to storm drains.
(2) Educate installers and operators on appropriate BMP

***Way to Comply***
4/2013: Some outreach information has been developed elsewhere; however, this has been a need for the municipalities.

***Frequency***
N/A

## C.15.b. Conditionally Exempted Non-Stormwater Discharges and iv. Discharge Type – Individual Residential Car Washing Required BMP

***Target Audience***
Residents who wash their own cars

***Specific Pollutants***
- Motor Oil
- Automotive Pollutants
- Cleaning Products

***Requirements***
(1) The Permittees shall discourage through outreach efforts individual residential car washing within their jurisdictional areas that discharge directly into their MS4s.
(2) The Permittees shall encourage individuals to direct car wash waters to landscaped areas, use as little detergent as necessary, wash cars at commercial car wash facilities, etc.

***Way to Comply***
4/2013: BASMAA Media Pitches have covered this topic.

***Frequency***

N/A

## C.15.b. Conditionally Exempted Non-Stormwater Discharges and v. Discharge Type – Swimming Pool, Hot Tub, Spa, and Fountain Water Discharges Required BMP

***Target Audience***
Commercial, municipal, and residential facilities with pools

***Specific Pollutants***
Polluted discharges from pools, hot tubs, spas, and fountains: water that contains chlorine residual, copper algaecide, filter backwash or other pollutants

***Requirements***
The Permittees shall improve their public outreach and educational efforts and ensure implementation of the required BMP and compliance in commercial, municipal, and residential facilities.

***Way to Comply***
4/2013: We developed BMP several years ago, but outreach efforts are currently non-existent.

***Frequency***
N/A

## C.15.b. Conditionally Exempted Non-Stormwater Discharges and vi. Discharge Type – Irrigation Water, Landscape Irrigation, and Lawn or Garden Watering

***Target Audience***
(1) Large-volume landscape irrigation
(2) Potable water purveyors

***Specific Pollutants***
- Pesticides
- Fertilizers
- Sediment

***Requirements***
The Permittees shall promote measures that minimize runoff and pollutant loading from excess irrigation via the following:

(1) Promoting outreach messages regarding the use of less toxic options for pest control and landscape management;
(2) Promoting and/or working with potable water purveyors to promote outreach messages that

encourage appropriate applications of water needed for irrigation and other watering practices

***Way to Comply***

4/2013: Work is needed in this area. The Pesticide Campaign should address "(b)". Promotion of and coordination with water purveyors has not happened at the Program level. We do promote smart irrigation systems in new and redevelopment projects as part of our C.3 Program (see the Program's Stormwater C.3 Guidebook).

***Frequency***

N/A

## APPENDIX C: LITERATURE REVIEW

# CCCWP Literature Review

January 24 2013

This literature review was conducted to lay the groundwork for honing in on Best Management Practices (BMP) and audience segments that the Contra Costa Clean Water Program may target in the coming years. The findings from this review will be referenced when designing the survey, focus groups, and in writing the strategic plan. Fifteen stormwater pollutants were identified and ranked, as they relate to the County. At the time of writing, these were only preliminary rankings, which can be adjusted with better information. Reviewed literature includes census data, annual reports, reports from similar Bay Area programs, and several research studies based on past campaigns.

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# Regional Breakdown

1. **West:** Hercules, Pinole, El Cerrito, San Pablo, Richmond
a. Unincorporated communities: Kensington, East Richmond Heights, North Richmond, El Sobrante, Montalvin/Tara Hills/Bayview, Rodeo, Crockett, and Port Costa

2. **Central:** Martinez, Pleasant Hill, Walnut Creek, Clayton, Concord
a. Unincorporated communities: Clyde, Contra Costa Centre, Mt. View, Pacheco, and Vine Hill

3. **East**: Pittsburg, Antioch, Brentwood, Oakley
a. Unincorporated communities: Bay Point, Bethel Island, Byron, Discovery Bay, and Knightsen

4. **South** (includes Lamorinda): San Ramon, Danville, Moraga, Lafayette, Orinda
a. Unincorporated communities: Alamo, Blackhawk, Diablo[1]

**Unincorporated communities were determined by their geographic locations in relation to the four major regions.*

# Census Data Summary

In 2011, according to the United States Census Bureau, Contra Costa County spanned 715.94 square miles and was home to approximately 1,066,096 residents.

**Table 1.** Demographics in Contra Costa County

| Demographic Characteristics of Contra Costa Residents | Percentage |
|---|---|
| Age<br>Under 18<br>Over 65 | %<br>24.2<br>12.8 |
| Gender<br>Female<br>Male | %<br>51.2<br>48.8 |
| Ethnicity<br>Caucasian<br>Black<br>Asian<br>Native American<br>Native Hawaiian<br>Hispanic/Latino<br>Two + races | %<br>68.8<br>9.7<br>15.2<br>1.0<br>0.6<br>24.8<br>4.8 |
| Education<br>High school diploma<br>Bachelor's degree or higher | %<br>88.5<br>38.4 |

| | |
|---|---|
| Primary Language<br>English<br>Other than English | %<br>77.2<br>32.8 |
| Housing<br>Homeownership rate<br>Median home value<br>Persons Living in Multi-family units | <br>68.3%<br>$490,200<br>23.7% |
| Economic<br>Per capita income past year<br>Median household income<br>Below poverty level | <br>$38,141<br>$79,135<br>9.9% |

*Source: 2011 United States Census*

East County exhibited the highest youth population rate, averaging 29.3% while Central County exhibited the lowest, averaging 20.9%. The population of persons 65 years and older rate was highest in Central and South County, averaging 15.8% and 15.6% respectively while the lowest rate was in East County, averaging 8.9%.

The greatest demographic of Caucasians persons resided in Central and South County which also accounted for the highest homeownership rates, education rates, per capita income rates, and median income rates. West and East County showed the largest demographic of minority Black persons, Asian persons, and Hispanic or Latino persons. Furthermore, the Western region also included the most significant percentage of foreign-born residents, as high as 43.2% compared to a County average of 23.6%. Consequently, West County also accounted for the largest percentage of residents who speak a language other than English at home. West and East County displayed lower home ownership rates, per capita income rates, median household income rates, and much lower higher education rates than Central and Southern regions.

The East region is the smallest of the four regions in area; however it is the most densely populated. Generally, Central and East County displayed higher percentages of housing units in multi-units structures than West and South County. Food service and retail sales were considerably higher in South Contra Costa than all other regions.[2]

## BMP and Audiences of Importance (Specific to Contra Costa) & Past Programs

The following lists 15 of the top pollutants specific to Contra Costa. The top pollutants are grouped from high to low in order of importance. Consideration for ranking includes: the scope of audiences affected, the number of regions affected, the prevalence of pollutants,

the affect of pollutants on watersheds, the ease of contamination to watersheds, and the level of public concern for each pollutant in Contra Costa. Pollutants grouped lower may be effectively decreased or managed through BMP that address higher groups of pollutants or polluting activities.

*This ranking is only preliminary. It is aimed to support stages yet to be completed: surveys and focus groups. Once these are completed, the final selection of target behaviors of focus can then be based on County priorities and our understanding of opportunities and threats we face.*

A review of past stormwater programs for counties comparable in area size and population to Contra Costa is also included: Alameda County Clean Water Program, Sacramento County Stormwater Quality Program/Partnership, and Napa County Stormwater Management Program. This can be used to help us understand the tactics used in various stormwater programs, their reported results and how they overlap with what Contra Costa has done in the past (also refer to the table in ***Appendix A***).

*Used throughout this document, an asterisk (*) indicates that the past program tactic is similar to or overlaps with a previous Contra Costa Clean Water Program tactic.*

# Priority: High

## 1. Litter

### *1.1. Target Audiences*

According to the 2010 O'Rorke study, litter ranks high as a general public concern among all Contra Costa residents. However, among all groups, youth are understood to have the highest propensity to litter.[3]

1. Residential: General public, but especially the youth

### *1.2. Regions*

1. East, Central, but especially West County
    a. Trash hotspots are present in these regions, and if not addressed they may put the County in violation of the Clean Water Act.[4]
    b. Highly urbanized and densely populated cities in these regions may attribute to higher littering rates.[5]
    c. Renters and African Americans are most concerned about litter polluting water due to the prevalence of litter in their communities. This demographic is largest in these regions, but especially West County.[6]

d. South County was excluded as a region to target due to the low concern for litter as a pollutant among residents as it is not as prevalent as other regions.

### *1.3 Past Programs*

1. Community Clean-Up Events*
    a. Community clean-up events can be effective methods to remove litter from source areas. Clean-up events may also be helpful in promoting community value and participation.[7]
2. School Presentations*
    a. School presentations such as "The Pollution Soup" in Napa County, "Splash" in Sacramento County and "The Storm Rangers" in Alameda County are generally seen as engaging methods to promote anti-littering messages and educate a large number of students on watershed issues. Quizzes and surveys can be utilized to track behavioral changes throughout the student's educational experience. Students are also likely to carry messages home.[8]
3. Media Relations Pitch: "Save the Bay/Trash Hotspots" & "Baseline Litter Survey"*
    a. Maximize the use of free media and media coverage in order to reach a broad audience. The objective of the campaign is to increase overall awareness on a variety of stormwater pollutants.[9]
4. Street Sweeping Program*
    a. Street sweeping helps remove a variety of urban pollutants and helps decrease the amount of waste discharged to waters of the State. Prioritizing streets most affected by litter and various pollutants can help meet the County's budget.[10]

## 2. Pesticides & Fertilizers (also Legacy Pesticides)

### *2.1. Target Audiences*

Addresses avid consumers and distributors of pesticides

1. Residential: homeowners
2. Commercial: suppliers (hardware stores, nurseries), landscapers, pest control experts
3. Agricultural: farmers

### *2.2. Regions*

1. All but especially Central, East, and South County

a. Central, East, and South County have relatively higher homeownership rates and discretionary incomes than West County so the level of personal lawn and garden care will most likely be greater.[11]
b. Agricultural communities in East County will most likely contribute to pesticide and fertilizer use.
c. Pesticides are a threat to aquatic environments such as reservoirs and fishing piers throughout Contra Costa.[12]

### *2.3. Past Programs*

1. County Fair Booth*
    a. The concept of the booth was to show visitors how their pest control choices impact wildlife and water quality. The booth was effective in educating a large and diverse audience.[13] (***Figure 1***)
2. Our Water Our World Partnership Program*
    a. The program provided less-toxic pest management fact sheets for distribution to customers at 33 nurseries and retail stores. Training on integrated pest management techniques and less toxic pest control products was given to 174 employees. Additionally, shelf tagging for non-toxic pest control products helped with outreach.[14]
3. Watershed Stewardship Collaborative Efforts*
    a. Bringing Back the Native Gardens Tour and Bay Friendly Gardening Tours attracted the target audience. These highly engaging tours had a high satisfaction rate. Behavioral changes were also noted through surveys among participants.[15]
4. Integrated Pest Management Presentations*
    a. The County Agricultural Department's IMP Coordinator conducted presentations in order to educate pest control applicators on integrated pest management.[16]
5. Outreach to Pest Control Operators*
    a. The program sent a letter to pest control companies to become certified through EcoWise or GreenPro. There was a generally low interest rate; only 10 out of 163 companies contacted conducted a follow-up. Currently, there is low public demand for IPM certified services.[17]
6. File for Hazardous Materials Business Plan
    a. Require businesses that store more than 55 gallons of pesticides to file a Hazardous Materials Business Plan with Sacramento County EMB. This also required businesses to have proper storage and spill response requirements, and regular inspections.[18]

# 3. Household Hazardous Waste

### *3.1. Target Audiences*

Large amounts of household hazardous waste are found in mostly residential communities.

1. Residential: homeowners, renters
2. Commercial: small businesses

### *3.2. Regions*

1. All but especially West and East County
    a. Household hazardous wastes are common items found in a majority of homes and small businesses.
    b. According to a survey conducted by the Hazardous Materials Commission in 2008-2009 for Contra Costa, 55% of survey respondents said "no or they were not sure" how to tell if a product is hazardous. Also, 25% of respondents also admitted they "put cleaning products down the drain or in the garbage."[19]
    c. In the same survey as above, 55% of West County respondents did not think their HHW disposal were adequate even though they had the lowest responses indicating improper disposal, while East County had the highest level of responses indicating that they had improperly disposed a HHW.[20]
    d. Furthermore in East County and more rural areas there have been cases of random dumping of household items such as batteries, appliances, e-waste, and tires.[21]

### *3.3. Past Programs*

1. Collection Events*
    a. Collection events can promote HHW recycling by servicing communities that are not conveniently located near HHW facilities. However, these events are infrequent because providing transportation can be costly.[22]
2. Free Disposal at HHW Facilities*
    a. Free disposal of HHW at authorized facilities offers an incentive for residents properly dispose hazardous materials. Paints and e-waste were found to be the most common disposed items. Promoting these facilities can be effective in controlling other pollutants such as PCBs, copper, and mercury.[23]

# 4. Automotive Pollutants

### *4.1. Target Audiences*

Automotive pollutants such as oil, gas, anti-freeze, batteries, transmission fluid, etc. are mostly found among residential DIY car owners or automotive related industries that provide maintenance services for consumers.

1. Residential: car owners (DIYers)
2. Commercial: automotive maintenance facilities, gas stations, and demo/wrecking yards

### *4.2. Regions*

1. All but especially Central County
    a. Automotive maintenance facilities are considered stormwater "hotspots."[24]
    b. There is a higher concentration of car dealerships and auto repair shops in Central County.[25]
    c. A large population of drivers in urban and suburban areas combined with an increase in impervious surfaces in those areas can attribute to automotive pollutants entering waterways.

### *4.3. Past Programs*

1. Point-of-Purchase Outreach*
    a. Point-of-purchase outreach was proposed for termination by Napa County in favor of used oil curbside collection service, and increase recycling at multi-family complexes due to high costs and low benefits.[26]
2. Used Oil Recycling Guide*
    a. An 18-page bilingual recycling guide was published in the SBC Napa Valley Yellow Pages in 2006. It provided information on the various ways to recycle used oil and well as many other forms of HHW. The level of outreach was expected to be high since many residents in Napa County use a landline and hold onto their phone books.[27]

# 5. Mercury

### *5.1. Target Audiences*

Mercury is a pervasive element that is present among many household products, electronic items, old building materials, hospital equipment, and dentist offices. Target audiences are multi-faceted, but mostly affect consumers and regulators.

1. Residential: all
2. Commercial: builders, contractors, offices, e-waste collection centers, hospitals, and dentist offices
3. Industrial/Municipal: public water treatment systems operators

### *5.2. Regions*

1. All
    a. The medical industry is a major source of mercury pollution.[41] The healthcare industry is one of the most common industries in Contra Costa.[42]
    b. Mercury is present in many household items such as thermometers, televisions, florescent lights, etc.[43]

### *5.3. Past Programs*

1. 2011 Pump Station Tour
    1. The purpose of the tour was to provide municipal staff and education through an in-depth look at how sampling will be conducted for PCB and mercury diversion studies.[44]
    2. Collection/Recycling of Mercury Containing Devices and Equipment*

Promotion of mercury collection and recycling was done through CWP Alameda County's website. It is estimated that .802 kg of mercury was collected in 2011-2012 at HHW facilities. Calculating diversion rates of mercury can be helpful for determining the extent of possible mercury pollution.[45]

## 6. PCBs

### *6.1. Target Audiences*

Major sources of PCBs come from construction related materials such as paints and caulk, or electrical industries in the form of transformers and capacitors. Target audiences either come in contact with PCB sources regularly as a result of their occupation and are able to prevent it from contaminating water ways or would be highly adversely affected by being exposed to PCBs. The later group includes school children and anglers.[60]

1. Commercial: construction workers, painters/paint suppliers, schools, electricians, and anglers
2. Industrial: metal fabricators, communications, and power/utility workers (industries that utilize transformers and capacitors)

### *6.2. Regions*

1. All
    a. Construction and remodeling related industries that may carry or use products containing PCBs are prevalent throughout Contra Costa.
    b. West, Central, and East Regions residents and workers who are located near or at HHW Facilities may be more subjected to PCB exposure.[61]
    c. PCBs can accumulate in sediment of rivers, streams, lakes, and coastal areas. It may be optimal to perform outreach in all regions and areas with reservoirs and fishing piers, where anglers may consume fish contaminated with PCBs.[62]

### *6.3. Past Programs*

1. No program that was examined had measurable results.

# Priority: Medium

## 7. Illicit Discharges (also Toxic Substances)

### *7.1. Target Audiences*

Toxic substances such as cleaners, solvents, and detergents are common sources of business related pollution, usually from cleaning and maintenance activities. Residential illicit discharges tend to include pool and spa water, trash, and yard waste.

1. Residential: homeowners
2. Commercial: construction, mobile cleaning businesses (surface, food related)
3. Municipal: parking lot/street cleaners, maintenance facilities

### *7.2. Regions*

1. All
    a. Urbanized areas with large amounts of flat surfaces such as buildings, walkways, and parking lots may attribute to stormwater pollution.
    b. According to the Illicit Discharge Control Activities Program of Contra Costa County, in 2007-2008 there were 103 illicit discharge complaints where 2/3 of all illicit discharges came from residents while only 1/3 came from commercial businesses. The most common types of illicit discharges included: trash/solid waste, pool water, sewage, construction materials, sediment/eroded soil, and yard waste.[28]

c. The IDCA program also reported that many "dischargers were shocked that yard waste constituted an illicit discharge" and believed "they were not classified as pollutants."[29]

### *7.3. Past Programs*

1. Promote Hotline*
    a. Promoting an illicit discharge hotline can be beneficial in promoting community awareness and responsibility. In Sacramento County, 80 cases were reported and 64 were eliminated in 2010-2011.[30]
2. Business Environmental Resource Center/Sacramento Area Sustainable Business Program*
    a. BERC worked with mobile business such as pressure washers to promote BMP that would allow them to be a part of Sacramento Area Sustainable Business Program. Inclusion in the program provided mutual benefits for businesses and regulators.[31]
3. Respond to and Contain Illicit Discharges*
    a. Responding to and containing illicit discharges quickly can be effective in preventing pollutants from entering waterways. Response can aid in tracking areas that are more prone to this type of behavior.[32]
4. No Dumping Signs
    a. No dumping signs near creeks can perform outreach to unincorporated areas. Maintenance staff has viewed these signs to be effective.[33]
5. Municipal Staff and Inspector Training*
    a. Training programs for municipal staff to better identify illicit discharges can be a measureable way to prevent illicit discharges.[34]

## 8. Pet Waste

### *8.1. Target Audiences*

Pet owners are ultimately in charge of picking up after their pets, however it may be helpful to reach out to dog clubs/training programs to promote the behavior.

1. Residential: pet owners
2. Business: dog clubs/training programs

### *8.2. Regions*

1. All especially Central, East, and South County

a. Pet owners are present in all communities however suburban residents in Central, East, and South County are more likely to have pets than West County who reside in higher density housing complexes.
b. Pet waste is more likely to be present in areas such as East Bay Regional Parks where dogs can be walked off leash and other dog friendly parks.

### *8.3. Past Programs*

1. Waste Bag Station
    a. Doggie bag stations increased pet bag use by 250% in 2010-2011 in Sacramento County. The stations eliminated the barrier of not having a bag to pick up pet waste, and promoted pet waste management education to pet owners and other park goers.[35]

## 9. Car Wash Runoff

### *9.1. Target Audiences*

Sources of car wash runoff come from residential car owners mostly living in single-family homes not multi-unit dwellers. Fundraising groups such as high schools and sports teams that have carwashes may produce car wash runoff as well

1. Residential: car owners (Do It Yourselfers), fundraising groups

### *9.2. Regions*

1. All especially South and East County
    a. Contra Costa has a high car ownership rate in comparison to many other counties, 70% of residents use a car to drive to work alone while 14% carpool.[36]
    b. West and Central County residents are less likely to wash their own cars since more residents live in multi-unit structures.
    c. All regions have reservoirs and/or fishing piers. Pollutants from car-wash runoff such as soaps, copper, and oil can attribute to a high fish mortality rate in the region.[37]

### *9.3. Past Programs*

1. "Our Water Our World" Newspaper Insert*

   a. The insert was entitled "Wheels by the Bay" and was sent out by the Bay Area Newspaper Group. It included information on car maintenance, proper car washing, and general stormwater pollution messages. It also included discount coupons for commercial car washes. 88 car washes were redeemed although the paper was sent out to 108,000 households.[38] (Figure 2)
2. Media Relations Pitch: Car Washing PSAs*
   b. The PSA ran on 8 stations and encouraged the use of car washes as a method of preventing stormwater pollution.[39]
3. River-Friendly Fundraiser Car Wash Program*
   c. Developed to provide guidance and help facilitate successful fundraiser carwashes while preventing stormwater pollution. Outreach was conducted to encourage commercial car washes to participate in the program. Host facilities were increased by promoting the webpage http://www.beriverfriendly.net/riverfriendlycarwashing/, and mailing letters to schools and commercial car washers. Carwash kits were also made available.[40]

## 10. Copper

### *10.1. Target Audiences*

Significant sources of copper come from older car brake pads, boat paint, and older buildings.[46] The target audience addresses those directly responsible for maintenance activities. There are currently 1,500 registered boats in Contra Costa.[47] Addressing pesticide and fertilizer pollutants can help additional copper from entering waterways.[48]

1. Residential: homeowners (w/pools, spas, fountains), recreational boat owners
2. Commercial: builders, contractors, pool maintenance, mobile cleaning, commercial docks/boat owners, and auto body shops

### *10.2. Regions*

1. All
   a. Since sources of copper are present in a wide variety of materials all regions should be addressed from pool algaecides to car brake pads.
   b. There is a general increase in use of architectural copper in the construction industry.[49]
   c. West, East, and Central regions are the predominate areas for marinas where boat owners may be outreached.[50]

### *10.3. Past Programs*

1. Participate in Brake Pad Partnership*
    a. Continued participation in the Partnership helps meet MRP copper compliance. Even though SB346 passed and the use of copper in brake pads sold in CA is subject to be reduced to no more than 0.5% by 2025, the Partnership still would like to promote marking and packaging standards for brake pads and third party verification.[51]

# Priority: Low

## 11. Industrial Pollution

### *11.1. Target Audiences*

BMP for industrial pollutants need to target the specific industry because they generally focus on source reduction, monitoring, and/or capturing wash-down water for recycling/reuse. Mercury is a major industrial pollutant; monitoring specific industries will aid Contra Costa in adhering to the EPA National Standards for Mercury Pollution.[52]

1. Industrial: refineries, chemical plants, laboratories, site maintenance workers

### *11.2. Regions and Areas*

1. West, East, and Central County
    a. Industrial pollutants have the most adverse effect on low-income communities in which they are adjacent to. West County has "long been considered an environmental justice area because of the prevalence of industrial sources of pollution in proximity to low-income communities of color."[53]
    b. West, East, and Central County are directly affected by the following industries: Chevron refinery, Shell refinery, Tesoro refinery, Texaco refinery, Dow Chemical, General Chemical, Posco Steel, C&H Sugar, and PG&E.

### *11.3. Past Programs*

2. Develop industrial and Pollutant-Specific Educational Materials/Tracking
   Sacramento County distributed 20 industry and pollutant-specific* education materials during inspection and enforcement processes. Tracking these industries can be helpful in determining possible sources of pollutants.[54]

## 12. Commercial Building Pollution (and Waste Storage Areas)

### *12.1. Target Audiences*

Hazardous waste, toxic chemicals, sediment, and debris are some of the sources of commercial building pollution where a variety of waste may be stored in a centralized area. Performing outreach to site owners and employees may prevent spillage and leakage due to improper disposal.

1. Commercial: property managers, site maintenance/construction/demolition workers

### *12.2. Regions*

1. All
    a. Urban commercial centers as sites for commercial building pollution are prevalent throughout Contra Costa due to growing development.
    b. Impervious surfaces in commercial centers can be major sources of urban run-off.
    c. BMP should be emphasized in proposed road construction projects in all areas.[55]
    d. Addressing commercial building pollution can help businesses across all regions adhere to California AB341.[56]

### *12.3. Past Programs*

1. 2012 Corporation Yard Training
    a. Keeping your corporation yard in compliance was the objective of the program. Fifty municipal operators were trained to identify areas and practices that threaten stormwater.[57]
2. Inspect Construction Site within 48 Hours of Major Storm Event*
    a. Inspecting construction sites within 48 hours of a major storm event can aid in determining sources of potential construction run-off and prevent sources of pollutants.[58]
3. Construction Site Erosion Control Workshop
    a. The construction site erosion workshop provides planners, inspectors, municipal staff, contractors, and architects useful information for compliance. The workshop was filled to capacity, but was only provided once a year.[59]

## 13. Pool, Spa, and Fountain Maintenance

### *13.1. Target Audiences*

Pool and spa construction, maintenance, and discharge may easily release large amounts of pollutants such as chlorine and copper into storm drains if not managed properly. Residents who have pools, spas, and fountains and/or regularly work with them should be informed on BMP to prevent watershed damage.[63]

1. Residential: DIY pool owners
2. Commercial: pool services/contractors

### *13.2. Regions*

1. Central and South
    a. South and Central regions are more likely to have residential pools, spas, and fountains than West and East regions due to a higher concentration homeownership and availability of pool services.[64]

### *13.3. Past Programs*

1. Refer to Illicit Discharges ***(Page 106)***

## 14. Fats, Oil, and Grease

### *14.1. Target Audiences*

Restaurants are large producers of Fats, Oils and Grease (FOG). Mobile food services, which have become increasingly popular, can also be potentially harmful sources since they are much less regulated than storefronts. Home cooks, probably produce small amounts of grease daily however they may be the least informed on BMP for FOG.[65]

1. Residential: home cooks
2. Commercial: restaurants, mobile food services

### *14.2. Regions*

1. All
    a. Foodservices are prevalent all across Contra Costa.

b. Residents generally do not have grease traps and are more likely to dispose of FOGs down the drain because they are "unaware that pouring hot water and detergent down the drain only breaks up grease temporarily."[66]

### *14.3. Past Programs*

1. Business Newsletter
    a. Newsletters were annually sent out to regulated-businesses in order to increase knowledge to specific industries on FOG BMP as well as other hazardous waste products.[67]

## 15. Pharmaceuticals

### *15.1. Target Audiences*

Seniors typically utilize more pharmaceutical products than the average consumer. Outreach should be approach both consumers and suppliers. An estimated 40% of drugs dispensed out of hospitals go unused.[68]

1. Residential: seniors
2. Commercial: drug-stores/pharmacies, hospitals, senior centers, and veteran homes

### *15.2. Regions and Areas*

1. All but especially Central County
    a. Central County is home to the largest demographic of senior citizens in Contra Costa County.[69]
    b. There are larger populations of veterans in East and Central County than South and West County.[70]
    c. Currently the majority of pharmaceutical drop off locations are located in Central County.[71]
    d. According to the Contra Costa Hazardous Materials Commission in a 2008-2009 survey, 33% of Contra Costa residents said they "put pharmaceuticals down the drain or in the garbage."[72]

### *15.3. Past Programs*

1. Refer to Household Hazardous Waste ***(page 105)***.

2. Participate in National Prescription Take-Back Day*
    a. Collection events can promote proper disposal of hazardous materials and provide convenient disposal methods. In Oregon, four National-Take-Back-Days to date have successfully removed 774 tons of medication from circulation and improper disposal.[73]

*Since the past programs from the chosen set of counties to study did not include any BMP specific to pharmaceuticals, these two programs are examples from the Oregon Department of Health Services.*

# In-Depth Literature Reviews

## 16. "Assessment of Maine's Stormwater Phase II 7 NPS Outreach Campaign 2003/2004 or Who is Willing to Protect Maine's Water Quality?"

### *16.1. Summary*

The literature assessed Maine's stormwater outreach media campaign, which targeted 35-55 year old residents with some education. The media campaign consisted of TV and radio ads in conjunction with the development of a logo/slogan and a website. Printed materials and community events were planned, but were never implemented due to budgetary constraints. The campaign was deemed successful two months after the campaign had ended, as it caught the attention 14.4% of Maine adults. Their message was so well conveyed that 32% of the adults reached planned to or had already taken actions to protect water quality. The campaign found that prompts increased the recollection of TV ads to 66% and radio ads to 40% among Maine adults. The campaign also found that the best time to buy TV media spots was during the local news since residents tend to watch their local stations. Lastly, staggering TV and radio ads also gave the appearance that the campaign ran longer than it actually was; which was helpful in increasing outreach while meeting budgetary constraints.[74]

### *16.2. Evaluation*

This was a well-documented study created by the Maine Department of Environmental Protection, which included a pre and post campaign telephone survey to determine the effectiveness of outreach tactics. The campaign gathered the appropriate data from focus groups prior to the launch of the campaign to aid in the understanding the social norms of target audiences and barriers to outreach.

### *16.3. Relationship*

The assessment of this campaign may be helpful in understanding some of the barriers and benefits in implementing a stormwater outreach media campaign and the recommendations in this literature may also be helpful in the development of a successful campaign.

## 17. "McDonald's Litter Hunt: A Community Litter Control System for Youth"

### *17.1. Summary*

The study represented an attempt to design, implement, and evaluate the effects of a practical community litter control program on reducing litter in an entire community. The study targeted school-age children and was conducted in Murfreesboro, Tennessee (30,000 population), where one of the most frequently attacked problems in the community was litter. A short-term litter hunt program was created and was promoted through radio and newspaper ads. McDonalds sponsored the events and provided incentives such as free cookies and sodas to participants. Results showed that the residential littler rate fell by 32% during the study. This conveys that it was possible to create a program that utilizes local businesses to effectively control litter.[75]

### *17.2. Evaluation*

The study was created by M. Partrick McNees, John F. Schnelle, John Gendrich, Murphy M. Thomas, and Gwen Beagle. It was based off a 1975 study that found that when litter was specially coded in a fashion that was detectable and could be exchanged for special rewards, litter was significantly reduced in a prison environment. Overall, the study provided helpful information to starting a similar program to manage litter, but it did not provide any evidence as to whether there were lasting behavioral changes among participants. Additionally, it addressed many of the benefits and motivators of creating and implementing a controllable and measurable anti-litter program, but did not address certain barriers.

### *17.3. Relationship*

The study would provide useful information in creating a similar program based on community partnerships, especially businesses to promote behavioral change.

## 18. "Monitoring and Evaluating an Education/Participation Campaign to Reduce Littering and Stormwater Litter Loads in a Small Commercial Shopping District in Melborne"

### *18.1. Summary*

The study looked at a littering outreach campaign relative to two audiences: the general public and businesses. The general public campaign consisted of posters in shop windows and the railway stations, drain stenciling, brochures distributed by traders, and maintenance of the local environment (e.g. clean-up of dumped rubbish and improvement to local Council managed infrastructure). The campaign did not appear to be successful at improving the knowledge of the community with respect to littering and stormwater management. The business outreach campaign consisted of a brochure, one-to-one site visits, meeting with traders, a clean-up event, a newsletter, a factsheet, maintenance of infrastructure in the street (including bin-related infrastructure), posters in shop windows, windproof ash-trays, and drain stenciling. The campaign seemed to be effective at improving knowledge of businesses in respect to littering and stormwater management.[76]

### *18.2. Evaluation*

The study was created by the Cooperative Research Center for Catchment Hydrology and was a well-documented study. However, it was rather confusing to decipher whether or not the business campaign was successful overall, as they seemed to say yes is come parts and no in others. The study also did not look at the business tactics to see which ones specifically were successful and which ones were not. They appeared to not spend much time on audience specific barriers and benefits. A cursory look at the materials developed showed that they focused on a catch basin that is connected to the creeks message.

### *18.3. Relationship*

The study used some rigorous evaluation methods that may be useful for other anti-litter campaigns for the public and businesses.

## 19. "Austin Lawn and Garden Chemical Education Campaign Final Report"

### *19.1. Summary*

The final report reviewed the City of Austin's lawn and garden educational campaign. The

goal of the campaign was to reduce the use of lawn and garden chemicals by promoting earth-wise landscaping methods. It targeted homeowners in the middle to high socio-economic category since they are more likely to have discretionary funds for the purchase of landscape materials. The general campaign consisted of television and radio ads, a website, mailings, print material, and workshops. The TV was found to be a more favorable method for people to receive info and was important for reaching unincorporated cities. Various types and levels of outreach were piloted to different neighborhoods in Austin, which were based not only on the neighborhood's demographics, but also its geographic location to sensitive aquifers. Results found that the workshop and website yielded the lowest public response while mailings and TV/radio ads yielded the most. However, website visits substantially increased during the months where the TV/radio ads ran. Creating a synergy between multiple tactics was an important finding.[77]

### *19.2. Evaluation*

The final report was prepared by the City of Austin, Texas in cooperation with the Texas Commission on Environmental Quality and the U.S. Environmental Protection Agency. The EPA 319 grant was a major resource, which provided opportunities to test and refine new educational outreach materials. This was a well-documented study that provided data on behavioral changes and their effects on Austin's groundwater. However, barriers to outreach were never fully identified.

### *19.3. Relationship*

The report provided a lot of useful reference materials that may be help in building pesticide and fertilizer outreach materials. The TV ads are also available on Youtube to view. The report also highlighted the importance of selectively targeting outreach tactics and neighborhood demographics for maximum impact.

## 20. "Pollution-Prevention Information Campaigns for Small Business: An Audience Analysis"

### *20.1. Summary*

The study examined barriers and benefits for small businesses to prevent pollution, and their level of awareness on BMPs. A random phone survey of 300 small businesses (fewer than 500 employees) in Colorado was conducted to help the Colorado Pollution Prevention Partnership develop a pollution prevention campaign. They noted that illegal disposal of hazardous waste

was generally unchecked among small-quantity hazardous waste generators and that much of this illegal activity happens in or near urban areas. The study identified tactics that maximized the response rates to the survey and also identified barriers of businesses in preventing pollution such as cost being the most serious and the business' belief about government regulation. Additionally, the survey found that businesses preferred to obtain their information from suppliers, publications, and other companies.[78]

### *20.2. Evaluation*

The study was created by Greg Boiarsky, Marilee Long, and Donald E. Zimmerman and was a well-documented study. They used strong social marketing tactics such as identifying target audiences, barriers, and benefits. They also provided substantial statistics on the social norms of businesses.

### *20.3. Relationship*

Results from the survey can be used to improve to create and improve outreach strategies for target pollutants such as hazardous waste. The recommendations in the report can also be utilized for pollution prevention campaign materials that target small businesses.

# Appendix A: Past Program Tactics by Pollutant

The table below serves as a quick reference summary of all past program tactics reviewed, grouped by pollutant. Not all programs included a thorough evaluation strategy. Measured results have been collected and are presented whenever possible.

(*) Indicates that the past program tactic is similar to or overlaps with previous Contra Costa Clean Water Program tactics.

| Pollutant | Behavior (BMP) | Audience | Barriers | Benefits/ Motivators | Tactics | Results | Lessons Learned | Source |
|---|---|---|---|---|---|---|---|---|
| **Litter** | Reduce litter | General public | Managing events | Community participation, first-hand experience of issue | Community Clean-Up Events* | High participation rate, 2000 volunteers, 21 tons of trash removed (Sacramento County Stormwater) | Citizens are interested in community clean up events | Sacramento County Quality Partnership Annual Report (2010-2011) |

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|---|---|---|---|---|---|---|---|---|
| **Litter** | Increase education/knowledge on stormwater issues, develop young stewards | School-age children | Working with school schedules/curriculum | Reach young/diverse children, fun, engaging, behavioral changes can be tracked through surveys | School Presentations* | High participation rate from students | Not all school presentations are the same in educational value, material retention can be low | Clean Water Program Alameda County Annual Report (2011-2012), Napa County Stormwater Management Program Annual Report (2006-2007), Sacramento County Quality Partnership Annual Report (2010-2011) |
| **Litter** | Increase general knowledge of effects of litter on stormwater | General public | N/A | Quantifying the litter load in the region | Media Relations Pitch: "Save the Bay/Trash Hotspots" & Baseline Litter Survey* | Well received, more than 30 placements | N/A | Clean Water Program Alameda County Annual Report (2011-2012) |

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|---|---|---|---|---|---|---|---|---|
| **Litter** | Decrease amount of waste discharged to the state | Municipal Operators | Cost/budget constraints | Removes a variety of urban pollutants in addition to litter | Street Sweeping Program* | 6,913 cy of waste removed in 2010-2011 (Sacramento Stormwater Program) | Document prioritized streets | Sacramento County Quality Partnership Annual Report (2010-2011) |
| **Pesticides & Fertilizers (also Legacy Pesticides)** | Increase education/kn-owledge | General Public | N/A | Highly engaging, reaches large/diverse audience | County Fair Booth* | Placed 1st in educational value/creativity | Design/attractiveness is important | Clean Water Program Alameda County Annual Report (2011-2012) |
| **Pesticides & Fertilizers (also Legacy Pesticides)** | Increase less toxic pest management | Nurseries, retail stores | Monitoring employees/ materials | Shelf tagging for non-toxic pest control products | Our Water Our World Partnership Program* | 174 store employees trained at 14 stores | N/A | Clean Water Program Alameda County Annual Report (2011-2012) |

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|---|---|---|---|---|---|---|---|---|
| **Pesticides & Fertilizers (also Legacy Pesticides)** | Promote the use of native plants, reduce lawn size, eliminate pesticide use | Homeowners | N/A | Attracted target audience, highly engaging, | Watershed Stewardship Collaborative Efforts: Bringing Back the Native Garden Tour/Bay Friendly Gardening Tours* | Behavior change was notable through surveys, high satisfaction rate | N/A | Clean Water Program Alameda County Annual Report (2011-2012) |
| **Pesticides & Fertilizers (also Legacy Pesticides)** | Educate pest control applicators | Agriculture/ Pest Control Applicators | Monitoring | Pass on education from top-down to pesticide applicators | Integrated Pest Management Presentations * | Proposed new restrictions on pyrethoids | N/A | Clean Water Program Alameda County Annual Report (2011-2012) |
| **Pesticides & Fertilizers (also Legacy Pesticides)** | Increase IPM certification | Pest control operators | Low public demand for IPM services | Increase environmentally sensitive approaches to pest management | Outreach to Pest Control Operators* | 10 out of 163 companies were interested | N/A | Clean Water Program Alameda County Annual Report (2011-2012) |

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|---|---|---|---|---|---|---|---|---|
| **Pesticides & Fertilizers (also Legacy Pesticides)** | Minimize spills | Municipal operators | Monitoring | Compliance, ensures proper storage of storage and disposal | File for Hazardous Materials Business Plan | Minimizing contamination of rain water and reduces potential spills | N/A | Sacramento County Quality Partnership Annual Report (2010-2011) |
| **Household Hazardous Waste** | Increase proper disposal of HHW and used oil | General Public, businesses | Limited funding, few events, saving HHW | Free disposal, convenient | Collection Events* | 60,566 lbs HHW collected in 2006-2007 (Napa Stormwater Program) | Expand e-waste collection | Napa County Stormwater Management Program Annual Report (2006-2007) |
| **Household Hazardous Waste** | Increase proper disposal of HHW and used oil | General Public, businesses | Driving to location | Free disposal | Free Disposal at HHW Facilities* | 537,023 lbs of HHW collected in 2006-2007 (Napa Stormwater Program) | Increase e-waste and paint collection | Napa County Stormwater Management Program Annual Report (2006-2007) |
| **Automotive Pollutants** | Increase oil recycling | Automotive DIYers | Costly | Reaches target audience | Point-of-Purchase Outreach* | Was not fully implemented (Napa Stormwater Program) | Opted for curbside recycling instead | Napa County Stormwater Management Program Annual Report (2006-2007) |

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|---|---|---|---|---|---|---|---|---|
| **Automotive Pollutants** | Increase proper disposal of used oil and other HHW | General Public, Automotive DIYers | N/A | Distributed through yellow pages, bilingual (Spanish/English) | Used Oil Recycling Guide | Many people used landlines and had phone books (Napa County Stormwater) | N/A | Napa County Stormwater Management Program Annual Report (2006-2007) |
| **Illicit Discharge (also Toxic Substances)** | Increase watershed stewardship/use of hotline | General Public | Public awareness on issue and number | Increases response and tracking | Promote Hotline* | Effective (80 reported, 64 verified and eliminated) (Sacramento Stormwater Program) | Continue to promote awareness of hotline | Sacramento County Quality Partnership Annual Report (2010-2011) |
| **Illicit Discharges (also Toxic Substances)** | Reduce commercial runoff | Mobile businesses | Tracking mobile washers | Joining Sacramento Area Sustainable Program | Business Environmental Resource Center/Sacramento Area Sustainable Business Program* | Developing a program to work with mobile businesses | Work with existing green businesses to expand program | Sacramento County Quality Partnership Annual Report (2010-2011) |

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|---|---|---|---|---|---|---|---|---|
| **Illicit Discharges (also Toxic Substances)** | Decrease illicit discharges and increase response | County DOT maintenance facilities | Increasing reporting of illicit discharges | Increases tracking of illicit discharges/areas | Respond to and contain Illicit Discharges* | 6,700 gallons motor oil; 1,450 gallons paint, 10 gallons anti-freeze, 24 leaf batters disposed/recycled properly in 2010-2011 (Sacramento Stormwater Program) | N/A | Sacramento County Quality Partnership Annual Report (2010-2011) |
| **Illicit Discharges (also Toxic Substances)** | Decrease dumping | General Public | Maintenance | Increases outreach to unincorporated areas | No Dumping Signs | Staff view that signs are effective (Sacramento Stormwater Program) | Monitor annually for data | Sacramento County Quality Partnership Annual Report (2010-2011) |
| **Illicit Discharges (also Toxic Substances)** | Increase illicit discharge identification and response | Municipal staff, operators | N/A | Track measurable improvements among staff, quizzes, record keeping | Municipal Staff and Inspector Training * | 19 illicit discharge complaints identified, 2006-2007 (Napa Stromwater Program) | N/A | Napa County Stormwater Management Program Annual Report (2006-2007) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Pet Waste** | Picking up after your pet | Pet-owners | Maintenance | Increases outreach, accessible (no excuses not to) | Waste Bag Stations | Pet bag use increased 250% (Sacramento Stormwater Program) | Program was effective in changing behavior | Sacramento County Quality Partnership Annual Report (2010-2011) |
| **Car Wash Runoff** | Increase car related stormwater pollution awareness, increase use of commercial car washing | Car owners, vehicle service facilities | Low interest in using commercial car washes (cost) | Coupons | "Our Water Our World" Newspaper Insert* | Low, 88 out of 108,000 coupons were redeemed | Newspaper coupons were inefficient | Clean Water Program Alameda County Annual Report (2011-2012) |
| **Car Wash Runoff** | Encourage use of car washes | Car owners | Tracking behavioral change | Car radio targeted drivers | Media Relations Pitch: Car Washing PSAs* | Aired by 8 stations, found to be a good turnout | N/A | Clean Water Program Alameda County Annual Report (2011-2012) |
| **Car Wash Runoff** | Reduce car wash runoff, increase commercial car washing | Car owners, car wash fundraisers | Public perception, cost of commercial car wash vs. DIY | Partnered with commercial car washes | River-Friendly Fundraiser Car Wash Program* | 645 people visited the website during 2010-2011, 3x increase (Sacramento Stormwater Program) | N/A | Sacramento County Quality Partnership Annual Report (2010-2011) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Mercury** | Increase education, identification and maintenance of pump station | Municipal operations | N/A | Increase communicati-on/understanding among groups | 2011 Pump Station Tour | Municipal staff obtained an in-depth look at how sampling will be conducted for PCB/mercury diversion studies | N/A | Clean Water Program Alameda County Annual Report (2011-2012) |
| **Mercury** | Promote recycling of mercury containing household hazardous waste | General Public, Municipalities | Traveling to facility | Calculating mercury diversion, free service | Collection/Recycling of Mercury Containing Devices and Equipment * | During 2011-2012 Sacramento Stormwater collected .802 kg of mercury | N/A | Sacramento County Quality Partnership Annual Report (2010-2011) |
| **Copper** | Reduce copper runoff from brake pads | Automotive DIYers, vehicle maintenance facilities | N/A | N/A | Participate in Brake Pad Partnership* | Discontinued after passing SB346 | N/A | Sacramento County Quality Partnership Annual Report (2010-2011) |
| **Industrial Pollution** | Increase education of BMP | Industrial | N/A | N/A | Develop Industry and Pollutant-Specific Educational Materials/Tracking | Distributed materials to 20 industries during inspections/enforcement, 2011-2012 (Sacramento Stormwater Program) | N/A | Sacramento County Quality Partnership Annual Report (2010-2011) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Commercial Building Pollution (and Waste Storage Areas)** | Keep corporations in compliance | Municipal operations | Small audience reached/ training only once a year | Practice identifying stormwater threats | 2012 Corporation Yard Training | 50 participants were able to identify | Tests are important | Clean Water Program Alameda County Annual Report (2011-2012) |
| **Commercial Building Pollution (and Waste Storage Areas)** | Prevent construction site run-off during storms | Construction sites, workers | Not enough inspectors, inconsistent construction site activity | Track, monitor, prevent pollution from occurring | Inspect Construction Site within 48 hours of Major Storm Event* | No violation rate increased from 40% to 72% (Napa Stormwater Program) | N/A | Napa County Stormwater Management Program Annual Report (2006-2007) |
| **Commercial Building Pollution (and Waste Storage Areas)** | Encourage continual education | Planners, inspectors, municipal staff, contractors, architects | Only 1 workshop/year | Provides useful info for compliance | Construction Site Erosion Control Workshop | Good turnout, filled to capacity (Napa Stormwater Program) | N/A | Napa County Stormwater Management Program Annual Report (2006-2007) |
| **Pool, Spa, and Fountain Maintenance** | -- | -- | -- | -- | Refer to Illicit Discharges | -- | -- | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Fats, Oil, and Grease** | Compliance | Food service facilities, businesses | Tracking effectiveness | Increase knowledge to specific industries | Business Newsletter* | Sent to 732 businesses out of 1,122 (Napa Stormwater Program) | Increase newsletter reach, mail to more businesses | Napa County Stormwater Management Program Annual Report (2006-2007) |
| **Pharmaceuticals** | -- | -- | -- | -- | Refer to Household Hazardous Waste | -- | -- | |
| **Pharmaceuticals** | Increase proper disposal of pharmaceuticals | General Public, seniors | N/A | Community | Participate in National Prescription Take-Back Day | 774 tons of medication removed from circulation in 4 Take-Back Days in Oregon (Oregon Health Authority) | N/A | Oregon Health Authority |

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# APPENDIX D: PHONE SURVEY TOOL

***Structure of CCCWP Resident Survey***

Introduction

Eligibility (4 Questions)

Current participation in BMP, by pollutant (8 Questions)
- Behavior
- Severity

Willingness to adopt BMP, by pollutant (5 Questions)

Tech access/use (7 Questions)

Methods of obtaining information (8 Questions)

Demographics (5 Questions)

Conclusion

Total (37 Questions)

***CCCWP Resident Survey - Phone***

**Hello, my name is _____ and I'm calling on behalf of the Contra Costa Clean Water Program. We are conducting a survey of residents in order to improve the community. This is not a sales call. Your responses would be used to compute some statistics for the County to better understand residents' needs and shape future program development. This will take ____ minutes of your time. You may skip any question you are not comfortable with, and your answers will be kept confidential and anonymous.**

*If respondent refuses to participate:*
**Ok, I understand you are unable to participate right now. Since you are not able to complete the full survey, would you mind taking just 1 minute to answer a few questions about your household?** *(conduct refusal survey).*

*If respondent agrees to participate:*
**Great! Thank you so much for your participation. I'm going to start by asking you a few questions about yourself and your household.**

*Unless otherwise indicated, the answer choices will not be read aloud. Questions will be posed in an open-ended fashion and the answer choices listed in all caps are there to help the interviewer code the responses and provide prompting to respondents for clarity as needed. Open-ended questions will yield more accurate information by avoiding leading questions/answer choices.*

**1. What language are you most comfortable speaking?**
ENGLISH
SPANISH
CANTONESE
MANDARIN
JAPANESE
KOREAN
TAGALOG
OTHER *(DESCRIBE)*

**2. Are you at least 18 years of age?**
YES *(continue)*
NO *(ask to speak to head of household >18 years of age)*
REFUSED *(terminate)*

**3. Are you a resident of Contra Costa County?**
YES *(continue)*
NO *(terminate)*

Refused *(terminate)*

**4. What city do you live in or near?**
*(WEST)*
EL CERRITO
RICHMOND
SAN PABLO
HERCULES
PINOLE
UNINCORPORATED COMMUNITIES: KENSINGTON, EAST RICHMOND HEIGHTS, NORTH RICHMOND, EL SOBRANTE, MONTALVIN/TARA HILLS/BAYVIEW, RODEO, CROCKETT, AND PORT COSTA

*(EAST)*
ANTIOCH
BRENTWOOD
OAKLEY
PITTSBURG
UNINCORPORATED COMMUNITIES: BAY POINT, BETHEL ISLAND, BYRON, DISCOVERY BAY, AND KNIGHTSEN

*(CENTRAL)*
CONCORD
CLAYTON
PLEASANT HILL
WALNUT CREEK
MARTINEZ
UNINCORPORATED COMMUNITIES: CLYDE, CONTRA COSTA CENTRE, MT. VIEW, PACHECO, AND VINE HILL

*(SOUTH)*
LAFAYETTE
MORAGA
ORINDA
SAN RAMON
DANVILLE
UNINCORPORATED COMMUNITIES: ALAMO, BLACKHAWK, DIABLO

OTHER *(describe)*

**5. What is your ZIP code?**
_____ *(enter 5-digit ZIP)*

*Interviewer, if respondent does not meet eligibility criteria, read the following to terminate call:*
**Thank you for agreeing to participate. Unfortunately, we are only able to include households located in Contra Costa County and we are only able to interview adults over the age of 18 years. At this time, we are unable to continue the interview. Thank you very much for you time.**

*Interviewer, if respondent meets eligibility criteria, read the following before continuing:*
**Great, based on the information you've provided, you are eligible to participate. The next few questions I'll ask you are related to your participation in a number of household activities.**

**6. What is the primary method you use to wash your car?**
TAKE IT TO A CAR WASH
WASH IT MYSELF AT HOME
OTHERS IN MY HOUSEHOLD WASH IT AT HOME
TAKE IT TO A FRIEND'S HOME TO HAVE IT WASHED
I NEVER WASH MY CAR / GET IT WASHED
I DO NOT HAVE A CAR
OTHER *(DESCRIBE)*

**7. How often do you _____ (response to previous Q6)?**
*(OPEN-ENDED)*

**8. What is the primary method you use to dispose of household wastes such as cleaners, solvents, detergents, pool cleaners, or paint?**
THROW IN THE TRASH OR RECYCLING BIN
POUR DOWN DRAIN
TAKE THEM TO A HOUSEHOLD HAZARDOUS WASTE CENTER
OTHER *(DESCRIBE)*

**9. What is the primary method you use to manage pests in your lawn or garden?**
PESTICIDES
TRAPS (SKIP TO Q10)
HIRE A COMPANY TO MANAGE THE SITUATION
I DON'T DO ANYTHING ABOUT IT (SKIP TO Q10)
I DON'T HAVE A LAWN/GARDEN (SKIP TO Q10)
OTHER (DESCRIBE)

**10. How often do you _____ (response to previous Q9)?**
*(OPEN ENDED)*

**11. Do you own a dog?**
YES
NO *(SKIP TO NEXT SECTION)*

**12. What is the primary method you use to deal with dog waste?**
PICK IT UP IMMEDIATELY
PICK IT UP LATER
HOSE IT DOWN
COVER IT UP / LEAVE IT THERE / DO NOTHING
OTHER *(DESCRIBE)*

**13. What percentage of the time do you pick up your dog's waste immediately on a scale from 0-100?**
0 10 20 30 40 50 60 70 80 90 100

**Now I'm going to ask you how willing you would be to participate in a number of the behaviors we just discussed. Please rate your answers on a scale from 1-10, with 1 being totally unwilling, and 10 being totally willing. Let me know if you need me to repeat this scale when I ask the questions. Remember, I'll be asking what you yourself would be willing to do, not what you think you should do. Our research is trying to understand the types of behaviors residents are actually likely to do so we can develop the appropriate programs.**

**14.** *(SKIP IF Q6 RESPONSE WAS "I DO NOT HAVE A CAR")* **How willing would you be to take your car to a car wash next time it needs to be washed? Please rate your response on a scale from 1-10 with 1 being totally unwilling and 10 being totally willing.**
1 2 3 4 5 6 7 8 9 10

**15. Next time you have household wastes (e.g., cleaners, solvents, detergents, pool/Jacuzzi cleaners, or paint) to dispose of, how willing would you be to take it to a household hazardous waste center? Please rate your response on a scale from 1-10 with 1 being totally unwilling and 10 being totally willing.**
1 2 3 4 5 6 7 8 9 10

**16.** *(SKIP IF Q9 RESPONSE WAS "I DO NOT HAVE A LAWN/GARDEN")* **Next time you need to take action to manage pests in your lawn/garden, how willing would you be to use an eco-friendly pesticide? Please rate your response on a scale from 1-10 with 1 being totally unwilling and 10 being totally willing.**
1 2 3 4 5 6 7 8 9 10

**17.** *(SKIP IF Q9 RESPONSE WAS "I DO NOT HAVE A LAWN/GARDEN")* **Next time you need to take action to manage pests in your lawn/garden, how willing would you be to hire an eco-friendly pest management operator? Please rate your response on a scale from 1-10 with 1 being totally unwilling and 10 being totally willing.**

1 2 3 4 5 6 7 8 9 10

**18.** *(SKIP IF Q11 RESPONSE WAS "I DO NOT HAVE A DOG")* **Next time your dog goes to the bathroom, how willing would you be to pick up your dog's waste immediately and place it in a trash bin? Please rate your response on a scale from 1-10 with 1 being totally unwilling and 10 being totally willing.**

1 2 3 4 5 6 7 8 9 10

**Thank you for your responses. We're about halfway done. For the next few questions, I'd like to ask you a little bit about where you get information about various things.**

**19. Do you ever use apps (e.g., smart phone applications) on your cell phone?**

I DON'T HAVE A CELL PHONE
MY PHONE DOES NOT SUPPORT APPS
MY PHONE HAS APPS BUT I DON'T USE THEM
YES, I USE APPS
OTHER *(DESCRIBE)*

**20. How often do you do the following?** *(READ RESPONSE SCALE ALOUD)*

**Search for things online/on the internet**

| | | | | |
|---|---|---|---|---|
| NEVER | A FEW TIMES PER YEAR | A FEW TIMES PER MONTH | A FEW TIMES PER WEEK | DAILY |

**Check email**

| | | | | |
|---|---|---|---|---|
| NEVER | A FEW TIMES PER YEAR | A FEW TIMES PER MONTH | A FEW TIMES PER WEEK | DAILY |

**Use Facebook**

| | | | | |
|---|---|---|---|---|
| NEVER | A FEW TIMES PER YEAR | A FEW TIMES PER MONTH | A FEW TIMES PER WEEK | DAILY |

**Use YouTube**

| | | | | |
|---|---|---|---|---|
| NEVER | A FEW TIMES PER YEAR | A FEW TIMES PER MONTH | A FEW TIMES PER WEEK | DAILY |

**Read blogs**

| | | | | |
|---|---|---|---|---|
| NEVER | A FEW TIMES PER YEAR | A FEW TIMES PER MONTH | A FEW TIMES PER WEEK | DAILY |

*(SKIP IF Q11 RESPONSE WAS "I DO NOT HAVE A CELL PHONE")*
**Use your cell phone to send and receive text messages**

| | | | | |
|---|---|---|---|---|
| NEVER | A FEW TIMES PER YEAR | A FEW TIMES PER MONTH | A FEW TIMES PER WEEK | DAILY |

**21.** *(SKIP IF Q19 RESPONSE WAS "I DO NOT HAVE A CAR")* **If you wanted information on washing your car or car-wash locations, where might you get this information?**
TELEVISION
RADIO
NEWSPAPER
MAGAZINES
INTERNET
EMAIL
SOCIAL MEDIA (E.G., FACEBOOK, TWITTER)
FRIENDS/RELATIVES/NEIGHBORS
AUTO SUPPLY STORE
COMMUNITY EVENTS
MAIL
OTHER (DESCRIBE)
NONE OF THE ABOVE

**22. If you wanted information on how or where to dispose of household waste, such as cleaners, solvents, detergents, pool cleaners, or paint, where might you get this information?**
TELEVISION
RADIO
NEWSPAPER
MAGAZINES
INTERNET
EMAIL
SOCIAL MEDIA (E.G., FACEBOOK, TWITTER)
FRIENDS/RELATIVES/NEIGHBORS
COMMUNITY EVENTS
MAIL
OTHER (DESCRIBE)
NONE OF THE ABOVE

**23.** *(SKIP IF Q6 RESPONSE WAS "I DO NOT HAVE A LAWN")* **If you wanted information about gardening or lawn care, where might you get this information?**
TELEVISION
RADIO
NEWSPAPER
MAGAZINES
INTERNET
EMAIL
SOCIAL MEDIA (E.G., FACEBOOK, TWITTER)
FRIENDS/RELATIVES/NEIGHBORS
GARDNER, LANDSCAPER, OR OTHER LAWN CARE PROFESSIONAL
HOME/GARDEN SUPPLY STORE (E.G., HOME DEPOT OR YOUR LOCAL NURSERY)
COMMUNITY EVENTS
MAIL
OTHER (DESCRIBE)
NONE OF THE ABOVE

**24.** *(SKIP IF Q6 RESPONSE WAS "I DO NOT HAVE A DOG")* **If you wanted to find information on dog-related issues or dog supplies, where might you get this information?**
TELEVISION
RADIO
NEWSPAPER
MAGAZINES
INTERNET
EMAIL
SOCIAL MEDIA (E.G., FACEBOOK, TWITTER)
FRIENDS/RELATIVES/NEIGHBORS
AT PET SUPPLY STORE
COMMUNITY EVENTS
MAIL
OTHER (DESCRIBE)
NONE OF THE ABOVE

**We have less than 1 minute left. For the final questions, I'd like to ask you a little bit about yourself.**

**25. How would you describe your residence?**
SINGLE-FAMILY HOME/ DETACHED
APARTMENT/CONDO/TOWNHOME
MOBILE HOME
OTHER *(DESCRIBE)*

**26. Do you own or rent this residence?**
OWN
RENT
OTHER *(DESCRIBE)*

**27. Please name any organizations in your community that you belong to, if any.**
*(OPEN-ENDED)*

**28. In what year were you born?**
_____ *(enter 4-digit year)*

*If response to Q9 was "I DO NOT HAVE A LAWN/GARDEN", conclude call:*

> *To conclude:* **Thank you very much for your time today, and for your service to the County. Your answers will help in developing programs for Contra Costa residents in the near future. Have a wonderful day! ☺**

*If respondent reported having a lawn or garden (Q9 response was NOT: "I DO NOT HAVE A LAWN/GARDEN"), follow instructions for Focus Group Recruitment before concluding call.*

# APPENDIX E: PHONE SURVEY REFUSAL & COMPLETION LOG

***SGA - CCCWP Resident Survey***
**Cumulative Thru 2/18/13**

| | | English Dials | | Spanish Dials | |
|---|---|---|---|---|---|
| No Answer | | 5689 | **40.77%** | 86 | **26.14%** |
| Phone busy | | 290 | **2.08%** | 15 | **4.56%** |
| Disconnected Phone | | 459 | **3.29%** | 3 | **0.91%** |
| Business/Government | | 48 | **0.34%** | 1 | **0.30%** |
| Respondent Not Available | | 1514 | **10.85%** | 70 | **21.28%** |
| Refusal | | 641 | **4.59%** | 1 | **0.30%** |
| Computer Tone | | 98 | **0.70%** | 0 | **0.00%** |
| Language Problem | | 144 | **1.03%** | 26 | **7.90%** |
| Schedule Callback | | 48 | **0.34%** | 6 | **1.82%** |
| Mid-Interview Terminate | | 9 | **0.06%** | 0 | **0.00%** |
| Answering Machine | | 4511 | **32.33%** | 100 | **30.40%** |
| Terminate - Completed Refusal Survey | | 6 | **0.04%** | 0 | **0.00%** |
| Terminate - No One in Household 18 or Older | | 2 | **0.01%** | 0 | **0.00%** |
| Terminate - Not a Resident | | 10 | **0.07%** | 0 | **0.00%** |
| Terminate - Out of Area | | 4 | **0.03%** | 0 | **0.00%** |
| **Completes** | **(Quota = 500)** | **481** | **3.45%** | **21** | **6.38%** |
| **TOTAL DIALS** | | **13954** | **100.00%** | **329** | **100.00%** |
| **Incidence:** | | **96.46%** | | **100.00%** | |
| **Length:** | | **8.31 min.** | | **10.07 min.** | |

| Area | Completes | Focus Group Recruits |
|---|---|---|
| **West** | 125 | 10 |
| **East** | 125 | 10 |
| **Central** | 125 | 10 |
| **South** | 127 | 10 |

# APPENDIX F: PHONE SURVEY FREQUENCIES

| Demographics | | West | | East | | Central | | South | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | % | n | % |
| Gender | Male | 60 | *48.0* | 68 | *54.4* | 59 | *47.2* | 59 | *46.5* | **246** | **49.0** |
| | Female | 65 | *52.0* | 57 | *45.6* | 66 | *52.8* | 68 | *53.5* | **256** | **51.0** |
| Type of residence* | Own | 101 | *80.8* | 105 | *84.0* | 98 | *78.4* | 116 | *91.3* | **420** | **83.7** |
| | Rent | 17 | *13.6* | 17 | *13.6* | 25 | *20.0* | 10 | *7.9* | **69** | **13.7** |
| | Other | 4 | *3.2* | 1 | *0.8* | 1 | *0.8* | 1 | *0.8* | **7** | **1.4** |
| | Refused | 3 | *2.4* | 2 | *1.6* | 1 | *0.8* | 0 | *0.0* | **6** | **1.2** |

| Age Group | | West | | East | | Central | | South | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | % | n | % |
| Age Range | 18-24 | 1 | *0.8* | 2 | *1.6* | 4 | *3.2* | 1 | *0.8* | **8** | **1.6** |
| | 25-34 | 4 | *3.2* | 4 | *3.1* | 3 | *2.4* | 3 | *2.3* | **14** | **2.8** |
| | 35-44 | 11 | *8.7* | 16 | *12.5* | 8 | *6.3* | 8 | *6.3* | **43** | **8.5** |
| | 46-54 | 16 | *12.7* | 18 | *14.1* | 18 | *14.3* | 22 | *17.2* | **74** | **14.6** |
| | 55-64 | 22 | *17.6* | 19 | *14.8* | 25 | *19.8* | 28 | *21.8* | **94** | **18.5** |
| | 65-74 | 25 | *19.8* | 36 | *28.1* | 27 | *21.4* | 24 | *18.8* | **112** | **22.0** |
| | 75-84 | 19 | *15.0* | 13 | *10.2* | 19 | *15.1* | 9 | *7.0* | **60** | **11.8** |
| | 85+ | 13 | *12.7* | 8 | *6.3* | 6 | *4.8* | 11 | *8.6* | **38** | **7.5** |
| | Missing | 15 | *11.9* | 12 | *9.4* | 16 | *12.6* | 22 | *17.2* | **65** | **12.8** |

| | Behavior | West | | East | | Central | | South | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | % | n | % |
| Primary method for car wash* | Take it to car wash | 74 | *59.2* | 63 | *50.4* | 60 | *48.0* | 77 | *60.6* | **274** | **54.6** |
| | Wash it myself at home | 30 | *24.0* | 39 | *31.2* | 44 | *35.2* | 37 | *29.1* | **150** | **29.9** |
| | Others in household wash at home | 1 | *0.8* | 0 | *0.0* | 1 | *0.8* | 2 | *1.6* | **4** | **0.8** |
| | Take to friend's home to wash | 0 | *0.0* | 2 | *1.6* | 2 | *1.6* | 0 | *0.0* | **4** | **0.8** |
| | Never wash car | 13 | *10.4* | 15 | *12.0* | 10 | *8.0* | 8 | *6.3* | **46** | **9.2** |
| | Do not have a car | 6 | *4.8* | 6 | *4.8* | 6 | *4.8* | 2 | *1.6* | **20** | **4.0** |
| | Other | 1 | *0.8* | 0 | *0.0* | 2 | *1.6* | 1 | *0.8* | **4** | **0.8** |
| Primary method to dispose household waste* | Throw in trash or recycling bin | 37 | *29.6* | 41 | *32.8* | 35 | *28.0* | 23 | *18.1* | **136** | **27.1** |
| | Pour down the drain | 8 | *6.4* | 6 | *4.8* | 7 | *5.6* | 5 | *3.9* | **26** | **5.2** |
| | Take to hazardous waste center | 64 | *51.2* | 57 | *45.6* | 65 | *52.0* | 77 | *60.6* | **263** | **52.4** |
| | Other | 16 | *12.8* | 21 | *16.8* | 18 | *14.4* | 22 | *17.3* | **77** | **15.3** |
| Primary method to manage pests in lawn/garden* | Pesticides | 22 | *17.6* | 34 | *27.2* | 32 | *25.6* | 27 | *21.3* | **115** | **22.9** |
| | Traps | 3 | *2.4* | 2 | *1.6* | 2 | *1.6* | 5 | *3.9* | **12** | **2.4** |
| | Hire a company | 10 | *8.0* | 35 | *28.0* | 17 | *13.6* | 30 | *23.6* | **92** | **18.3** |
| | Don't do anything about it | 58 | *46.4* | 36 | *28.8* | 46 | *36.8* | 37 | *29.1* | **177** | **35.3** |
| | Don't have a lawn/garden | 21 | *16.8* | 12 | *9.6* | 21 | *16.8* | 18 | *14.2* | **72** | **14.3** |
| | Other | 11 | *8.8* | 6 | *4.8* | 7 | *5.6* | 10 | *7.9* | **34** | **6.8** |
| Dog | Yes | 32 | *25.6* | 49 | *39.2* | 33 | *26.4* | 38 | *29.9* | **152** | **30.3** |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| owner | No | 93 | *74.4* | 76 | *60.8* | 92 | *73.6* | 89 | *70.1* | **350** | **69.7** |
| Primary method to deal with dog waste* | Pick it up immediately | 15 | *46.9* | 26 | *53.1* | 16 | *48.5* | 21 | *55.3* | **78** | **51.3** |
| | Pick it up later | 14 | *43.8* | 18 | *36.7* | 14 | *42.4* | 12 | *31.6* | **58** | **38.2** |
| | Cover it up | 2 | *6.3* | 5 | *10.2* | 3 | *9.1* | 3 | *7.9* | **13** | **8.6** |
| | Other | 1 | *3.1* | 0 | *0.0* | 0 | *0.0* | 2 | *5.3* | **3** | **2.0** |

| Technology | | West | | East | | Central | | South | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | % | n | % |
| Use apps in cell phone | Don't have cell phone | 24 | *19.2* | 14 | *11.2* | 19 | *15.2* | 14 | *11.0* | **71** | **14.1** |
| | Phone does not support apps | 45 | *36.0* | 44 | *35.2* | 36 | *28.8* | 27 | *21.3* | **152** | **30.3** |
| | Don't use apps but has phone | 14 | *11.2* | 29 | *23.2* | 41 | *32.8* | 29 | *22.8* | **113** | **22.5** |
| | Use apps | 41 | *32.8* | 38 | *30.4* | 28 | *22.4* | 57 | *44.9* | **164** | **32.7** |
| | Other | 1 | *0.8* | 0 | *0.0* | 1 | *0.8* | 0 | *0.0* | **2** | **0.4** |
| Search for things online/on the internet* | Never | 29 | *23.2* | 27 | *21.6* | 23 | *18.4* | 12 | *9.5* | **91** | **18.1** |
| | A few times per year | 4 | *3.2* | 5 | *4.0* | 3 | *2.4* | 2 | *1.6* | **14** | **2.8** |
| | A few times per month | 16 | *12.8* | 22 | *17.6* | 17 | *13.6* | 8 | *6.3* | **63** | **12.5** |
| | A few times per week | 18 | *14.4* | 28 | *22.4* | 24 | *19.2* | 16 | *12.6* | **86** | **17.1** |
| | Daily | 58 | *46.4* | 43 | *34.4* | 58 | *46.4* | 89 | *70.1* | **248** | **49.4** |
| Check email* | Never | 30 | *24.0* | 28 | *22.4* | 21 | *16.8* | 10 | *7.9* | **89** | **17.7** |
| | A few times per year | 3 | *2.4* | 1 | *0.8* | 3 | *2.4* | 0 | *0.0* | **7** | **1.4** |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Use Facebook* | A few times per month | 6 | *4.8* | 7 | *5.6* | 6 | *4.8* | 2 | *1.6* | **21** | **4.2** |
| | A few times per week | 16 | *12.8* | 15 | *12.0* | 18 | *14.4* | 12 | *9.5* | **61** | **12.2** |
| | Daily | 70 | *56.0* | 74 | *59.2* | 77 | *61.6* | 103 | *81.1* | **324** | **64.5** |
| | Never | 72 | *57.6* | 77 | *61.6* | 74 | *59.2* | 69 | *54.3* | **292** | **58.2** |
| | A few times per year | 2 | *1.6* | 1 | *0.8* | 7 | *5.6* | 6 | *4.7* | **16** | **3.2** |
| | A few times per month | 15 | *12.0* | 9 | *7.2* | 9 | *7.2* | 11 | *8.7* | **44** | **8.8** |
| | A few times per week | 14 | *11.2* | 18 | *14.4* | 11 | *8.8* | 16 | *12.6* | **59** | **11.8** |
| | Daily | 22 | *17.6* | 20 | *16.0* | 24 | *19.2* | 25 | *19.7* | **91** | **18.1** |
| Use of Youtube | Never | 57 | *45.6* | 67 | *53.6* | 59 | *47.2* | 50 | *39.4* | **233** | **46.4** |
| | A few times per year | 18 | *14.4* | 13 | *10.4* | 14 | *11.2* | 15 | *11.8* | **60** | **12.0** |
| | A few times per month | 14 | *11.2* | 22 | *17.6* | 22 | *17.6* | 28 | *22.1* | **86** | **17.1** |
| | A few times per week | 25 | *20.0* | 14 | *11.2* | 23 | *18.4* | 23 | *18.1* | **85** | **16.9** |
| | Daily | 11 | *8.8* | 9 | *7.2* | 7 | *5.6* | 11 | *8.7* | **38** | **7.6** |
| Read blogs | Never | 80 | *64.0* | 93 | *74.4* | 78 | *62.4* | 67 | *52.8* | **318** | **63.3** |
| | A few times per year | 10 | *8.0* | 9 | *7.2* | 10 | *8.0* | 19 | *15.0* | **48** | **9.6** |
| | A few times per month | 17 | *13.6* | 10 | *8.0* | 12 | *9.6* | 16 | *12.6* | **55** | **11.0** |
| | A few times per week | 10 | *8.0* | 6 | *4.8* | 16 | *12.8* | 10 | *7.9* | **42** | **8.4** |
| | Daily | 8 | *6.4* | 7 | *5.6* | 9 | *7.2* | 15 | *11.8* | **39** | **7.8** |
| Use cell phone to send and receive text | Never | 47 | *46.5* | 42 | *37.8* | 43 | *40.6* | 36 | *31.9* | **168** | **33.5** |
| | A few times per year | 4 | *4.0* | 2 | *1.8* | 5 | *4.7* | 2 | *1.8* | **13** | **2.6** |
| | A few times per month | 5 | *5.0* | 6 | *5.4* | 9 | *8.5* | 9 | *8.0* | **29** | **5.8** |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A few times per week | 16 | *15.8* | 22 | *19.8* | 12 | *11.3* | 13 | *11.5* | **63** | **12.5** |
| | Daily | 29 | *28.7* | 39 | *35.1* | 37 | *34.9* | 53 | *46.9* | **158** | **31.5** |

| Outreach | | West | | East | | Central | | South | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | % | n | % |
| Information for washing car or car wash location* | Television | 1 | *0.8* | 0 | *0.0* | 2 | *1.7* | 1 | *0.8* | **4** | **0.8** |
| | Newspaper | 4 | *3.4* | 5 | *4.2* | 8 | *6.7* | 2 | *1.6* | **19** | **3.9** |
| | Magazine | 3 | *2.5* | 1 | *0.8* | 0 | *0.0* | 0 | *0.0* | **4** | **0.8** |
| | Internet | 42 | *35.3* | 43 | *36.1* | 47 | *39.5* | 59 | *47.2* | **191** | **39.6** |
| | Email | 0 | *0.0* | 1 | *0.8* | 0 | *0.0* | 1 | *0.8* | **2** | **0.4** |
| | Social media (ie. Facebook, Twitter) | 0 | *0.0* | 0 | *0.0* | 1 | *0.8* | 0 | *0.0* | **1** | **0.2** |
| | Friends/relatives/ neighbors | 7 | *5.9* | 16 | *13.5* | 10 | *8.4* | 15 | *12.0* | **48** | **10.0** |
| | Community events | 2 | *1.7* | 2 | *1.7* | 1 | *0.8* | 1 | *0.8* | **6** | **1.2** |
| | Mail | 2 | *1.7* | 2 | *1.7* | 4 | *3.4* | 0 | *0.0* | **8** | **1.7** |
| | Auto supply store | 1 | *0.8* | 0 | *0.0* | 2 | *1.7* | 2 | *1.6* | **5** | **1.0** |
| | Other | 33 | *27.7* | 19 | *16.0* | 27 | *22.7* | 23 | *18.4* | **102** | **21.2** |
| | None of the above | 24 | *20.2* | 30 | *25.2* | 17 | *14.3* | 21 | *16.8* | **92** | **19.1** |
| Information on how or where to dispose of | Television | 2 | *1.6* | 2 | *1.6* | 0 | *0.0* | 0 | *0.0* | **4** | **0.8** |
| | Radio | 0 | *0.0* | 1 | *0.8* | 2 | *1.6* | 0 | *0.0* | **3** | **0.6** |
| | Newspaper | 3 | *2.4* | 12 | *9.6* | 3 | *2.4* | 4 | *3.2* | **22** | **4.4** |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Magazines | 2 | *1.6* | 0 | *0.0* | 0 | *0.0* | 0 | *0.0* | **2** | **0.4** |
| | Internet | 61 | *48.8* | 46 | *36.8* | 52 | *41.6* | 72 | *56.7* | **231** | **46.0** |
| | Email | 0 | *0.0* | 1 | *0.8* | 0 | *0.0* | 1 | *0.8* | **2** | **0.4** |
| | Social Media (eg. Facebook, Twitter) | 2 | *1.6* | 0 | *0.0* | 1 | *0.8* | 0 | *0.0* | **3** | **0.6** |
| | Friends/relatives/ neighbors | 10 | *8.0* | 13 | *10.4* | 4 | *3.2* | 6 | *4.7* | **33** | **6.6** |
| | Community events | 5 | *4.0* | 4 | *3.2* | 7 | *5.6* | 3 | *2.4* | **19** | **3.8** |
| | Mail | 4 | *3.2* | 11 | *8.8* | 12 | *9.6* | 8 | *6.3* | **35** | **7.0** |
| | Other | 24 | *19.2* | 28 | *22.4* | 32 | *25.6* | 24 | *18.9* | **108** | **21.5** |
| | None of the above | 12 | *9.6* | 7 | *5.6* | 12 | *9.6* | 9 | *7.1* | **40** | **8.0** |
| **Information about gardening or lawn care*** | Television | 1 | *1.0* | 0 | *0.0* | 0 | *0.0* | 0 | *0.0* | **1** | **0.2** |
| | Radio | 1 | *1.0* | 0 | *0.0* | 0 | *0.0* | 0 | *0.0* | **1** | **0.2** |
| | Newspaper | 3 | *2.9* | 5 | *4.4* | 2 | *1.9* | 3 | *2.8* | **13** | **3.0** |
| | Magazines | 3 | *2.9* | 3 | *2.7* | 3 | *2.9* | 1 | *0.9* | **10** | **2.3** |
| | Internet | 45 | *43.3* | 41 | *36.3* | 44 | *42.3* | 50 | *45.9* | **180** | **41.9** |
| | Email | 0 | *0.0* | 0 | *0.0* | 1 | *1.0* | 0 | *0.0* | **1** | **0.2** |
| | Friends/relatives/ neighbors | 9 | *8.7* | 14 | *12.4* | 8 | *7.7* | 6 | *5.5* | **37** | **8.6** |
| | Community events | 1 | *1.0* | 1 | *0.9* | 0 | *0.0* | 0 | *0.0* | **2** | **0.5** |
| | Mail | 0 | *0.0* | 2 | *1.8* | 3 | *2.9* | 1 | *0.9* | **6** | **1.4** |
| | Gardner, landscaper or other lawn care professional | 10 | *9.6* | 9 | *8.0* | 15 | *14.4* | 19 | *17.4* | **53** | **12.3** |
| | Home/garden supply store | 9 | *8.7* | 13 | *11.5* | 12 | *11.5* | 10 | *9.2* | **44** | **10.2** |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Other | 10 | *9.6* | 9 | *8.0* | 10 | *9.6* | 9 | *8.3* | **38** | **8.8** |
| | None of the above | 12 | *11.5* | 16 | *14.2* | 6 | *5.8* | 10 | *9.2* | **44** | **10.2** |
| **Information on dog-related issues or dog supplies*** | Television | 0 | *0.0* | 0 | *0.0* | 0 | *0.0* | 1 | *2.6* | **1** | **0.7** |
| | Newspaper | 0 | *0.0* | 1 | *2.0* | 0 | *0.0* | 0 | *0.0* | **1** | **0.7** |
| | Magazines | 3 | *9.4* | 0 | *0.0* | 0 | *0.0* | 0 | *0.0* | **3** | **2.0** |
| | Internet | 11 | *34.4* | 17 | *34.7* | 17 | *51.5* | 19 | *50.0* | **64** | **42.1** |
| | Friends/relatives/ neighbors | 0 | *0.0* | 2 | *4.1* | 2 | *6.1* | 2 | *5.3* | **6** | **3.9** |
| | Mail | 1 | *3.1* | 1 | *2.0* | 2 | *6.1* | 0 | *0.0* | **4** | **2.6** |
| | At a pet supply store | 12 | *37.5* | 16 | *32.7* | 5 | *15.2* | 8 | *21.1* | **41** | **27.0** |
| | Other | 4 | *12.5* | 7 | *14.3* | 7 | *21.2* | 7 | *18.4* | **25** | **16.4** |
| | None of the above | 1 | *3.1* | 5 | *10.2* | 0 | *0.0* | 1 | *2.6* | **7** | **4.6** |

| **Willingness** | **West** | | **East** | | **Central** | | **South** | |
|---|---|---|---|---|---|---|---|---|
| | **Mean** | ***SD*** | **Mean** | ***SD*** | **Mean** | ***SD*** | **Mean** | ***SD*** |
| Willingess to take car to the carwash | 7.6 | *3.4* | 6.8 | *3.6* | 6.6 | *3.8* | 7.4 | *3.5* |
| Willingess to take household was to household hazardous waste center | 7.9 | *3.3* | 8.1 | *3.0* | 8.5 | *2.7* | 8.5 | *2.7* |
| Willingess to use an eco-friendly pesticide | 7.6 | *3.1* | 7.8 | *3.0* | 7.2 | *3.3* | 8.0 | *2.8* |
| Willingness to hire an eco-friendly pest management operator | 4.4 | *3.5* | 5.0 | *3.8* | 4.2 | *3.5* | 5.0 | *3.6* |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Willingness to pick up your dog's waste immediately and place it in a trash bin | 6.5 | *3.5* | 7.2 | *3.3* | 7.6 | *2.8* | 6.3 | *3.2* |

# APPENDIX G: FOCUS GROUP FACILITATION

***Focus Group Facilitation: Key Points & Content Script***

**Group flow**

- Check-in [15]
- Introduction – facilitator & purpose [5-10]
- Ground rules [5-10]
- Icebreaker [5]
- Content questions [<=1 hr 15 mins]
- Conclusion [5]
- Payment [5-10]

**Check-in**

Check participants in and give them any materials to review

**Introduction**

My name is _____ and I'm from a company called S. Groner Associates, or SGA for short. Our company [describe what SGA does & how it relates to today's focus group].

We are interested in hearing about how you manage your lawn and/or garden. We will be asking questions about your experiences in lawn/garden care, including what you do to take care of pests.

You've been invited here today to give your opinion as a person who has a lawn/garden. We know you may have other roles in the community and in your daily life, but today we would like your views as a person who works in their lawn or garden, rather than from the perspective of your other roles. We value your opinions and want you to know that we hope to use the information in to learn more about important lawn/garden management issues and needs among Contra Costa residents.

**Ground rules**

Before we begin, let me mention a few things about how we usually conduct these groups:

1) I will be the facilitator for the group. My role is to ask the questions we have for the group, and to encourage everyone to participate. I won't be doing much talking, but may ask you to explain more or to give an example. Also, it's my job to see that everyone has a chance to voice their opinions, as well as to keep us moving along so that we have time to discuss all of the questions. So, at times, it might seem as though I am cutting you off, and this is not meant to be rude but rather to make sure that we have time to hear from everyone on each question. Since we only have until (STATE TIME HERE), we won't have time to hear all of the details of each person's situation. We know that you each have your own experience and that sharing your experience with others can be useful. We hope you'll understand that for the next hour or so we will ask you to focus on the questions asked. You can take extra time after the group is finished to talk more with each other if you wish. We want to thank each of you for being here, so please know that we value your ideas and comments.

2) It's really important that everyone hear this: THERE ARE NO RIGHT OR WRONG ANSWERS! Each person's experiences and opinions are valid, and we want to hear a wide range of opinions on the questions we'll be asking. So, please speak up, whether you agree or disagree with what's being said, and let us know what you think.
3) Sometimes participants bring up sensitive issues during these discussions, and we want to be sure that everyone agrees before we begin the group that anything of a personal nature that is mentioned in this room will NOT be repeated to others outside of this discussion group. Can I see a nod from everyone showing me that you agree with this confidentiality ground rule? (If anyone is not willing to give their consent to confidentiality, they may be excused from the group.)
4) Let me tell you about our recording process. As you can see, we have a tape recorder. We usually record these focus groups because we want to get everything that all of you say, and we simply can't write fast enough to get it all down. We use first names only in the transcript, and when we put together the results from all the groups, we don't include any names. It is VERY IMPO
TIME, so that we have a good quality recording. So, now that you know what our process is, is everyone OK with being recorded?
5) Let me mention before we start, that we plan to be finished with our discussion by [END TIME]. After our discussion, you will receive $100 cash as our thank-you to you for participating in our group today.
6) In case anyone needs to use the restroom, they are located [_____]. One last thing, we ask that everyone turn their cell phones off or to silent mode so that we can begin our discussion. Thanks.

**Ice Breaker**

- Let's start by going around the room to introduce ourselves. Will each person please share with the group:
  - Your first name
  - Your city/neighborhood and how long you've lived there
  - What your favorite activity is in [region where group is being conducted]

**Content questions**

- Start out by asking group about problems or issues they've experienced in maintaining their lawn /garden.
- *Get at: What methods do residents use to control pests in their lawn/garden?*
  - *Sample questions: When someone mentions pests in response to above question, keep the conversation flowing on that topic.*
    - What do you do to manage pests in your lawn/garden?
    - How do you deal with pests?
    - How important is it to you that you effectively manage pests in your lawn/garden?
    - Can anyone share with the group an example of when they've had to deal with pests in their lawn/garden?
- *Get at: What are the motivators of pesticide use?*
  - *Sample questions (flowing directly from first conversation point above (doesn't necessarily have to go in this order)):*
    - What are the benefits of using pesticides?

        - What are some reasons for using pesticides rather than other methods of pest control?
        - What do you like about using pesticides?
- *Get at: What are the motivators of eco-friendly pest management?*
    - *Sample questions:*
        - Has anyone here heard about eco-friendly pest management options (DIY & domestic outsourcing)? *Allow group to generate ideas, and fill in the following: options if needed.*
            - *IPM*
            - *IPM perimeter spray*
            - *Non-pyrethroid or fipronil pesticides*
            - *Our Water Our World – certified products*
        - Tell us about a time when you used [x eco friendly option]. How did you come to the decision to use that option? What factored into your decision to use that particular option relative to others available?
        - Who else here has used [x eco friendly option] for pest management? Can you explain to the group your decision making process in that situation?
        - What do you like about using [x eco friendly option]?
        - What are the benefits of using [x eco friendly option]?
        - What are some reasons for using [x eco friendly option] rather than other methods of pest control?
        - What are some reasons that you might consider using [x eco friendly option] for pest management?
- *Get at: What are the barriers to eco-friendly pest management?*
    - *Sample questions:*
        - Who here has considered using [x eco friendly option] for pest management but decided against it? Can you explain to the group your decision making process in that situation?
        - Tell us about a time when you used [x eco friendly option]. How did you come to the decision not to use that option? What factored into your decision not to go with [x eco friendly option]?
        - What are some reasons that you have not used [x eco friendly option] for pest management?
        - What are some reasons that would prevent you from trying [x eco friendly option] in the future?

**Conclusion**

- So what we talked about today included ….. [summarize main themes conveyed by participants]
- Is there anything we've missed? Anything else we should know?
- Thanks so much for being here today and for sharing your ideas with us!

**Payment**

- Give each participant $100 cash and have them & you sign 2 receipts of payment – they keep a copy, we keep a copy.

# APPENDIX H: FOCUS GROUP TRANSCRIPTS

***Contra Costsa – West Region***
Richmond City Hall
10:00 am Saturday, February 23, 2013

[0:00:00]

Interviewer 1: I'll start, how about we'll just do your name, where you're from and one thing you like to do and if you have any children, grandchildren, pets, whatever. My name is Philip, I'm originally from Dallas, Texas. But now I'm out here in California, I have one dog and one of my favorite things to do is to go swimming. And I like stuff with the ocean. So if Frank can take it away.

Frank M.: My name is Frank, I live in Pinole, and I'm originally from Canada. I like traveling, I like fishing, I have no pets, I have 14 grandchildren and I think about [xx] great grandchildren and that's about it.

Interviewer 1: Wow, well thank you very much Frank. David?

David P.: My name is David, I'm originally from Austin, Texas. I have one daughter and she's kind of strange.

Interviewer 1: Oh, and something you like to do?

David P.: Travel, definitely travel.

Annette L.: My name is Annette and I was born and raised in San Francisco. Now I live in Richmond and I'm recently retired and I like gardening and hiking.

Interviewer 1: Great, thank you Annette.

Lynn: I'm Lynn, and I'm here in Richmond and I like traveling. I have two sons.

Interviewer 1: Oh, great.

Jose L.: My name is Jose, I'm from Mexico, I live in Richmond, and I got three children. Two girls and one boy and I like hunting.

Interviewer 1: Oh, okay, thank you, oh anything else, oh that's it okay.

Lanita P.: Hi my name's Lanita and I love to eat, I'll travel wherever I need to go to eat and I have a little girl she's six years old and I'm from here, in Richmond.

Interviewer 1: Great.

Bruce B.: I'm Bruce, I'm originally from Southern Idaho, I've live in Pinole for the last 21 years and I'm married, I have a married daughter and my wife and I, when gasoline prices permit like to go see the scenery.

Interviewer 1: Great, thanks.

Thurman V.: Well I'm Thurman, I've lived in El Sobriante since 1946 married to a retired Kaiser nurse. Four kids scattered all over the West coast and we like to tend bees and garden, go up to our rural property.

Interviewer 1: Okay.

Interviewer 2: I'm Nick, was born in New York, now I'm out here live over on the lake, I know I was talking to somebody living over there. Lived in Oakland. Had lots of animals throughout my whole life, tons of different animals. First person I heard tend bees, that's kinda cool. We usually had dogs, I had gigantic you know those Great Pyrenees.

Annette L.: They are huge.

Interviewer 2: Huge, huge dogs. When I was a little little kid, about 30 years ago, I rode around on it like a horse. I have pictures of me a little guy riding around on this big ol' dog. That's my horse, that's [Mystique].

Interviewer 1: So I'll be kinda asking questions after, Nick will be taking notes and let's get started. You know little about what the discussion is, but what you do know is it has something to do with lawns, gardens, you all have a lawn or garden, correct? Do we have any gardeners out there?

Annette L.: I'm kind of a beginner gardener.

Interviewer 1: Beginner gardener?

Annette L.: Yeah. yeah.

Interviewer 1: Beginner gardener, like fruits and veggies?

Annette L.: No, flowers.

Interviewer 1: Oh, flowers, nice nice.

Annette L.: Yeah yeah.

Interviewer 1: Nice okay.

Annette L.: I'm not sure about planting them. I'm not sure about the pollution and the ground enrichment and how thick the soil is so just flowers.

Interviewer 1: So, just flowers? Okay. Anyone do landscaping or anything like that?

Annette L.: I want to do landscaping but I'm looking for somebody, it's really expensive, so I'm just kinda looking around trying to find something that maybe the County is in on or something non-profit reference and what they do. I have a lawn now and I wouldn't mind replacing it with some natural things, but I haven't looked into it yet.

[5:06]

Interviewer 1: Yeah okay that's great. What do you all do with your lawns or do you have a lawn, Thurman?

Thurman V.: I do have one, we mow our grass when it comes up, we garden extensively though.

Interviewer 1: Oh?

Thurman V.: We do a lot of tomatoes, vegetables, flowers, trees, breaking down trees out in the yard occasionally.

Interviewer 1: Oh, nice.

Thurman V.: We got a pretty large place so.

Interviewer 1: Oh that's good, so do you have a big front yard, back yard size, side yard or anything?

Thurman V.: The front yard is planted as a vegetable garden and grass, the backyard is planted as a vegetable garden, but we have things like, our property originally raised horses and sorts of animals, peasants, it was pretty much a farm as it started out. So we have tractors and old cars and things like that. We do a lot of amateur agriculture and we have the bees.

Interviewer 1: Great, bees. Thank you.

Bruce B.: I have a small front yard, its takes maybe 5-6 minutes to mow which I like, when I moved into the house there was some vegetation around the house completely, but little by little it's been transformed into rock gardens. I like rock gardens their easy to tend, you wash them and their happy and no fertilizer required or anything like that.

Interviewer 1: Gotcha, Lanita?

Lanita P.: We have a nice sized front yard, grass, it's nice, it's actually nice. My mom put a lot of money into it and then the backyard is a lot of grass, but then she has a huge vegetable garden as well.

Interviewer 1: Wow.

Lanita P.: So a lot of vegetables, we have a lemon tree, an orange tree, everything, so we seldom...

Annette L.: Oh that's nice.

Lanita P.: …have to buy the fruits of vegetables.

Interviewer 1: Great, Jose?

Jose L.: We have a small pieces grass, I do my own sprinklers, I never pay for anything. And I got a big flower, the leaf is THIS big. But the flowers are this big, so as soon as it comes out, they're dry so I don't have pests.

Frank M.: Sunflower?

Jose L.: No, the leaf are big ones too, the flowers, when they come out its kinda dry…

Interviewer 1: Okay, thank you, Lynn?

Lynn: I live in a condo complex, so most of our landscaping is maintained communally, we have a deck back patio, and we grow stuff on it. My kids like butterflies so we try to put out butterfly things.

Interviewer 1: Oh, nice, thanks.

Annette L.: As far gardening, I have some flowers and stuff like that, with the lawn, I still have a lawn there but I either I have to replace it or put something else in there, I haven't decided yet, [something reasonable]. I've landscaped but I've checked into it and it's really expensive, so my lawn's kinda is half gone.

Interviewer 1: Okay.

Annette L.: So I'm kind of in between right now.

Interviewer 1: Gotcha.

David P.: So I... Does growing medical marijuana, does that count?

Interviewer 1: Yeah.

David P.: So it's my first attempt at that, it takes a lot of light, your electric bill goes way up, so you know, that didn't last long.

Interviewer 1: Okay.

David P.: Other than that I rarely use the yard... But I have a neighbor in Texas, my grandmother left me and everything just grew out everything just cracked, the house is actually settling because it's been so dry.

Interviewer 1: We'll talk about your lawn in California today. Frank?

Frank M.: I have a front lawn, I'm going to put in a new back lawn, get some landscaping around there and put in a couple of redwood trees, sequoias, I have flowers in the back. I use a drip system on my roses, I have it on a timer so it comes on for just a few minutes and they get plenty of water. I garden on and off, some years I do some years I don't.

[10:03]

Interviewer 1: As in flowers, veggies?

Frank M.: Vegetables.

Interviewer 1: For food?

Frank M.: Hmmhmm, everything but zucchinis

Interviewer 1: Why not the zucchinis?

Frank M.: Because all the neighbors give them to me because they grow them. They get way more than they can eat, so they give them to me so there is no need to grow them.

Interviewer 1: Gotcha.

Frank M.: They mainly like tomatoes and green beans, peppers, corn.

Interviewer 1: Okay, great.

Frank M.: I find corn, the quicker you can pick it and get it into the pot the better it is.

Interviewer 1: Ah yeah, because the sugars start to break down...

Frank M.: Yeah yeah.

Interviewer 1: Great, so we got a lot of stuff going on. What about how you use your lawn? Do you, for those of you who have kids, do they play on the lawn or do you ever go out there and camp in your own little new grass or what do you do with it? Anyone can just chime in.

Frank M.: My putting in a back lawn would be for my grandkids.

Interviewer 1: Okay.

Frank M.: To have a place to play and tumble and what kids do, play games and so forth.

Interviewer 1: Right.

Frank M.: The front lawn I have two, two really good sized trees that the dang birds have taken over the lawn. So the only way to get rid of them is have them cut down and the whole front yard dug up to get rid of all the roots and then put something else in. But I would like something that's drought tolerant in the front that I didn't have to put a lot of care into. Other than just cover it rock or cement or something.

Interviewer 1: Gotcha.

Annette L.: My friend, I really like the look of her lawn. Greens my favorite color so I love the look of the lawn even though it's a small space it really adds a lot to when you walk into the house. I'll sit out there and it's really nice and peaceful. The front yard, gee I don't know if I have to replace... I would have to replace it or do something else. I really happen to like it because it looks nice.

Interviewer 1: Mmhmm, yeah that's a good reason, yeah.

Bruce B.: I'm much in the same situation as that. My lawn is so small you don't do anything with it in a practical way. We can't get out there and play croquet or badminton or something so it just add some green to the front of the house so it looks nice for what there is of it.

Interviewer 1: Okay.

Lanita P.: We get a lot of compliments on my yard, on our front yard.

Interviewer 1: Really?

Lanita P.: It's just green.

Interviewer 1: Because your mom really...

Lanita P.: Mmhmm. mmhmm, she had it auto rototilled and redone.

Interviewer 1: Wow, did she do it herself?

Lanita P.: No, no, no, no, no, she had a landscaper and do you remember them putting patches of grass.

Interviewer 1: Sod?

Lanita P.: Sod, mmhmm and within a few months it was, it's really nice and thick, real thick green grass.

Interviewer 1: Really lush?

Lanita P.: Mmhmm.

Annette L.: I love that look.

Lanita P.: Oh, it's beautiful, it's beautiful.

Annette L.: How did you find someone? You use the phone book?

Lanita P.: I have to ask my mom, I think it's... I'm unsure if it's somebody she knows and she knows everybody in the community, you know.

Annette L.: Usually people in the phone book, but you never know [willy wonky] it's really hard to find somebody that going to do a good job and not charge you a fortune. [Or just not do it, or whatever. It's kinda where I am right now.

Interviewer 1: Yeah, Jose?

Jose L.: The grass can so be in the dirt so it's kinda hard the grass kinda small we try to keep it nice but I don't know it won't come out like well.

Interviewer 1: It's not growing well?

Jose L.: It always grows low, I tried to put a lot of vitamins or whatever.

Interviewer 1: Nutrients.

Jose L.: I just put it on, a little bit, and leave it on 2-3 weeks and then they grow back again I never got lucky with the crops or the flowers. The inside of my house, my wife's got beautiful plants inside.

Interviewer 1: Potted plants?

Jose L.: Yeah.

Interviewer 1: Okay.

Jose L.: But that's the only thing.

Interviewer 1: Okay cool and Thurman sounds like you do a lot with your..

Thurman V.: We don't have a formal lawn or the things that the Mrs. would like would be a good cultured lawn even a tiny one. [We read books and] that sort of thing but we're totally essentially totally rural. This is a beautiful time of year because everything's green which is nice but we don't do anything to assist, it maybe a little water but that's absolutely necessary. Mostly vegetable garden, farm like [atmosphere].

[15:11]

Interviewer 1: Okay yeah. So, oh yeah David?

David P.: I like not having to maintain my lawn because in Texas I had a grandson that was always out there working the lawn and I had other grandkids do it. So for it to be there.

Interviewer 1: So you don't do much with it, what's it like when you kinda just...

David P.: I had a daughter, when I had a daughter it was kinda used but my daughter, she likes to play in it.

Interviewer 1: Uh huh.

David P.: Sprinkler sure, summertime.

Interviewer 1: Okay yeah okay so other than that you don't do much else with it, or?

David P.: Nah.

Interviewer 1: I mean you grow some plants and stuff.

David P.: I have a patio, tomatoes that's about it.

Interviewer 1: Oh tomatoes, okay.

David P.: I actually made a plant that came back it was all chemicals for the pot.

Interviewer 1: Oh okay, all right so it seems like we've got a good diverse group here. When you guys are managing, lets mix it up here. Well anyone can chime in. What are some issues you have with pest and what I mean by pests are either weeds maybe on your lawn or bugs or rodents anything like that and issues.

David P.: Neighbors cigarette butts.

Interviewer 1: Excuse me?

David P.: Neighbors their cigarette butts.

Interviewer 1: Oh yeah that a pest.

Annette L.: Weeds.

Interviewer 1: Weeds?

Annette L.: Oh yeah, they're always there, yeah.

Interviewer 1: Always there? Yeah, okay.

Frank M.: Crabgrass.

Interviewer 1: Crabgrass?

[group mutters]

Frank M.: Oh yeah I hate it.

Interviewer 1: You hate it?

Annette L.: I don't use any sprays or anything, so I know, I don't know if you can tell but I've always worried that some people have... There's two types of spray and people say it's very bad for the environment or they believe help they will eliminate the weeds from coming really back fast but it's a lot a work pulling weeds though.

Interviewer 1: So how often do you pull weeds?

Annette L.: I'll let it go, I'll let it go two or three months, and I'll be out there all day.

Interviewer 1: Oh okay, Frank when you say you hate crabgrass why do you hate it ?

Frank M.: Well it takes over, you have to get out there and put something on it to get rid of it before it germinates again, it dies every weather but then the seeds all germinate.

Interviewer 1: Oh okay, so once it goes...

Frank M.: Sunny days like this it comes up quick.

Interviewer 1: Oh, gotcha.

Frank M.: That's the only way I know how to get with rid of it is to use like a Scott's. Scott's fertilizer with crabgrass killer.

Interviewer 1: Okay.

Thurman V.: I just recycled three cases of crabgrass killer that I wouldn't use myself. That must of been worth 10 bucks a bottle and there are three cases of it. The neighbor next-door who is a master gardener, [a chemical freak]. We always wondered why our cats died occasionally.

[Group laughter]

Thurman V.: The old man passed away he was from Missouri. He just used the [salt] and the earth and he was a far better gardener than me than I could even imagine to be. But I told the daughter I would help clean the house and get it ready for sale and there was a tin shed completely full of chemicals.

Lanita P.: Wow.

Thurman V.: While you sure can imagine three cases of crabgrass killer. Brand new Ortho stuff all that stuff was 4 ½% arsenic.

Bruce B.: Oh my goodness.

Anonymous: Are you serious.

Thurman V.: That kind of scared the hell out of me. In fact when I went to the recycling center, they don't let you get out of the car, you open the trunk and they take it out and I told the guy, by the way this stuff is 4 ½% arsenic. Oh yeah I [know], we started looking at each other, putting on gloves and that sort of thing. Three cases.

Frank M.: The the bottle or cans? Or?

Thurman V.: It was in plastic bottles it was Ortho crabgrass killer and it had a number of other chemicals but it was 4 ½% metallic arsenic. It would kill lot more than crabgrass.

Bruce B.: Wow.

Interviewer 1: How do recycle it?

Thurman V.: Took it to the County, West County recycling center.

Interviewer 1: Okay.

Thurman V.: They'll take up to 15 gallons per trip.

Interviewer 1: Okay.

Thurman V.: And the one with the old paint and that sort of thing, to clean the place up.

Interviewer 1: Okay.

Thurman V.: Without happy new neighbors.

[20:01]

Frank M.: That's a good place to go to if you're looking for stuff.

Thurman V.: You can have free paint.

Frank M.: That's right. They'll give it to you, anything, anything that's not real dangerous. Like what he took in is probably outlawed now but anything else, fertilizers and weed killers, and stuff like that they haven't all lined up there you could take whatever you want. I took a brand new can of redwood stain.

Bruce B.: Oh my god.

Frank M.: It has never been open it was a little bit stained.

Bruce B.: Maybe chlorine, chlorine stuff and all.

Frank M. Yeah.

Lanita P.: Wow, let me write that down.

Frank M.: It down off [Parvers] isn't it, park in that part boulevard.

Thurman V.: It's over what used to be Third Street

Lanita P.: Oh the recycling center.

Thurman V.: It's same street as action metals.

Lanita P.: Yes.

Annette L.: Is it off Rich and Parkway?

Thurman V.: Yeah ,yeah, when you see action metals you turn left and go east maybe two blocks, it's a big moderate looking building.

Frank M.: It's on the right.

Thurman V.: It would be at any [xx].

Lanita P.: Okay, wow, thank you.

Interviewer 1: So what about some pest that you deal? I'm sure.

Thurman V.: Oh we have everything up there.

Interviewer 1: Yeah?

Thurman V.: We have possums, raccoons. We got coyotes on the property.

Interviewer 1: Wow.

Thurman V.: I suspect mountain lions.

Annette L.: Where are you again?

Thurman V: Up Hilltop Drive on [Elsa Brandy], in the old section.

Annette L.: Oh yeah.

Thurman V.: There's a word for that kind of housing, I can't remember what it is but it's mixed.

[Group talking over each other]

Thurman V.: It's not attractive in modern sense.

Annette L.: Right, right, right.

Thurman V: The lots were from between an acre and an acre and a half.

Annette L.: Wow.

Interviewer 1: Okay, so you get a lot of rodents it sounds like?

Thurman V.: We trap the those and we can do without dangerous chemicals on the foodstuffs and everything in that matter. We just use a tiny amount of brush killer for blackberries where we don't want them.

Interviewer 1: So for the blackberries what's the pest that you're trying to deal with usually?

Thurman V.: The blackberries.

Interviewer 1: Oh, the blackberries themselves.

Thurman V.: The bees love them but you know they're evasive.

Interviewer 1: Ohhh.

Thurman V.: It's great to have a lot of blackberries for the bees and the birds and that sort of thing but if you have a little blackberry in this area, this is blackberry country they get bigger and bigger and bigger until finally... I've got tractors in the backyard that you cannot see because of the blackberries, with it just as well.

Interviewer 1: Okay.

Lanita P.: We have a huge problem with ants.

Interviewer 1: Ants, oh.

Lanita P.: Ants all over the vegetables and weeds. I was trying to get something that doesn't have chemicals. You got to have something chemically, so we use that like maybe twice a year. [xx] of course you got dead ants everywhere but you be amazed at the number of them.

Interviewer 1: Yeah.

Lanita P.: There's so many of them it looks like a...

Interviewer 1: Like a big line of them.

Lanita P.: You know what I mean.

Interviewer 1: Is it outside?

Lanita P.: When they dead.

Interviewer 1: Do they come inside?

Lanita P.: They'll come inside too. They'll come inside through the faucets, and little crevices in the kitchen and what not. But I was astonished at how many it was when they all were dead.

Interviewer 1: Yeah.

Lanita P.: Like oh my god, but yeah...

Interviewer 1: So was that with the line or do you find the source?

Lanita P.: I try to find the source, but it's kinda difficult.

Interviewer 1: Yeah.

Lanita P.: I've taken all the pots and pans out of the kitchen and bowls and wash everything down. And my mom is like, "What is wrong with you?" and I'm like in tears, "I don't like ants," there's just so many of them and you think you take care of them in one part of the house and then tomorrow they're over there.

Interviewer 1: Yeah so they're a menace.

Lanita P.: Mmhmm.

Interviewer 1: Okay.

Frank M.: Cold's driving them in too. The cold will definitely drive them in..

Lanita P.: Mmhmm, definitely

Frank M.: With ants, when it gets extremely cold out, that's what we have a problem.

Lanita P.: And slugs.

Interviewer 1: Slugs? Like on your vegetables?

Lanita P.: Mmhmm, mostly on the vegetables.

Interviewer 1: Okay.

Lanita P.: They eat them up.

Interviewer 1: What do you do with those?

[25:00]

Lanita P.: Toss salt.

Interviewer 1: Salt them? Fry them a little?

Lanita P.: We put a lot of salt out there.

Frank M.: I heard cinnamon, cinnamon will get rid of ants too.

Interviewer 1: Ohh, I've actually heard that .

Lanita P.: Cinnamon?

Frank M.: Simply, yeah cinnamon.

Lanita P.: Okay, plain cinnamon?

Bruce B.: I think I've heard that too.

Thurman V.: I've never tried it, but I think I've heard that.

Lanita P.: Cinnamon.

Interviewer 1: What about you Bruce? Any pest that you...

Bruce B.: When you categorize weeds as pests, I do spray a combination of grass feed and weed killer and the bottle is attached to the hose and I spray my lawn once or twice in the season. And as far as the individual weeds that I find in the rock garden I use a spray, a concentrated spray directly on that one plant.

Interviewer 1: Okay, do you have any issues with bugs or anything.

Bruce B.: I've had some problems with ants in my garage [xx] early. I've used just commercial spray on it.

Interviewer: Okay, Jose?

Jose L.: One time I had a palm tree.

Interviewer 1: Excuse me?

Jose L.: A plum tree.

Interviewer 1: A plum tree.

[26:25]

Jose L: When I look out there, they're white. They go around at the leaves and it's a white animal really tiny, I don't know how to call them. I go and try to ask them how to get it out and they use soap. They spray soap and it comes out. Then next year the same thing. Then next year the same thing. Then we found out that the tree died.

Interviewer 1: Oh.

Jose L.: The ants, they're all over. I'm not really sure.

Interviewer 1: When you said soap was it like a detergent?

Jose L.: Yes.

Interviewer 1: Okay, did you make it yourself?

Jose L.: Yeah I mixed it myself and I sprayed and let it dry.

Interviewer 1: Okay.

Jose L.: Spray all over it the leaves and [xx]

Annette L.: Those are aphids, those white little bugs and you get them on the leaves, [I keep] finding them.

Interviewer 1: What do you about those?

Annette L.: Well I use, well if it's part of the plant I just cut off that part of the plant and get rid of it. They spread a lot you know what I'm saying. But when we had a fig tree when we first moved there, it was already there. You could never get a whole fig because the birds would get them. So as soon as the figs were perfectly

ripe, these little birds we have. I consider them a pest I don't know if they're in that category. We can't really grow anything there anyways. Still cute little black birds, they're really noisy in the morning.

Interviewer 1: Yeah okay. David?

David P.: Raccoons.

Interviewer 1: Raccoons?

David P.: Raccoons, they mostly go through trash. I was going outside and this raccoon wouldn't move, so I went back inside the house and was like "Aw forget it."

Interviewer 1: Yeah they come around at night, do you try anything to get rid of them?

David P.: I basically just throw out the trash at the day rather than night time. But they're loud and you can hear, I don't know what they're beating up cats or I don't know but...

Interviewer 1: You just kinda let them be?

David P.: Oh definitely, everyday.

Annette L.: You really can't do anything, once in awhile I had, it's pretty rare but once in awhile but what can you though? I mean you could just close the windows or anything. You really can't do anything right?

Frank M.: Think about [mocking them back].

Interviewer 1: Oh they come?

Frank M.: I'll be sitting there watching TV.

Lanita P.: And they watching you and your TV.

[Group talking over each other]

Interviewer 1: Okay, what about your marijuana plants?

David P.: One time I had mice and [unrecognized name] was teaching me how to grow so I basically gave the plant to him afterwards.

Interviewer 1: Oh, okay.

David P.: But he saved the day.

Interviewer 1: He saved it?

David P.: My wife gave it to him so, I don't know what to do with it though.

Frank M.: I thought you're gonna tell us that raccoons were eating the pot.

[Group laughing and talking over each other]

Lanita P.: Coming in your house and watching you.

David P.: If I had them outside, my neighbors would probably be smoking that too.

Frank M.: So you use grow lights?

[30:00]

David P.: One time I tried yeah.

Interviewer 1: So it was indoors, not outdoors?

David P.: They check my electric bills, then [xx] got on my case, I think it went to the rental agency and then they started [xx].

Interviewer 1: So you put them outside now?

David P.: No I don't grow them anymore.

Interviewer 1: Oh you don't?

David P.: Nuh uh, because…

Interviewer 1: Oh the rent? Okay so sounds we got mostly there's some rodents around maybe not a huge issue for most people except Thurman. Is that right I mean it sounds like
it's either curiosity.

Frank M.: I had a gopher once and a while.

Interviewer 1: Oh holes and stuff.

Frank M.: Mostly gophers.

Interviewer 1: Gophers.

Frank M.: My cat died, the cat used to take care of them.

Interviewer 1: Oh.

Frank M.: Usually the same day I saw a new hole I'd see the cat carry a new gopher.

Interviewer 1: Yeah

Thurman V.: The cat would line them up like the good old days. Pull a gopher out [mow them down] and have a line of maybe three them.

Frank M.: I saw that cats sit there in the pouring rain, I mean it was pouring rain this one day and there was a new gopher hole and that cat sat over that gopher hole just staring at it, getting soaking wet and next thing I know cat comes down with a big gopher in its mouth.

Thurman V.: It's a beautiful thing.

Interviewer 1: Yeah they'll do that. So rodents are kinda more of an issue for you.

Thurman V.: Not really an issue as we just...

Interviewer 1: You trap them.

Thurman V.: We trap them, we have the gophers I think the gophers were invented now in Elsa Brandy.

Interviewer 1: We got some bugs here and there.

Bruce B.: I did have one temporary rat issue. The house next to mine is a rental house and there was one family in it for four or five years I guess and they had all kinds of trash and anything imaginable in the yard. I did not know the rats were included but they had a [list] in their yard and when they moved out they kinda cut out the rats food supply. So the rats moved over to my house came through the vents of the driver of the garage and in through the walls up to the attic. Fortunately they never seem to get up to the main floor but they got into the attic and they got into the garage. I really don't know what to do about them but I had heard that D-con brand rat killer and so I gave that a try and put some little boxes both in the garage and up in the attic. And took care of them very quickly.

Interviewer 1: So you just found them around dead?

Bruce B.: They were completely dehydrated. I found a bunch, I don't remember how many I found and I don't know there still might be some secreted in corners of the attic, the carcasses. But it eliminated the problem very quickly but not before they had chewed every wire and hose in my car; it was later detected when I took it in for servicing. So all of the hoses and wires had to be replaced.

Annette L.: In your car?

Lanita P.: They can do some damage.

Bruce B.: I don't think they gnawed anything in two but they gnawed them enough to weaken them.

Annette L.: Yeah.

Thurman V.: They can break or cut copper wire with their little teeth.

Bruce B.: It's amazing what they can do, yes.

Thurman V.: I worked on a ladies car, kind of a collector's item but down in [Veraga], a couple of old cars in the garage and I forgot about them. There was a hiding rat infestation. There were lights of wires in the car that were even accounted for. Two wires would come out and the rest would be missing.

Interviewer 1: So what can be done about, for those of you who do have rodent issues. So use a product...

Bruce B.: I use D-con brand rat killer.

Interviewer 1: What is it you say you trap them?

Thurman V.: We trap of mechanically, the poisons are good, one of the things that will happen is if a rat or any sort of rodents get out and he's poisoned and [an owl comes along] or the cat or any of the little predators we

have, will kill them. It's good if they say inside the building like yours are but they just die and desiccate but if get a situation where they're out, out in the public that's what happens with the neighbors and the poisons. You love the poisons, they would use a lot in the garden. So the gopher would come out and die on the surface.

Interviewer 1: Okay.

Frank M.: I tried for gophers, I tried this blood meal that I got, it's got actual rodent blood in it. You put it in the around the gopher hole, I tried it to see if it'll work and it worked. It's nothing that's toxic that's going to poison the ground or anything. Like you are saying too I think that's how my cat died I think my cat ate a rat who was poisoned.

[35:29]

Thurman V.: It will happen.

Frank M.: But he didn't just kill them he killed them and ate them. A lot of cats just play with them and then leave them, but my cat would actually eat them and the neighbors had torn down an old building and [group mumbling] there were a lot of rats when it tore down. You know the rats all have to go somewhere, so they go evidently in these blackberry bushes behind my neighbors house and he put poison out for them and I think my cat probably ate one of those rats. That's another thing to blackberries attract rats, among other things.

Interviewer 1: So what about plant pest like blackberries or crabgrass or weeds?

David P.: In Texas we have had hackberry, so in my grandmother's backyard there would frond and if you didn't stay on them they'd be like trees, but the time I came back on another visit back from another visit. So my question is, is there any kind of tree that's indigenous to this area that's equivalent to hackberry.

Interviewer 1: Okay.

Frank M.: What's it called?

David P: Hackberry.

Frank M.: Never heard of it.

Thurman V.: [H-a-e?]

David P.: H-a-c-k I believe.

Thurman V.: Hackberry.

Bruce B.: I've heard of them, I lived in Texas a couple years but I'm not sure what they referred to.

[Group talking over each other]

Anonymous: I remember the plant name.

Bruce B.: I wouldn't know if it was looking at it

Frank M.: Must only grow only down there maybe?

David P.: I'm pretty sure it's indigenous around that part of the country.

Interviewer 1: Okay what about, here the people who have weeds or crabgrass. I mean I heard you spray them. Does anyone use other methods? Alternative, maybe home remedies or anything like that?

Annette L.: I just pull them.

Interviewer 1: The old-fashioned way?

Annette L.: Yeah.

Anonymous: Crabgrass.

[Group talking]

Annette L.: Yeah after it rains, usually I pull weeds. Sometimes I'll have somebody come for the weeds here, if it's a huge amount [or the] whole backyard.

Frank M.: I have a couple weeds that's not a problem but crabgrass it's harder, it's a little tougher.

Annette L.: Yeah it is, it is tougher.

Frank M.: They spread all around, you know.

Annette L.: Once it starts spreading it's hard to control.

Frank M.: So many different roots.

Annette L.: Yeah.

Interviewer 1: When you said you called somebody who do you call?

Annette L.: I used to have a neighbor who used to do that but [there's new owners], not them.

Interviewer 1: Oh, okay.

Annette L.: They had the weed [xx] and they come and do it a couple times a year, it really help but pulling weeds by yourself manually, when you let it go for a few months, it takes a long time.

Interviewer 1: Yeah.

Annette L.: So I can see why people use chemicals, it looks tempting because it's a lot of works by hand.

[Someone mumbling, cannot decipher]

Frank M.: There has to be a good program with the County or the city, you know to help people replace their lawns and so forth. You know water tolerant type plants, like for me to get rid of those big trees in the yard and have the whole yard dug out, get rid of all the roots and only have topsoil all brought in and have it all filled up, like she said it costs a fortune.

Interviewer 1: Yeah

Annette L.: That's why I haven't done it yet. I want to do that but it's really expensive. That would be great if this County... It must be a fantasy though. That's what I was kinda hoping [these kind of meetings would have...] Somebody once in awhile has to have a program where you sit people down.

Interviewer 1: Subsidize?

Annette L.: Yeah.

Interviewer 1: Replacing parts.

Annette L.: Yeah.

Lanita P.: That's a good idea.

Frank M.: So if people who want to replace their lawns with something else, you know come up with a... They have someone make a presentation to them, this is what you could do with your front yard, this is what it would look like with computers. You know? You can show exactly what some things going to look like in their actual yard.

Interviewer 1: Would you physically go out there and do it? or would you prefer hiring somebody.

Annette L.: I would want to hire somebody myself because, I mean you have to have the plan down because you want to make sure it's done correctly… I would want to have somebody else to do it. They have these native plant tours now… So you need somebody show you what kind of plants. And you can work with them or whatever.

[40:17]

Annette L.: I was watching this program, Curb Appeal but they don't have anything in this area. I was hoping [because] they have it on television. They go to people's house and kinda help them but everything's always back East. But there has to be a program like that, so a lot of people can benefit from it.

Frank M.: Cities have programs where they'll help you make improvements on your house with your roof, or your painting or whatever, but I don't think it covers landscaping.

Annette L.: And sometimes the problem is usually that they're so low income it might make somebody feel low, because you can leave out a lot of people, so anyway.

Jose L.: The town where I would work construction, the companies they call it Christmas in April. What we do for the companies is they select certain kind of people. Poor people, and what we do is replace their whole house. It's like the lawn, the kitchen, we give them everything. The companies like General Electric they said I'm going to give you the stuff, or whatever on electronic things. And the concrete guys, they poured the concrete and then we the laborers, are the common guys, so we do the work for free. We put the concrete patio whatever, they do the landscaping. They went to nursing guys he did the plants and they do everything basically. Three days.

Annette L.: How do you find these people that do that?

Jose L.: It's somewhere from the city I don't know.

Annette L.: Richmond?

Jose L.: I don't know, all over California.

Annette L.: Where was that I never heard of that before.

Interviewer 1: I think it's maybe better for after the discussion, let's try to focus on lawns and pests and lawn stuff for now. Okay so back to the question which was, for those of you who use spray, I think I heard Jose say detergents. So do you guys use any other alternatives for [insects] other than spraying? The slugs you use salt…

Lanita P.: The spray we use industrial spray.

Interviewer 1: Oh yeah? So that means it's extra strong?

Lanita P.: Strong and...

Interviewer 1: Fast?

Lanita P.: Mmhmm.

Interviewer 2: Where do you get it?

Lanita P.: Osh.

Interviewer 1: So when you're at... Can you just walk me through your thought process. You see the ants and you got to deal with them. So what steps do you take?

Lanita P.: I see the ants, try to find the source, usually. See how many there are, see we have anything on hand in the house to kill them but usually we don't because we use it on the spot. We use it a lot, once you realize it's a problem, it's a big problem, then we go to Osh and I can't remember it, the name. I should know the name of it, it's like in a white container. You have the pump the container. Pump it before we can spray and we just spray all edges, first we spray the edges of the house from the outside.

Interviewer 1: Yeah.

Lanita P.: And then we spray on the inside and clean all the cabinets, take everything out of the cabinets wash them down because food grease drips down there and that attracts anything. Any little thing can attract them and just basically spray it very well and then not wipe the spray off. So it's not dripping or anything yeah but to keep it we have the little stakes that we put in there to support what we spray and then we put everything back. It's a long time for this actually, it's an ordeal.

Interviewer 1: Yeah so when you're choosing the spray what so you said you tried the one with the pump what made you... Why that one because a friend recommended it?

Lanita P.: Osh.

Interviewer 1: Oh recommended?

Lanita P.: Osh, they recommended it, we go and ask them and tell them we have a really really bad problem with the ants and I can't believe I don't know the name of it.

[45:04]

Interviewer 1: No, it's fine.

Lanita P.: I swear by that stuff but yeah and it's pretty expensive too.

Interviewer 1: Oh yeah?

Lanita P.: It's pretty expensive, it's not like the raid like you buy in the store.

Interviewer 1: Does it last a while?

Lanita P.: When you consider spraying the whole inside of the house it's a four bedroom house, spray the outside of the house, you can go through two of them easy in a day.

Interviewer 1: And you do that maybe you said a couple times a year?

Lanita P.: About twice a year.

Interviewer 1: Okay

Jose L.: Sometimes we have too many spiders, moths or other kinds of small animals. He call me up and down, the guy, I don't know what the name of the guy. He drives around with a big ol' hamper in the back?

Lanita P.: Orkin?

Jose L.: We call them and they do the...

Interviewer 1: What do they do?

Jose L.: They spray there and I do know what they use but we pay them they came, they come three times every month or every two weeks they come and do it.

Interviewer 1: Okay, does anyone else hire Orkin or any company to do it?

Frank M.: I used.

Interviewer 1: You used to?

Frank M.: The same company, but the guy..

[Group talking over each other]

Interviewer 1: Do you know what they used?

Frank M.: No I don't.

Interviewer 1: Okay when you do spray, when it's inside if you see it dripping, you don't want that stuff, but what about outside that you mentioned?

Lanita P.: No, [we don't worry about] outside.

Frank M.: I use granules for crabgrass, I use Scotch with halts, with halts you get it on early with a spreader. I can dial in the amount you want to put down and get out there early enough and works a lot.

Interviewer 1: So what happens after your crabgrass dies or after the ants die and I think Bruce you said you use the concentrated something on the lawns?

Bruce B.: On the lawns.

Interviewer 1: Yeah so I assume it works pretty quickly?

Bruce B.: Crabgrass dies every year, dies every winter and then it doesn't take too many days of sunlight.

Interviewer 1: It comes back.

Bruce B.: Days like this it's germinating again, it's coming back up.

Frank M.: The seeds from the crabgrass can stay dormant for years, years and years and if you take a rototiller or something and start digging, bring these seeds up to the... I guess the way to keep crabgrass away to is to keep a real healthy thick lawn.

Interviewer 1: Like a physical barrier?

Frank M.: Right

Interviewer 1: Okay do you find that may be might become resistant to the strained? Do you try to switch it up?

Frank M.: No, I haven't.

Interviewer 1: Do you think it's become resistant or does it work now as well as it worked the first time?

Frank M.: We'll find out because I'm gonna put it on today, I hope I'm not too late.

Interviewer 1: What about you with the ants, do you think they'll be coming back more regularly?

Lanita P.: No.

Bruce B.: I recently changed the frequency.

Frank M.: There is a possibility of putting a whole lawn of crabgrass because it sure doesn't need water it thrives.

Interviewer 1: In the end you can have it all beautiful?

Frank M.: That's right.

Thurman V.: We have various life in between the gardening rows, we just left the crabgrass grow and when it's green it's nice low to the ground it actually looks pretty good.

Interviewer 1: So after the stuff that you don't wipe off or the granules, what happens to that stuff does it break down or...?

Lanita P.: Not sure.

Frank M.: It dissolves into the ground, like the granules do.

Interviewer 1: Like salt or something.

Frank M.: Scott's is like a time release, it goes into the ground over time.

Interviewer 1: So maybe it's in the soil now or it gets washed away or what do you mean?

Frank M.: It shouldn't get washed away, you sprinkle first, so was adhere to the grass.

[50:00]

Interviewer 1: Okay great.

Frank M.: I imagine some of that ends up though in the runoff water.

Interviewer 1: Oh, when it rains.

Frank M.: Yeah of course you don't put it on when they say to don't put it on when there's a chance it will rain within the next 72 hours or something.

Interviewer 1: David or Annette do either of you have an opinion on any of that stuff?

Annette B.: I just usually just pull all the weeds out.

Interviewer 1: Just pull them out?

[Group talking over each other]

Annette B.: It's tempting though, it's a lot of work.

Interviewer 1: So when you say that it might get in the runoff, what might possibly be the consequences of that, if any?

Frank M. Well it would go into the drainage system and it would go out into the bay I guess it could cause like fertilized growth in the bay like algae and that sort of thing.

Interviewer 1: Is that true or does anyone agree with that or disagree or have other opinions about what might happen?

Thurman V.: Different chemicals do different things, some products are renowned for decomposing completely into harmless elements, whereas others become residual in the environment forever.

Interviewer 1: Yeah do you know which ones do what?

Thurman V.: Only by studying, I don't use enough of the stuff.

Interviewer 1: Great.

Thurman V.: I consider most of it to be pretty bad.

Interviewer 1: Just trying to stay away from it.

Thurman V.: And you can work around it. For example in the house when I'm making sausage I need to sanitize the work area anyway so I put 25% household bleach with water in one of the inexpensive spray cans and that knocks ants dead. And as long as the chlorine residual stays there they don't come back. I think it's pretty harmless stuff, [bleach micro] chloride. Wipe the mess up and you got rid of the ants and you also sanitize the counter.

Interviewer 1: Gotcha.

Frank M.: That's why they outlawed DDT because evidently it doesn't break down.

Thurman V.: Oh apparently not. That's supposed to be the advantage of this Roundup product, you have morning gardening show I listen to, the guys a real organic gardener as well as his radio show he does a gardening program to the homes in Marine County but he tells you that Roundup breaks down completely. He's not a chemist but apparently no one is contradicting him.

Bruce B.: Your Roundup brand?

Thurman V.: Yeah a particular [xx] is it?

Interviewer 1: Yeah, have any of you heard about any eco-certified types of products for the sprays and stuff? Is there any sort of certifications?

Thurman V.: Sure. Yeah the seed catalogs, some of the seed producers, we get probably 20 per year. Some of them are very organically oriented. Those catalogs explain [xx] various wellness of certifications for organic use. It's interesting because their conflicting, the federal law is different from state law from organizational law within these things. It's very confusing.

Interviewer 1: So the standards for the certifications might be all different?

Thurman V.: They are the rather different if you look at all the products a lot of them will have half a dozen symbols next to it indicating that everybody agrees it's pretty good stuff. Some will have one.

Interviewer 1: Has anyone else seen those things?

Lanita P.: That spray that we use for the ants it says eco-certified on there and that was the first time I've ever seen it.

Interviewer 1: Okay, thanks.

[Group murmuring]

Interviewer 1: Excuse me?

David P: I like to grow pot that's about it.

Interviewer 1: Okay have you heard of any certifications or is it a new thing?

David P.: Not really I've only watched regular TV.

Interviewer 1: Annette?

Annette L.: I've heard of them but I rarely use them

[55:00]

Interviewer 1: Jose?

Jose L.: I don't know if I'm wrong or right, but we went to the class, did they tell you when that for example the controller gas or gasoline there is a symbol. They got numbers on it, what kind of chemical it is and how dangerous it is.

Interviewer 1: Hazardous.

Jose L.: So every chemical we buy from any store they have those things on it and they tell you how dangerous it is for several things. So what happens is, I'm not going to point at anybody, but we're ignorant on this situation because if it use it on the wrong property you damage a lot of things. Like the chemicals we used for the plants, that you try to avoid it, they go into the drain and go to the ocean they damage a lot of things in the ocean. They say one drop of oil, you're infecting 40 gallons I think of water. One drop.

Lanita P.: Mmm, that's a lot.

Jose L.: And things like that they show on every chemical you buy. When you have questions about your chemicals for the store from where you bought it they call it a book… MSD…

Lanita P.: MSDS

Jose L.: MSDS and they show you exactly what it is. If they had it it's a big fine for them… from the ocean for all of us.

Interviewer 1: Okay, you're nodding your head

Lanita P.: You know the [Ocea] governs all that and if they sell it, they have to have the MSDS sheet showing.

Interviewer 1: Right, show chemicals...

Lanita P.: Showing everything that's in.

Interviewer 1: Has anyone, I'm going to say a phrase tell me if this rings a bell. Have you ever heard of "Our water our world?"

Bruce B.: Say it again please?

Interviewer 1: "Our water our world."

Bruce B.: Oh yes I've heard of it.

Interviewer 1: Oh yeah? What's that?

Bruce B.: I'm not sure what it is but I've heard of it.

Interviewer 1: Okay.

Annette L.: I've heard the slogan but I don't know maybe on somebody's car? People have things on their car… I don't know anything about it…

Interviewer 1: Okay, I think I just need one or two more questions. I like to know kind of what I think I have a good sense of what each of you are doing and what your situation is. What's it like in your neighborhoods when you take a look around. What do you think other people are doing where you live and if we can go around for this…

Lanita P.: I'm thinking of my neighborhood, oh I'm sorry.

[Group talking over each other]

Interviewer 1: You can go ahead.

Lanita P.: In my neighborhood, the knowledge is not there. I know people would love to have a nice lawn or garden or whatever but they really don't know how to go about it and then the cost of it, it's not cheap to do.

Interviewer 1: Absolutely.

Lanita P.: But like I said we get a lot of compliments on our yard and people are like how did you this and can you... So I know that the desire is there it's just the cost and probably not knowing exactly how to go about doing it.

Interviewer 1: Right

Bruce B.: I really don't know, I very seldom ever see any neighbors working on their lawns other than to mow the front lawn if they have a front lawn. so I really don't know what they do, the contribution in that.

Interviewer 1: No, it's fine that's good to know too.

Thurman V.: I'm with Bruce, you occasionally see someone mowing the lawn but there's not much other than keeping the houses nice of [activity]. I'm a big gardener but the guy across the street gardens the backyard.

Interviewer 1: And with pest I know you're a big advocate with all the chemicals and he passed away, do you know what other people in your area kinda do about pest or maybe it's not a topic that comes up in daily conversation.

Thurman V.: Oh, we're pretty open about, but it we don't have a lot of trouble. I have the largest property there. We have things there, so we tend to have I think more of it than others. Every so often the neighbors will say oh man there were rats in my something. I don't think anybody's too terribly upset about it. Rodents are kind of an endemic in reality.

[1:00:02]

Frank M.: As far as my neighborhood goes it used to be a lot nicer.

Interviewer 1: Really?

Frank M.: Years ago, Pinole was small when I moved in, there was like 1500 people there.
My neighbor next-door, she pretty much moved out of her house, she has a cat named Tracy and she pretty much lives there so her yard literally goes to hell. That's where I get a lot of my weeds and stuff is from her yard, otherwise it's pretty decent I guess, the yards. And one of the questions I don't know it if it was you that asked

me or whoever called me on the phone, if I was washing my car. I go to car wash, is on a topic you're gonna bring up later or?

[1:01:01]

Interviewer 1: Oh, that is a topic but we probably won't address it in today's discussion but after we're done here we're free to chat about it. Interesting.

Frank M.: So anyway I just try to keep my lawn as good as I can and my house looking as good as I can.

Bruce B.: We must live in the same neighborhood because that's a perfect description of my neighborhood. I've lived there considerably long, shorter period than you have. Been 21 years I've lived in my neighborhood I've seen a significant difference in the neighborhood. Not acute deterioration but I can see deterioration in the neighborhood.

Interviewer 1: So when you say nice and it used to be nicer do you mean from the context of pest management or just in general.

Frank M.: When you get people moving out of homes and renting them out, you start getting different types of people.

Interviewer 1: Who might not care?

Frank M.: And another thing too is that I noticed, and I think it makes a difference is, neighbors aren't close like they used to be.

Lanita P: I know, I've seen that too.

Frank M.: When I moved to Pinole in 53' with my parents. I was in junior high school, but anyway there were quite a few good neighbors and they would come over for coffee. They'd come over and visit and my mother, they'd bring cookies or doughnuts and then all sit around and drink coffee and so forth, and now Jesus my neighbor across the street been there, what? Two, three years? I don't even know his name, you know you don't know who your neighbors are, they're either too busy or maybe it's the culture changing.

Interviewer 1: Do you all find that in your neighborhoods too?

Lanita P.: I do but I find that you can sometimes you kinda, have to you have to kinda set the tone.

Thurman V.: That's right.

Lanita P.: You have to come reach out sometimes. My neighbors, [xx] whatever. What are you doing to make that situation better or to nurture a neighborly relationship. I'm not saying you don't but I'm really to myself, so it takes a lot for me to step out of my comfort zone and to go say hi but I know this is a person that could look out for my house while I'm away for a few days. So that's how I look at it, so I don't know, I'm like how are you doing today or something of that nature just a little something to break the ice. Because a lot of people sometimes are just afraid because they don't know what type of reaction they're going to get.

Frank M.: Right.

Lanita P: Maybe because of the culture, different culture and whatnot, you just kinda have to put yourself out there sometimes.

Interviewer 1: David, how about your neighborhood?

David P.: I would say they're kind of rude. It's a lot of money, they spend a lot of money but they're not really maintaining it.

Interviewer 1: Their lawns? [mumbling in background] Excuse me?

David P.: A lot of landscaping, reconstruction, gutting houses out in my neighborhood.

Interviewer 1: Oh okay, which area is that?

David P.: Over by Hilltop.

Interviewer 1: Okay.

David P: But...

Lanita P.: That used to be like everyone place where people wanted to move by Hilltop.

Interviewer 1: Okay, thanks.

[1:05:00]

Annette L.: Some people take care of their yards, it's kinda half-and-half here and a lot of them have, most of them have a smaller yard than I do. When I moved there, a lot of them had a lot of cement or whatever. I like a lot of green so, I'm kinda like, we kinda live different that way. So one of my neighbors has cement or rocks or a cactus. I like mine really green and lush and everything. So my idea of a plant place takes much more work. As far as my area it's kinda half-and-half a few of them are expensive to do.

Interviewer 1: Right.

Annette L.: Most people are busy so they don't really think about that much.

Interviewer 1: What about managing weed or bugs and rodents are they like you? Do they pull them?

Annette L.: I think one of my neighbors, one of my neighbors I know pulls them, the other one on the other side, I think she sometimes sprays. You really can't tell people to or not to do it.

[Group talking over each other]

Annette L.: I can't tell people not to use sprays. I don't mind that. Because people say "what's your business?", kind of sensitive subject for a lot of people.

Interviewer 1: Do you all find that the same case? That you wouldn't have any influence over your neighbors or you shouldn't have?

Jose L.: What happens is that, you know, you got new neighbors. I own my house. But every time you got your new neighbors they can barely afford the rent. So when they try to fix the house, they try to get the lender to fix the

house. So they look kind of a make a connection to include anything… the grass, old grass grows out and the weeds come to yours and start growing out. They come to talk to you, but they don't want to talk to you because you tell them the truth and then you try to get him a little [xx] and they won't talk to you. You try to be nice and they'll walk away so we lost that communication between the neighbors. I lived what 15 years in my house. I don't know the name of the guys on the same block, so it's hard for us to get good communication. Now two years ago my neighbor said what about we got up together and we plan to a palm. Palm trees! That's a good idea. Some of them cared but the other one didn't want to, but when you look at it right now the palms are really nice and that block looks pretty and that's when you see how important it is to get good communication with your neighbor. But we didn't have that facility to say okay you don't have that money I'll buy the tree, and you put it on. That would be a good idea. You know to get the owners, and work together and make our blocks beautiful and that's what we need to do better.

Interviewer 1: So most people are renting so maybe it's tough to get good coordination.
Okay. Lanita? Oh actually we just went all the way around. All right yeah how about Lynn?

Lynn: While living in a condo complex, it's kinda referred to upkeep and it helps decide who's the landscaper.

Interviewer 1: Okay.

Lynn: Smaller things where as influencing our neighbors, if you have connections, like I know the neighbors who have kids. Sometimes it takes up my life and I don't have connections with other…

Interviewer 1: All right well that's about it for my questions. I think you all have been really great in telling me how it is with you and I really appreciate you all coming out here.

***Contra Costsa – East Region***
Antioch Community Center

6:30 pm Friday, February 22, 2013

[00:00:00]

Interviewer 1: Like I said we are representing the County, we just wanted to hear from you guys and this is all to develop a future program. We want to make sure we take resident's opinions, perspectives, and experiences into account before just coming up with the program willy nilly. So let's go around in a circle and do a little bit of an icebreaker. Say your name, where you're from, what's one thing you like to do, and if you have any kids or pets or grandchildren. So my name is Philip, I'll start. I'm from Dallas, Texas originally and I have one dog name Gravy.

Marcia K.: And you don't have a southern accent.

Interviewer 1: No, no southern accent.

Marcia K.: I'm Marcia and I live in Antioch. I consider myself a fairly newcomer here to the whole California scene. Water is definitely something I'm really conscious of and I'm really glad to see Contra Costa County doing something like this. I applaud them for reaching out to the people first before they make any decisions themselves. I think it's wonderful.

Interviewer 1: Great, thanks. Do you have any kids or pets?

Marcia K.: Oh I have two kids, but they are not here and I do have a little dog. That was one of the questions you asked you said asked…nine by twelve tiny little dog. I do have a dog, yes.

Gene D.: I'm Gene Davis, I started out in Akron, Ohio a few years ago…been in Antioch since '67. I've been in the same house. About six years ago, my daughter bought the house across the street. That's a great thing. About that time, my first grandson…one and only grandkid showed up. He's the closest thing I've come to having livestock, but [xx]. I have a son up in Arcata, and it's a good life. I'm a retired teacher and [xx] apart from that I was a [xx] for fourteen years.

Marcia K.?: What congregation?

Gene D.: American Baptist.

Marcia K.: Baptist.

Gene D.: We weren't the ones who are mad at everybody or hitting them over the head every time they [xx] at you. We get along with most people pretty well.

Interviewer 1: Great, thank you.

Interviewer 2: I'm Nick. I [was] born in New York. We talked about it before. I'm up to living in six countries and then in more than twenty-five states. I've been traveling for a while. I'm just a rolling stone. I have had, over the course of my life…I've had a couple of dogs. I've had a [xx], a gigantic dog, real big dog, six fee tall when it stood up. It was a beautiful, beautiful thing, I used to ride it as a little kid. I've had birds and reptiles.

Paul K.: Wives?

Interviewer 2: No wives, no wives.

Gene D.: That's why you're smiling.

Shantal G.: I'm Shantal. I live in Berkeley, but I've been living in Pittsburg since '79. I have two children, a twenty-two year old and a thirteen year old. And I have a little bichon frise whose very high maintenance.

Marcia K.: She should meet my Italian greyhound.

[Group Bantering 00:03:57]

Barlee R.: I'm Barlee Rumburg. I'm an artist. I work at home…wool fiber. My [card] is made out of yarn.

Marcia K.: I actually have a dog. I'm a sculptor and I have a dog in the Westminster dog show. It is to be [xx]. They are using it now to be [xx] for the afghan [xx]. It's also in the museum, the dog museum somewhere in Southern California…somewhere on the coast. I also make dogs.

Barlee R.: I have three grown children and when they moved out, I replaced them with dogs. I have three dogs. My husband lives half of the year out of the country, works beautifully.

Marcia K.: Nothing else?

Barlee R.: No, I live in Antioch too.

Interviewer 1: Okay, great thank you.

Beverley D.: My name is Beverly Detiege. I live in Oakland, I moved out there seven years ago. [xx] Louisiana and North Carolina. I was born in the hood in Oakland, but I have a little twang because we always went over there to visit. I have no animals. I have a son [that's] twenty-two that just got out of the military. My hobby is traveling.

[00:05:26]

Interviewer 1: Oh nice.

Beverley D.: I work midnights, twelve-hour shifts. So I'm trying to get this together right now…just sleep and I woke up this morning and I didn't get to bed till one p.m. and by the time I woke up it was five.

Marcia K.: I should have brought a lollipop for you, so you can be awake.

Beverly D.: That's pretty much it. I've been in [xx] for twenty-six years.

Frank R.: I'm Frank, I was born in Pittsburg because the Antioch Hospital was full…lived there for a few years then moved to [Sacramento] for a few years and then moved back here. And now I'm in Brentwood, taking care of my mom. My girlfriend lives with me so she could help out too, tree trimming and stuff around the house…we got lots of overgrowth stuff, [xx] trees.

Paul K.: My name is Paul. I've lived in Discovery Bay since '99. Before that I lived fourteen years in Fremont. Before that I lived nine years in Vancouver, Canada. Before that I lived seven years in Toronto, Canada. Before that I was born in Denmark. I haven't been in forty-five years. I have two children. I am really American now

because both of my kids were serving four years in the Marine Corps. The girl was the tough one. I travel a lot in my job. I've been to all fifty states and Canada, and probably fifty countries around the world. I worked for a German company for twenty-four years so I still travel.

Interviewer 1: Thank you, Paul. Looks like we got a good group here. I'm just going to jump into the discussion if you don't mind. I know you all have some sort of lawn or garden. What do you have? Do any of you garden?

Beverly D.: Yes.

Frank R.: I'm trimming a bunch of trees right now. I've filled up five barrels full of stuff. Five trash barrels you know the big green ones.

Interviewer 1: Landscaping.

Frank R.: Yeah, there's a lot of tree trimming

Interviewer 1: Paul?

Paul K.: I have a garden, but I have a gardener because I am not there a lot. I still do some gardening.

Interviewer 1: Do you have a lawn?

Paul K.: I have a lawn, yeah. Two lawns, one in front one in back.

Beverly D.: Front side and back, I don't do too much of gardening everything suppose to die. That's pretty much it for me.

Barlee R.: I have what I think is considered a classic California yard. I have a very small area of grass in the front and another very small area of grass in the back. My biggest problem is the little patch of backyard. I get a lot of droppings from my neighbor's tree. It's partially shaded. I have three little dogs [that] think it's their bathroom. It's a struggle to keep grass. I would like to find an alternative to grass. I'd like to find something green. I don't like rocks. I have some wood chips in the bare areas now.

Interviewer 1: Okay.

Barlee R.: So I don't get muddy.

Interviewer 1: So you have flowers, you said daylilies?

Barlee R.: Yeah, the daylilies.

Interviewer 1: Fruits and vegetables?

Barlee R.: No I don't, but I was thinking maybe what I should do with that yard is make some raised beds in.

Shantal G.: A front lawn and a back lawn. I'm totally not the lawn person. I'm the person that will just call in for someone to do my lawn.

Interviewer 1: Okay.

Shantal G.: But I have front and back.

Interviewer 1: Got it.

Gene D.: I have a front and back yard. I maintain them myself. I have few trees. A Liquid Amber out front and a European White Birch. The birch is pretty. The other one was planted by the city and it drops these little hard spiked balls.

Marcia K.: Oh we took our out.

[00:10:00]

Frank R.: Oh those little green ones? Yeah, those are solid

Gene D.: You step on those with your bare foot and…

Marcia K.: It will ruin your lawnmower.

Frank R.: But I do get to rake a lot. My son is a gardener, which would help me a lot if he didn't live three hundred miles away. He doesn't come down and tries to get the roses. Probably like many of you, I have a sprinkler system. I've lived for twenty, twenty-five years without it and got desperate to put it in. I'd go on vacation and I'd come back my kids presented me with a brown lawn. But I watch the timers and I would try to be very sensitive to not water at the inappropriate times. It's raining like crazy and somebody is watering…I try to avoid that.

Marcia K.: Coming from the East coast the properties are large. I feel like I live in a postage stamp. You know houses all around me. Really, I don't consider it a lawn at all. It's just a part of my property, very tiny. We have three trees in the back and they drop these…in around May or June it looks like snow, like white pebbles all over my backyard. I don't know it must be the same kind of tree. But raking, it takes me three huge containers just for the backyard of leaves and I have to have it empty three times. My husband is very conservative with water. He's a hiker. In the summertime we put it on at like four o'clock in the morning and maybe for a very short time and that's all the water it gets the rest of the day so. The roots of the large tree…the backyard suffers. We do not over water. We do not have a gardener. We probably have the worst lawn in the property, in the neighborhood because we do it ourselves. He's out there with a push mower. We're not that kind of people. We don't manicure.

Barlee R.: I like my grass to look pretty.

Marcia K.: I think it's nice.

Barlee R.: The people at the corner have the most beautiful lawn in my neighborhood. I would like mine to look like that. It's just not possible with three little dogs…sell the house to someone who doesn't take care of it. Fertilizer gives a lot.

Marcia K.: Yeah my husband fertilizes and stuff like that but the backyard is fertilized also, and all the trees. And I'm trying to figure out California and from what I heard…because the roots are all over the backyard completely that they steal the water. The trees desperately want the water so the grass does even have a chance. So we do plant grass and it lasts for maybe about a month. Then it starts turning brown or just dies and I just had it with that. And I'm just like you. I'm looking for alternatives.

Gene D.: Deep water the roots of the trees, otherwise…

Marcia K.: I think ever since my husband moved out here, there's been nothing but draught after draught and you don't want to spend a lot of time…he takes it very seriously. He does not over water, or uses much water.

Interviewer 1: What about weeds? Do you guys have issues with weeds?

Barlee R.: Well I was pulling weeds today. It's good therapy. I like pulling weeds.

Gene D.: I think I have them all, but I always have a couple more.

Frank R.: I used to pull the weeds, but for the past couple decades I spray the weeds. It tends to be very effective if you get a strong weed killer. You just got to be patient and in a few weeks your weeds are pretty much gone.

Paul K.: We do the weeding. We also grow tomatoes and some herbs, and so on, on the side of our house. But weeds… [xx] fertilizer. We don't use weed killer. We try to use the old method…like pull them by hand.

Beverly D.: I have problems with weeds also, but I spray or pull. But the concrete area…and they come up…and I use permanent killer on that one. I'll always seem to have weeds. Especially on the portion of the side of the house that is totally different from front and the back. That one always has weeds. I just go get one of those whackers and I just level it, level it, all the way down. I can't pull all those weeds. And then I have a problem with gophers in the backyard. This house I bought two years ago. The other one I'm renting out. But the one I bought… I have never experienced gophers in my life. And man…because the back of my yard, well it's not my yard, but after the fence there's nothing but dirt because they haven't developed that area yet. And man…oh my god.

[00:15:52]

Interviewer 1: Yeah, big problem.

Beverley D.: Yeah it is, because every time the grass looks nice and everything. Another hole, another hole, another hole…

Marcia K.: There are gopher killers you can buy, they're in the cages that…

Beverly D.: No I don't do the cage thing. I do the pellet thing. The smoke bomb thing. The pellet thing. Then I probably have some, I don't know if I should say it…

Interviewer 1: Say it. Speak your mind.

Beverly D.: The poison with cyanide and that seems to take care of all of them because I guess when the family dies they don't come through the tunnel anymore. It's for gophers but it has that in there.

Barlee R.: You know I worry about skunks and raccoons in my neighborhood because my dogs are very small. My dogs will charge and bark and I don't want them to get into any confrontation. And I found, I think its coyote urine. It's like a dried…it's called [xx]. It's made to keep deer away. But I'm wondering if they have dried urine for the gophers.

Marcia K.: Have your husband go out in the backyard and literally pee around the yard. It keeps the skunks away.

Barlee R.: Really?

Marcia K.: It's true.

Barlee R.: I think my husband would love to do that.

Marcia K.: It's supposed to keep the skunks away. I read that somewhere, it has to be a man though.

Barlee R.: Nobody knows any animal urine that would keep the gophers away though.

Marcia K.: It just takes a tiny, tiny bit…just a sprinkle here. Sprinkle there.

Barlee R.: They are little granules. Maybe I go out there every two or three months depending on the rain. If we had a lot of rain, I go out there a little more often. But they don't come around anymore.

Gene D.: Maybe you'll attract a coyote in your backyard.

Interviewer 1: How about you Shantal, do you have issues with weeds or gophers?

Shantal G.: I don't have problems with the weeds, but I call someone to do the lawn for me.

Interviewer 1: Oh right, okay. How often do they come around?

Shantal G.: I used to call them like twice a month they come, but just recently I bought my boyfriend a lawnmower that he's not happy with because he has to mow the lawn now. My hours were cut so I have to change our spending habits. I bought a lawnmower instead of hiring someone to do the lawn.

Interviewer 1: Gotcha.

Barlee R.: Yeah there was a time when you could have the little boy down the street for fifty cents.

Marcia K.: These days they're gone.

Beverly D.: Kids are like what we work?

Barlee R.: Fifty cents are you kidding me?

Interviewer 1: So what are the best ways to I hear some rodents, weeds…

Barlee R.: I have a lot of squirrels.

Marcia K.: Bees. I have trouble with bees.

Barlee R.: I don't really consider them pests because they entertain my dogs.

Frank R.: Me too. They're cute. The squirrels are kind of cute.

Marcia K.: Yeah.

Barlee R.: They don't do any harm.

Beverly D.: I have ground squirrel…I don't know.

Marcia K.: I have ants.

Interviewer 1: In your house?

Marcia K.: I think it's from a tree that my neighbors are trying to kill in their backyard. It just keeps growing up. They call somebody to come and grind it down and it keeps coming up. I think underneath that is an ant colony

with the [tiniest] little ants. In the summer months, I have to have pest control to keep that down so they don't come in my house.

Interviewer 1: When it gets warmer.

Paul K.: I have a cat. My daughter came home with a cat she couldn't keep at her place anymore. Kids always do that. It was a big, huge cat. We had problems with gophers before, not anymore. After that big cat came around and killed a couple gophers, no more.

[00:20:12]

Beverly D.: And now that you mention it, my next-door neighbor has two dogs. I go over there and I don't see any gopher holes. And it dawned on me that the dogs were keeping them. They have enough sense to go on their property. And now I say, "Can I borrow your dog to put his scent around my yard?"

Gene D.: Or somebody's cat.

Shantal G.: Beetles are horrible.

Interviewer 1: What do you do about those?

Shantal G.: I use Home Defense that I get from Home Depot. I spray like the outside of the house. It's horrible. As soon as you turn on the lights in the backyard, they're like all over.

Interviewer 1: Are the June bugs?

Shantal G.: I don't know what they are, but they are big.

Interviewer 1: Oh, they're big.

Barlee R.: [Someone told me they're] Japanese cockroaches. I am like, "How can you tell they're Japanese?"

Marcia K.: I have a lot of Burmese spiders, those tiny little spiders. And what I did last year was I just took a hose and sprayed them down and they go somewhere else. They will attack your bushes and things like that. My husband used to think that they were good for the property. We never bothered with them, but then all of a sudden our bushes began to disappear. And so we started…I would go out there and spray it down and we'd get rid... they're little tiny, they make those little tents.

Interviewer 1: Yeah, the little webs.

Marcia K.: Yeah the little spiders and they really destroy your plants.

Interviewer 1: Spray them with water?

Marcia K.: Yeah just water, and there's another tree I have that has the white scale on it and again somebody just said, "Wash it down." And it works, not having to use pesticides.

Interviewer 1: Gene, do you have any issues with pests?

Gene D.: Termites, I have to deal with them. No, I have a service that comes around…keeps an eyeball on them and goes under the house and check.

Interviewer 1: How often? Like once a year?

Gene D.: It's been work it…gives you peace of mind.

Interviewer 1: Paul, you said you do a little bit of gardening…Frank too right? Do you have problems with aphids, caterpillars, or anything like that?

Paul K.: No, the only thing we used pesticides for [are] the ants. A certain time of year, the ants can be really bad. We found some [white] powder really helps a bit, around the doors and windows.

Marcia K.: If they are carpenter ants, I heard that you [could] put cornmeal outside. They don't digest and they will eat it, and they will die from eating something just as simple as cornmeal.

Barlee R.: I buy something called Diatomaceous Earth. It's a fossil type and [I] sprinkle that around.

Marcia K.: Yeah.

Paul K.: Is it a powder or…?

Gene D.: I don't think you are familiar with Terro. It's pretty simple, basically it's like syrup and I believe it has borax in it or something. You got [to] tolerate the fact that it attracts ants as well, but when they take it back to the nest they don't return. So you go through a period, where you put this out it starts attracting ants and then a few days no ants. I haven't had any in years. It's very, very effective.

Marcia K: What do you use Terro syrup?

Gene D.: No, I think you can make your own. It's Terro, t-e-r-r-o.

Marcia K.: Even baking soda…anything that will blow their stomachs up. They can't tolerate that stuff. They [xx] their hangs, it gets on their bodies, they will die.

Paul K.: Baking soda?

Interviewer 1: A lot of home remedies.

Marcia K.: Yeah.

Barlee R.: Yeah, I do use… I spread cinnamon too across my door.

Marcia K.: Yeah they say cinnamon [xx].

Paul K.: Interesting.

Gene D.: My mom has a stack of books, all of them with her home remedies. I've read none of them yet.

Interviewer 1: You were about to say the biggest problem was with your garden?

Frank R.: They haven't been cut back in a long time, the wild brush. And those things really become…everything sits in there and just clings to each other over the years. You got to spray it all…you spray that with a high power sprayer and those things you got to keep up with them or they really get [xx].

[00:25:15]

Interviewer 1: What were you spraying them with? With water?

Frank R.: Yes, just water.

Interviewer 1: Anyone else? Home remedies? Seems like Marcia's got them all.

Beverly D.: I have no home remedies, but I have problems with those darn centipedes. Backyard. Front yard. And then I have, I guess they are Japanese roaches. When first moved in the house was empty for two years. When I turn on the light on in the backyard and front yard…these things were too big. They were scattering. I know these things are not roaches. We cannot live here. They used to be my friends back in the day when I was younger. Roaches used to be a part of our apartment, but I haven't had to deal with them since then. They were scattering so I complained to my boyfriend. He [doesn't] have a clue. I had to go to Home Depot, and read, and get the poison that is necessary for it. I actually get the concentrated green bottle. I don't know the name of it, but I guess the concentrated one. And kept spraying, and kept spraying in a big ol' gallon, mix with water. Kept spraying near the grass and near the house. When I started spraying, they were actually from the crevice of the concrete. Some of the concrete, and some of the gaps…that when they built the house it started shifting. I don't know, but all I could do was keep spraying. And you know I'm fussing. And then I was spraying, and spraying, and eventually we got rid of them. That was a poison too. The centipedes I still have an issue with those, they still come out. And ugh, and they die. They eventually die. That's my issue there too.

Interviewer 1: What was the stuff you said? Green bottle?

Beverly D.: Oh it's a green bottle, it's concentrated and I guess I should have [written] down some of the names.

Interviewer 1: It happens, it's okay.

Beverly D.: It's a green bottle.

Marcia K.: Is it round or a kind of Round Up?

Beverly D.: No, it's not Round Up. I guess I should have glanced…

Marcia K.: Well Bayer aspirin has some new products and they're green insecticide.

Beverly D.: I was using poison for that. I have a lot of that crap in the grass.

Interviewer 1: So I hear a lot of people…seems like a big problem is the bugs when they are starting to get closer to your house. You guys either hire people to take care of them or you spray yourself. When you guys hire, I think I heard Gene or Shantal, when you hire folks do you know what they're spraying or how much or anything like that?

Barlee R.: I have a pest control service and they use a chrysanthemum based product.

Interviewer 1: How did you know that?

Barlee R.: I asked him because I am concerned. I have pets and because I don't like toxic build up in my soil.

Shantal G.: Yeah I don't know what they spray…because I had someone spray for spiders on the side of my house, but whatever it was it was safe for my pets and my child…because I asked them.

Interviewer 1: Okay.

Gene D.: I asked the same questions, and it was non-toxic to humans. And I have no pets to be concerned about. I have no concerns as to serious effects on animals.

Paul K.: I asked them too, and they said they don't use [anything] that was harmful to animals. I used something for my lawn…I asked them…only once or twice a year.

Interviewer 1: Okay

Barlee R.: Okay, you know let me speak out a bit. I think a lot of people can tell you that things are good for you. I mean our government tells us that GM's in food are good for us. So you know, don't take their word for it. If you [have] young children or pets that you're concerned about, ask them to give you written proof of what is exactly in their product. You can tell me till the cows come home, it's safe, it's safe. And I say, "Can you back that up in writing?" And he says, he can. So you know, you [got to] push them to the wall or they'll feed you to the fire. Don't just let whatever spills out of their mouth be true.

Interviewer 1: What about your friends or family, do you know or have you had the conversation about pest control? Do you know what they do about weeds, bugs, [or] rodents?

[00:30:28]

Marcia K.: I don't know. I find so many people have their lawns done. Everybody in my neighborhood…I think we are the only ones that don't. We are the few that don't. And I just there's a lot of pesticides that…they don't know what's going on with their lawn. The guy shows up at their door with their garbage cans and their blowers, and they got lovely green lawns. And I don't think anyone knows what's going on with their lawns and I think that maybe you should have a focus group with people who are doing the lawns to see exactly what's going on, because I don't think anybody has a clue. Except those people who are doing it themselves. They really don't. And obviously they are finding the cheapest possible so they are not going to buy expensive stuff to do your lawn, you know whatever is cheap on the market is what they're going to use

Gene D.: And they don't have to live with the consequences.

Marcia K.: Well except a yellow lawn, then they'll have to replant your lawn. They'll have to be careful at one point. They'll probably have to pay for that.

Interviewer 1: Anyone else maybe know what's going on in their neighborhoods [or] their neighbors?

Barlee R.: Well my son lives in San Francisco and he's in a co-op for organic foods. So he goes the organic route. He looks for herbs that repel, and any kind of natural product that the store carries. I think the store carries some other avenues in San Francisco. I think education is the key to everything here.

Marcia K.: I don't know how you can deliver education because when I get something in the mail…like if I get a bill and there's a few of the pamphlets in there I throw them out, I do not read them. I do not like people calling me at my house. I usually hang up on them. So I'm not sure what you're [going to] deliver.

Interviewer 1: You took our survey.

Marcia: I did, they've must've liked you. I must've of been you. I kept listening a little bit more, and a little bit more. But I didn't hang up on him.

[Group bantering 00:32:40]

Paul K.: I live in a gated community and they keep their lawns absolutely gorgeous, but I think they use a lot of stuff.

Marcia K.: Oh I'm sure they do.

Paul K.: I think it's nice to see that there are fish in [the] lake, but you know I don't know what kind of fish it is. I think that everything is gorgeous, but I think there's a price for it. I don't think the price is right even.

Barlee R.: Yeah.

Paul K.: You are right about asking them more questions.

Interview: So it seems like generally there is a little bit of a concern with what could be going on and what people might be using, but what do you guys think [are the] consequences? Or what are the risks?

Gene D.: Well the water gets all dirty. The water gets all the chemicals that run into the drain.

Marcia K.: Runoff from the water. And another thing, I have about six bottles of medicine that I don't know what to do. I haven't thrown them away yet, and I went over to the hospital here and they charge you to put it in a bag to mail it off, to have it taken care of. So nineteen dollars take care of your bottles of medicine. What do you do with your medicine bottles? That's not [going] to end up your water? I got them sitting on my kitchen table.

Gene D.: You can probably unload them at those pharmacies.

Marcia K.: The hospital won't take them. They said put them in an envelope for nineteen dollars and mail them. That's a problem.

Barlee R.: I wonder what they do once they get them.

Gene D.: Check with hazardous waste.

Marcia K.: When you only got ten little bottles a trip over there doesn't seem worth it.

[Group Bantering 00:34:42]

Paul K.: I called hazardous waste one time, I had six old cans of paint and I didn't know what to do it. I called hazardous waste and asked, "What do I do with these six cans of paint?" [And they said], "Well the best thing you can do is you can buy it from the hardware store, something that hardens up the paint and throw it up the garbage." I do think that was a good answer

[00:35:16]

Barlee R.: No, there's a place you can take them.

Marcia K.: Just take them over to hazardous waste. They will take them. Somebody will want to paint [his or her] house.

Paul K.: It's some time ago now, five years ago now in Oakland. I did not [xx] their answer.

Marcia K.: We bring all our hazardous waste over there.

Frank R.: There's a place you can go to that is like a dump. I know in Sacramento they have this paint can stuff…that's what hazardous stuff they take.

Marcia K.: I think in [xx] they had a little cabinet of stuff, where they were keeping the paint for people who can't afford to paint their houses and if you go over there they will give you reusable paint. I thought it was a great idea. So hold onto them.

Interviewer 1: What else besides…I think you guys said the water gets affected. I think I heard someone say runoff. What other health or environmental or any type of consequences…when you guys say dangerous

Barlee R.: Consequences to…?

Interviewer 1: To spraying pesticides…to poison.

Marcia K.: Well I think it's affecting the bees. I think the bees are affecting our whole ecosystem. You know the fact that they are not being able to pollinate. We don't have enough bees and I think that…there's a group called CREDO that is always trying to the senators to stop using this particular insecticide that they feel is killing off all the bees. I think the bees are being affected; the birds are obviously being affected also. They're eating them, you know they're eating everything…all insecticides and stuff.

Barlee R.: We are just bombarded with chemicals, and poisons, and toxins everywhere we look in this world so…

Interviewer 1: What might happen because of that?

Barlee R.: What might happen? The death of everything, every living thing on this earth is threatened.

Marcia K.: If the bees are gone we are not going to have vegetation, we are not going to have vegetables, we are not going to have food.

Barlee R.: We are not going to have birds, fish, people, food, [and] plants.

Interviewer 1: So it's disrupting the whole balance.

Barlee R.: Everything.

Paul K.: Two years ago in summer I sailed on a small sail boat from San Francisco to Hawaii. It was two thousand nautical miles, halfway out there, a thousand miles out to sea.

Barlee R.: You found the garbage dump.

Paul K.: There was a garbage dump you would not believe.

Marcia K.: They say it's the size of Texas.

Paul K.: Plastic bottles, it was maybe after the tsunami stuff. I don't know what happened. You would think that if you are that far out, I had been at sea for two or three days.

Marcia K.: Did you have to go around it or could you go through it?

Paul K.: We actually saw it, it wasn't severe enough to [hinder] us, but it was just shocking. To find that huge amount of garbage was shocking to us.

Marcia K.: There's a little island that somebody…I mean also on Facebook, there's a little [xx] going around. There's an island where no human people are on it. It's just a little island and there [are] a lot of birds on it and stuff. A scientist went out to check on these birds that were out there…this particular film that's probably on Youtube, but these little birds are dying and when they open them up they are filled with bottle caps and plastic and I mean this much plastic! The bird was dead and there's this stuff sitting there.

Interviewer 1: Sorry to interrupt, but are you…am I hearing that these chemicals end up in the ocean, end up in our birds our wildlife somehow through what's consumed? Beverly, do you have any thought about that stuff or do you agree with it?

Beverly R.: No, actually when he had mentioned it…you see it on TV all the time and you read about it…I'm thinking…you hear about the cruise ships throwing out garbage and all the different ships throwing out garbage all the time and it's truly unfortunate. That is just terrible about birds.

Marcia K.: [It's] heartbreaking because I watched them die.

Interviewer 1: Can you see the connection though, with what were talking about with the spraying?

Gene D.: Well I think so, yeah.

Beverly R.: Like she was saying it all trickles down, all toxic…we know that waste causes major problems and it just trickles down and it affects all areas of life.

Interviewer 1: Yeah.

Beverly R.: I just got all warm just thinking about it.

Interviewer 1: Shantal, do you have any thoughts there?

[00:40:03]

Shantal: Yeah, I was thinking what she said about the pesticides and thinking really I don't know what they're using…even on my lawn or in my house, but now I'm going to question that.

Barlee R.: And you know Round Up is a product from Monsanto. It's all of our enemies, the world's enemy. So we don't ever want to get Round Up, nothing.

Marcia K.: What about Bayer?

Barlee R.: I don't know.

Marcia K.: I'm seeing so many Bayer products lately. Maybe they're not doing so well with aspirin anymore so they're breaking out into pesticides.

Barlee R.: But you know, I just know that Monsanto is just focused on destroying out world.

Paul K.: Is that a [xx]?

Barlee R.: Monsanto is a mega corporation.

Marcia K.: They make the seeds number one.

Barlee R.: Yeah, they got a patent on [xx] seeds.

Marcia K.: Yeah, genetically modified seeds.

Barlee R.: You heard all the talk about genetically modified foods. Monsanto is at the forefront of. They are the ones that are really pushing it. They're actually after Obama's first election. He immediately, he promised that he would get the GMO foods labeled, but the first thing he did was put Monsanto executives into the FDA so they could approve their own food products.

Interviewer 1: We have some big issues, but we can't address them all here.

Marcia K.: Why in California out of all the progressive places in the world? Why would they put down GMO labeling? I mean why was that destroyed?

Barlee R.: I suspect owner fraud.

Marcia K.: Is that possible?

Barlee R.: Yeah.

Interviewer 1: Okay, so I hear…

Barlee R.: It's the only explanation that makes sense to me.

Marcia K.: It's nonsense, yeah go ahead.

Interviewer 1: Yeah, I mean we have some big issues.

Barlee R.: All the chemicals, Round Up or whatever, similar types of products. I think that those accumulate in our soil.

Gene D.: [xx] I think that's one of them. I used to use that.

Barlee R.: So you know, even if, I use this now for so many years in a row…is it ever going to go away? Is it always going to show up in the food I grow or in the plants I grow? Or is it going to be absorbed through our skin or our animal's skins? Or washed into our water? Yeah, we have to stop doing those things.

Interviewer 1: Okay, I think something that I heard from everybody; at some level you do use pesticides. At some point you just decide…even if it kind of rings a bell on the head or a little red flag, but at some point you spray or you use poison or you hire someone and they spray, so what is that point? When does it become too much or too big of a problem where it's time to use the chemicals?

Paul K.: Well I think, it's very possible…it starts right here I heard some people saying you can use baking powder, you can use some natural products…do things like we did before.

Barlee R.: What we did before these companies came out with poisons.

Marcia K.: What's wrong with a newspaper? What's wrong with picking up a bug?

Barlee R.: But yeah you don't want those buggers infesting your homes, inside you know, it's a nuisance if you go outside and you got holes all over it.

Gene D.: It's a quality of life issue.

Marcia K.: I think it's easy to grab a can to be quite honest. Without even putting much thought into it, it's available on your shelf.

Interviewer 1: Gene, when you said quality of life what do you mean?

Gene D.: I don't like putting chemicals into the environment. If something isn't a chemical…water is a chemical. For me, my wife will usually let me know, ask me the question again because I will let myself run off.

Interviewer 1: The question is at some point, it seems like most people do spray, I asked when does it become a big enough problem to turn into that chemical?

Gene: My wife usually lets me know that. It's when you don't know what some of the insects are carrying perhaps like germs. If you're uncomfortable living in your own home because of insect infestation or mice or whatever…I had those years ago, then you'll have to take action. You want to do what will have the least negative impact on the environment, but the truth sometimes you can't do that. Another thing that hasn't been address and I don't know if any of us are experts on it, I sprayed for years with a probably weed killers 245TP is the formula, but I don't know but I think it breaks down after a while. It's not like a rock that will lay in my yard for one hundred years. These things, some chemicals break down and some don't. Salt is salt. And salt is going to break down. [If] you get the chemical formulas that come from the companies that profits, then it would be wise to find out how long the effectiveness that some of this lasts. Same with some of the medicines you were talking about. Some of those have a long shelf life and some perhaps after a certain period of time and I've seen this on cans and bottles that I've used, but the effective life, there's a time when basically it expires in terms of its practical usefulness.

[00:46:13]

Interviewer 1: Yeah I'd like to get to that for sure, like disposal and what to do but before we get there let's talk about what Gene was saying at one point it's affecting your lifestyle and it's time to take action in your hands about this. Do you guys feel the same way?

Frank R.: Mhm.

Interviewer 1: Frank, so at one point do you think it's time?

Frank R.: To take action? Well, if you see them all the time. If you see rats all the time. If you see ants all the time…I like to look for the household message…like in my mom's books. She has Clorox and water or vinegar and water and then there [are] things you can use to get rid of rodents. Other than the big time sprayers, I don't like the smell. I know it has gone too far when I can smell the poison around the house and stuff. They say it's non-toxic. I hate that stuff.

Marcia K.: Yeah, it smells bad.

Barlee R.: It doesn't smell like non-toxic.

Frank R.: They say it's not bad, but I know it's [going] to be bad.

Interviewer 1: Shantal, what about you?

Shantal G.: I'm more preventative so I spray the Home Defense that I use around my house. I spray even if I don't see the pests because I don't want to see them. So I try to keep them away than take action when you're there.

Barlee R.: You got to do my urine thing. We want those raccoons in my yard.

Shantal G.: I'll spray periodically; the outskirts of our home try to keep them away.

Interviewer 1: Have you considered other forms of preventative pest management?

Shantal G.: I haven't up until now, or home remedies.

Beverly R.: I'm [xx] this stuff in.

Interviewer 1: Gene when you said you'd like to do what's…obviously we don't want to endanger our environment with chemicals, but at some point we just have to. Is it because at some point they're the most effective? Or the cheapest?

Gene D.: Yeah, they are. I used to pull weeds. I used to pull a lot of weeds and every one of them always grew back, but when I spray they didn't come back. There comes a time in life, I simply speak for myself, you stop pulling weeds. It's no fun there so you want something that works quite well. It's effective.

Barlee R.: I may tire of pulling weeds at some point. I find it really therapeutic for me. I love trying to get the root out, the whole thing. I just sit there, get my fingers in the dirt, sun on my back…I love it.

Frank R.: Sometimes I see a weed get this high and I'll go, "How long has this been here?" I pull that thing out with both hands…the roots are all…

Barlee R.: Yeah when it gets big it's fun, isn't it?

Frank R.: I'll just pull the weeds out. I don't want to look at it. I'm working here I don't want [any] weeds around me.

Interviewer 1: You guys should exchange numbers.

Beverly D.: Throw a weed party.

Interviewer 1: Do you feel the same way?

Paul K.: I think that we come to an age…at least my wife and I where we really try hard to recycle and we have found that we have a very, very small garbage can and a really, really big reusable thing…so it seems to work for us. And even pulling weeds, I don't like pulling weed too much either, but we found that a certain amount of ground carbon will do some of the same job.

[00:50:14]

Barlee R.: So you can choke out the weeds with another plant.

Gene D.: You can fertilize your yard with some of the chemicals.

Paul K.: Stuff like peppermint plants, they are great for covering grounds with and you can make tea too. There are many ways to do it without pulling too many weeds, I think.

Marcia K.: You can make a Dandelion win out of the Dandelions. We used to do that, but in Massachusetts though.

Paul K.: I was saying before, when I lived in a gated community, I have not yet to see one Dandelion in that whole gated community. That's not natural.

Barlee R.: That worries me.

Marcia K.: There are no more Dandelions

Gene D.: I assure you they're not all gone

Marcia K.: My grandmother used to put them in salads, it's suppose to be an Italian thing.

Interviewer 1: So just to summarize a little bit, it seems like no one really wants to put chemicals out there, but there comes a point where you have to, maybe it's the most efficient. But then there are other alternatives that some of you use.

Barlee R.: There's different types of chemicals you can use.

Beverly D.: I'm open to that, I'm open to that.

Interviewer 1: Yeah, so the first time you saw a gopher, what was the other…?

Beverly D.: Ground squirrel, gopher, centipedes, roaches, Japanese roaches…

Interviewer 1: Right, when you see that stuff, in your mind…can you walk me through the steps when you see it and decide I'm going to address this?

Beverly D.: The steps are: oh my god, let's figure this out, this can't continue, the you go on the Internet, you go to Home Depot, you read, read, read, and you try to talk to your friends to see what really works. It was actually a friend of mine that concentrated green bottle, and you react that to solve the problem. There has to be some resolution. We can't both live here. Something has to go.

Marcia K.: I think the baking soda would work, I think it would blow up his stomach.

Beverly D.: Baking soda and cornmeal and I was here thinking, "What?...okay."

Gene D.: It's like you're feeding them up. They're like, "Oh boy look at this." They'll eat it all up.

Marcia K.: One thing I noticed about roaches though living on Long Island. They move in a mass movement they just kind of move together, you may see them...one day in Long Island our basement was filled with them, but they move right through. You know it was a very strange phenomenon, but they just keep going.

Beverly D.: We are really blessed that they're outside. It's just about being consistent and just keep spraying…and poison. What I found that was rather interesting was that once they die you see them on the ground they are upside down. I was sitting there drinking wine [and] the birds were they're picking them up and eating them. And I was thinking, well they're dead and the birds are eating dead poisonous bugs. What is going to happen to the birds? So oh shoot, they were disappearing and I couldn't understand. I didn't have to sweep them or anything. I

had dead insects and I said, "What's going on?" Never even thought about the birds, and then I started noticing that the birds were coming down and eating them and stuff. They are small little birds.

Interviewer 1: So well after that, did you stop?

Beverly D.: No I did not unfortunately, but I was concerned about the birds. My heart was going out to them.

Paul K.: It also comes down to what we eat because all kinds of stuff we eat are fed with all kinds of spray [and] chemicals and stuff to make them grow big and fat. No wonder we all grow big and fat because we eat them…those cows or those chickens.

[00:55:03]

Interviewer 1: So we talked a lot about, what we don't care for all these pests? What about what you do care for? It seems like a green lawn, you want things to look pretty, that's important to you. It seems very important to most people. Tell me if I am wrong, what else?

Marcia K.: I think it's a social pressure to have a nice garden and a green lawn. I think if some people didn't have to do that, I don't think they will do it

Shantal G.: Where I live, it's a rule.

Marcia K.: It's a rule where I live that you have to lawn

Shantal G.: I don't want it either, but it's a rule where I live.

Interviewer 1: The HOA rules.

Marcia K.: Mhm.

Shantal G.: Yes, yes.

Beverly D.: You have to have what now? A certain amount of lawn?

Shantal G.: You have to have a certain amount of lawn.

Paul K.: Well you have to have a certain color house. There's rules for everything.

Marcia K.: It's also illegal to grow wild flowers out in your front lawn. You can't have a natural lawn. I think the fire department will come by and consider your house a hazard because it's burnable, flammable; all this stuff on your front lawn is flammable. I think you can report and neighbor who doesn't cut his lawn. And it gets long. You can report to the fire department and they will cite them. I mean there's a peer pressure.

Paul K: In my neighborhood, if you don't cut the lawn and keep the yard the way [you] are suppose to do the HOA will come over and do it.

Marcia K.: Yeah, I see it as a peer pressure as far as this manicured lawn and the use of insecticides. I think it's beyond our control.

Interviewer 1: What do you guys care about?

Marcia K.: I came to California thinking it was a wild beautiful open scenic views and fresh air. I came out here, and I live in a postage stamp of a house with typical manicured lawns. But there's one house on top of another it's not what I wanted. No, it's not what I wanted at all. I wanted land and something [more free]. Maybe a dirt patch is just fine. That kind of thing would be much nicer, but that's not the mentality right now. It's not the way people think, especially in California.

Interviewer 1: What about you?

Paul K.: It's really hard sometimes also dealing with people too, because I was a landlord for a while. I had a fifteen-plex. I was I was really trying to make it a nice place. I would try to keep everything nice and painted and so on. I put new carpet into it. One of the problems is though…in a unit I put new carpet in one once and I came back the next month and the guy had his Harley Davidson parked on my new carpet. What do you do with people like that? It's just not environment; it's people…no rules for behaving you know?

Barlee R.: Then you put industrial rubber floors in.

Paul K.: I didn't want to be a landlord anymore so I sold it in 2006 when it was perfect.

Marcia K.: Antioch I think in general…they call it ground zero in the housing debacle. And there [are] an awful lot of renters. There's an awful lot of that stuff going on right now because people don't care about the houses or their properties. Or if their property is out of their hands the owners will just pay to have their places taken care of.

Interviewer 1: So mostly you have your garden going and you have some dogs…Maybe Shantal doesn't want to care for the lawn, but she could have it her way but the rules force her. Beverly can you tell me, do you use your lawn for anything? Or you just want it to be nice and you don't want the pests to takeover?

Beverly D.: Yeah I don't really use my lawn for anything or than visual.

Interviewer 1: Okay.

Paul K.: I use mine for the grandkids when they come over and I have a little swimming pool. I  a little gate and grass.

[01:00:00]

Barlee R.: That's why I don't want rocks out there, it's not comfortable to go out...throw your sleeping bag on or do cartwheels on.

Shantal G.: I don't do that, there's just too many bugs that come out of there…campground.

Paul K.: I don't agree with you because I mostly don't like when the grandkids to go out and get muddy. I think it's great.

Shantal G.: Well they think it's great too.

Barlee R.: I love a dirty kid.

Paul K.: I think that's the way they should live. Maybe not with the chemicals.

Interviewer 1: You say your grass does get used, with kids or animals…

Barlee R.: Setting up tables for a party outside, my yard gets used a lot of different ways. I want it pretty, I don't care what the neighbors think.

Paul K.: I said to you I usually wash my own car, and it was almost like you didn't like that.

Interviewer 1: Actually I wasn't asking that.

Paul K.: It's really insane to take it to a car wash, you can do just as good yourself as a car wash.

Gene D.: My car is ten years old and it's never been to a car wash.

Interviewer 1: Car washing, we can talk a little bit after…when you talk about using your lawn, what about your front lawn? Is it used the same way? Or is it mostly your back and side yards?

Gene D.: Somewhat equally for a six year old. Green as a soccer field.

Marcia K.: Yeah I think it depends if you have young children.

Paul K.: I have gardeners as I told you before. I have six roses and two [xx] trees that require a fair amount of care. And the gardeners they basically just do what I call "cut and blow." Most gardeners, what they do [are] they cut the lawn and then they blow the sidewalk off. Taking care of the roses and cutting so they look nice and everything. They don't do any of that. That's fine, because that's the stuff I like to do.

Marcia K.: Gardening.

Paul K.: Cut and blow. If I were to do that myself, it would take up a whole weekend. They do it in half an hour. But all the stuff that is fun to do, I cut the roses and the tree. That's nice to do. I like the front yard, not because I like to show off but I like to do it myself.

Interviewer 1: Yeah.

Marcia K.: My front yard is just more aesthetics…neighborhood contributions to the neighborhood aesthetics.

Gene D.: I think a green lawn is beautiful.

Marcia K.: Curb appeal.

Gene D.: I am not opposed to…my neighbors don't have a front yard or a backyard what they have is very beautiful and it's tastefully done. I grew up in Ohio everybody had a lawns. They were small lawns, but okay lawns. I knew that if I had my own home someday, I wanted a place where I could have some grass.

Paul K.: It's also funny back East, it seemed to be…there aren't that many fences. Pretty often you could cut into the neighbors lawn and back out again.

Gene D.: When I was kid, I lived at the bottom of the street and there were about fifteen houses. I could go in my backyard…we pretty much knew everybody. I could walk to the house at the top of the block, there were no fences, just go through the backyards and people from the Midwest sometimes look at California and they don't get this fenced in backyard.

Marcia K.: I don't get it.

Paul K.: I don't get it either.

Marcia K.: We bought this property up in Murphys. That's where I look out and I have this beautiful mountain view. I have my grass. I have this sierra grass that comes in. And it's like what I expect California to be and that's where I go.

Barlee R.: It is up north.

Gene D.: California has everything. We have every climate…

Marcia K.: It's gorgeous. As far as my daily living I just live in my house and on the weekends when we go up there I live outside.

[01:05:00]

Barlee R.: I live outside. I moved to Antioch for the weather.

Marcia K.: The weather is great, but actually Murphys is great too. It gets the warm air also.

Barlee R.: You know when my husband said, "Let's buy a house, anywhere you want," I said, "Sunshine!"

Gene D.: I get air from the Pacific at my house. I've lived in a few places. I have never for a minute missed the Pacific.

Marlee R.: Oh I miss it.

Marcia K.: Is that on the water? Its cold and foggy I guess.

Barlee R.: It's where the fog capital of California is…the Pacific.

Paul K.: You said before you never go to a car wash. I lived down in Fremont for fourteen years and I always washed my car down there. It always got a black film on it that kind of worried me. I'm breathing this stuff.

Barlee R.: What's in your air?

Paul K.: That's not the case up here. Up here, it is the dust from the farms that gets on your car. It's not funny chemical film that we [have] down in Silicon Valley. It did worry me because you're breathing that too.

Marcia K.: You need to tell Contra Costa that I buy my water. I do not drink our water. I think its delta water.

Barlee R.: I have even been told by people not to water your plants with it.

Shantal G.: Really?

Marcia K.: I drink the bottle water from the Blue Delta water place…osmosis system and it takes as much…and that's what I drink. I will not drink Contra Costa water.

Interviewer 1: The city does a pretty good job. It's federal law.

Marcia K.: But it has a taste, I want…

Interviewer 1: That's a big issue, but let's talk about…I hear that you are all here. Everybody enjoys the California weather…indoor, outdoor living…so that's why it seems to matter a lot, outside spraying. What about indoors though, when you are living in your home do you do the same thing? What do you use to manage pests indoor because that's kind of your enclosed environment?

Marcia K.: My husband gets the glass if he sees a spider, it crawls in the glass and then he goes outside.

Interviewer 1: So that's how he removes pests.

Shantal G.: The Home Defense I use is both indoor and outdoor use.

Interviewer 1: What is that Home Defense?

Shantal G.: Home Defense. It's in a white and red container. It's like a big industrial container with a pump on it and everything.

Interviewer 1: Oh okay, and that's at Home Depot?

Shantal G.: You can get it at Home Depot or Lowes.

Interviewer 1: Okay, what made you choose that over some other product?

Shantal G.: First of all I saw those bugs and so I went to Home Depot and one of the salesman suggested it and it works, it works. Like I said I use it for preventative…and it works. So I have been buying it ever since and it lasts so long time like so many months. The container itself and when you spray it, it lasts so long. So I don't have to keep buying it. It's worth it.

Paul K.: At my house, I don't like the bottled water because there [are] too many bad stories about bottled water. So I actually have a soft water system, so the water is softer and then I have three filters…osmosis system. It goes to my [refrigerator] where I have my cold water and tap in the sink, so it's filtered three times. It should be as pure as distilled water. I changed the filter once a year.

Barlee R.: [xx] water like this too…you take your own container and you go, and you fill up your own container.

Marcia K.: Yeah it just comes out of his, but he has a huge system. It's on [xx].

Interviewer 1: Yeah going back…you said you physically remove some pests. Frank, how about you? Inside the home, where they would move from outdoor to indoors, what do you do when there's an infestation?

Frank: Yeah, I usually call somebody for that. I call pest control or something.

Interviewer 1: And they'll come around and take care of it.

Frank: It seems like they know what they're doing. I mean they have to.

Interviewer 1: Have you all ever, heard of or considered an eco-certified either products or professionals? Have you heard of it at all?

Barlee R.: Yeah.

Beverly D.: Mhm.

Marcia K.: You know even Walmarts' have detergents that are green, but you don't know…

[01:10:04]

Barlee R.: Are you talking about the company that works in pest control and they are certified?

Interviewer 1: I mean there's different certification of products you can get, depending on what ingredients they might have.

Marcia K.: Does one exist in Antioch?

Beverly D.: I have an eco-friendly cleanser, I [forgot] the name because someone came door to door to sell cleansers.

Marcia K.: See cleansers I've heard of but…

Beverly D.: He actually tasted the cleanser to show you how good it is.

Marcia K.: It's probably like some kind [xx] or citrus.

Paul K.: [xx] iced tea.

Barlee R.: Yes, but I've heard of that before.

Interviewer 1: How about Beverly, you?

Beverly: Well I was just thinking, when you asked the question, do you have any suggestions as far as things we can purchase? Because I was just wondering…

Interviewer 1: I mean we can follow up about it later, but I want to hear from you.

Beverly: I mean, I am open to it I'm sure it's going to cost more because there's something different.

Paul K.: I am suspicious of all these certifications. What does it really mean? It's like when you go to [xx] and you buy an apples and they are spotted…what guarantee do they really have?...a lot of incorrectness. I know all this certification…who checks the certification?

Marcia K.: I really think organics, that's why it costs so much money because they really do have to…it's called third-party organic certified. It's like being kosher.

Paul K.: Can you really trust it?

Barlee R.: To a great degree, is the answer to that. They are certified because they have not used pesticides on their property for X amount of years and the product that you have has had has been treated with any pesticides. However, there is some runoff from the environment. We are living in this world…

Marcia K.: Air carriers.

Paul K.: The pesticides from the [naval]…and the flying air craft devices.

Marcia K.: Unfortunately it's very expensive for people to have an organic, it's very expensive for them. Some people just say it's natural because they don't want to have to pay inspectors to come inspect their property and inspect everything. So you know it costs them more money to be organic. That's why it's so expensive. You think they are not using anything so their stuff should be great, but they have to pay to be certified to be natural. It's just a strange phenomenon.

Interviewer 1: Yeah, Shantal you know when you said you know about them…the certification stuff would you have you considered going out of your way to get them?

Shantal: I heard about it, maybe I haven't heard enough to make a decision.

Interviewer 1: Yeah gotcha.

Beverly D.: Well you want it to be convenient. We worry about convenience and time spent, and I don't want to go far and fit that in your schedule to go pick it up. Convenience is something that…

Interviewer 1: Frank, how do you feel about it?

Frank R.: Convenient things. You go get your sprays and everything, right next to the store or the garden department. Convenient, we all do it so especially eco-friendly type stuff

Beverly D.: And affordable.

Frank R.: Affordable.

Gene D.: I don't know how much of a typical sample we are, my sense is that all of us have a awareness of what's going on and we're concern citizens. I see a lot of people that I think would be lost here and they would have nothing to contribute.

Barlee R.: Very special group.

Interviewer 1: We got a good representation, so maybe you can have a little faith in your community.

Frank R.: I have done some work in toxic waste cleanup too.

Interviewer 1: What kinds of things did you do?

Frank R.: There will be spills… and we go in my friend's brother's company, R&H Environmental. We had this one place where they spilled all this toxic…and we'd go in. And I'll pour these things full of some liquid. I forget the name, its just gallons of it…walking through, pouring it. And we take the trucks, and put a bunch of stuff…and we scoop all the stuff up and put it in drums and stuff like that.

[01:15:12]

Marcia K.: And then bury it where? Put it in the dump?

Frank R.: Put the stuff in barrels and take it away.

Marcia K.: Don't know where it goes.

Barlee R.: You know one of the reasons I didn't hang up when you called me is because I am very concerned about our water.

Marcia K.: Me too.

Barlee R.: I can buy bottled water to drink, filtered water to drink, but what am I going to bathe in when my skin is the largest organ of my body? I can't afford a whole house filtering system. I would get one in a heartbeat if I could because of the fluoride that is put into our water.

Marcia K.: That's why I get the [xx].

Barlee R.: I do not understand it. I hope everybody here is aware that this fluoride that was introduced back...for our teeth is being ingested as a drug.

Gene D.: I am in favor of that I think that it's good.

Barlee R.: Well do you know where it comes from?

Gene D.: I can't say, I am not an expert on it.

Barlee R.: It comes from phosphate industry. The people who make pesticides and what happens…

Gene D.: I'm concerned about that as much as I am concerned about it's effectiveness.

Barlee R.: It's never been proven to prevent cavities.

Gene D.: I can't agree with that.

Beverly D.: No, I can't agree with that either.

Marcia K.: Well you know, I think it would work if you just had it in your toothpaste.

Barlee R.: Toxic waste. As ingesting it, it has never been proven to be effective to reduce cavities. Around the world…

Shantal G.: I didn't give my child…I gave her straight bottled water till she started school. Her teeth were so messed up, that even now I have to pay for her teeth. That was the first daughter, and I took her to the doctor and I asked what happened? And they said she doesn't drink water with fluoride.

Marcia K.: Does she brush her teeth?

Shantal G.: All the time. It's not the cavities; it's the front teeth that were brittle from no fluoride in her water until it was time for her to start school. The second daughter and I said, "The heck with that." And I let her drink out faucet water, but I boiled it first and I had no dental problems. That was twenty-two years ago. We don't have a problem with the faucet water.

Interviewer 1: I have one last question for you guys, so Gene you said we may be an atypical group, and I think to point maybe you stayed on the phone because you were concerned. So if we are concerned citizens and you know friends or family who you think… what could possible be done to change people's minds?

Marcia K.: To get people more interested in their water?

Interviewer 1: Sorry I'm focused on pest management.

Marcia K.: Oh okay.

Interviewer 1: For the chemicals, not overusing, things like that. Have you ever had an experience where you tried to influence somebody to use [fewer] chemicals? Or educate them?

Gene D.: I think education is the key word. That's a big job, but you [have] to educate in every way that you can if there are things that are critical to the safety of the environment and the safety of our citizens.

Interviewer 1: Yeah, but what about you personally? Can you think of one experience, related to this issue?

Marcia K.: My daughter is on my back constantly so I get it from someone else more than me giving it to anyone else. She's an organic farmer…she doesn't eat meat, you name it. I get it and I'm really glad that I do.

Barlee R.: This is true about all of my friends and family as well, they're just every bit aware, as I am to avoid toxins.

Paul R.: I think that…I'm definitely trying very hard…we have solar panels that take care of our whole electricity bill. We clean the water the best we can. We don't like to buy things or use things in plastic bottles. Because we are all trying to do the best we can to buy chemical free and so on. I think we all try to do a little, to do things. I think I try to influence other people. Don't do as I do, but do as I tell you, doesn't work.

[01:20:21]

Marcia K.: I think it's worth it now, I really do. Because when I'm watching something on TV, if there's a commercial that comes on…I'm gone someplace else as soon as the commercial comes on…whatever is movement on there I have no idea…phone calls I hang up on them…mailing does no good because I'm not going to spend time reading it. I don't know how you can deliver the message except by word of mouth or by having focus groups maybe, or watching our water. When I was up in the reservoir the other day, I was shocked at how low the water is up there. I don't know if anybody has walked up there lately… because they are doing something.

Paul K.: They are working on it right now.

Marcia K.: Is that why it's so low? Oh my god, I could stop think out how low it was… thinking about our water.

Paul K.: It's kind of scary too.

Marcia K.: It was very scary.

Paul K.: If it ever breaks there would be a flood.

Marcia K.: I thought it was shooting it all down south and I got really upset.

Barlee R.: One of those water thieves.

Marcia K.: I think people in California are very water conscious. We are very water conscious.

Frank R.: We were sending our water down to LA, weren't we for a while?

Marcia K.: I think they're working on it now, they are building all kinds of…

Barlee R.: I do both, I was my car and I take it to the car wash.

Marcia K.: [xx] wanted to talk about washing our cars. I don't wash my car.

[Group bantering 01:22:08]

Interviewer 2: So the deal with the cars is…what happens [are] you drive your car right? When you wash it off, it's not the soap. It's not anything you wash it with unless you are washing it with acetone. When you wash it all of the stuff gets liquidated, put into liquid. And if you're washing it probably in the street or in your driveway it goes straight into the storm drain, that's why…at the car wash they have to do certain things to take it out. When you took the survey and you thought you had answered the wrong thing; that is an issue with my survey. So that is different that's again…the theory behind it, whenever you introduce…or mitigate the distance that we [xx]

Marcia K.: So what have you found, with us talking and everything else is there anything unusual? Are shocked by anything? Or are you learning anything? Or you use from this focus group?

Interviewer 2: I was shocked that when you thought you were going out to California you were going to get space.

Marcia K.: I guess, I really was shocked.

[01:24:13]

***Contra Costsa - Central Region***
Walnut Creek City Hall
6:30 pm Thursday, February 21, 2013

[00:00:00]

Collene T: I like to cook. I like to read. And basically I like to volunteer.

Interviewer 1: Great, great.

Willie S.: I'm Willie Sadie and I say pets we have one dog, two cats, five chickens, and my wife. I have a daughter that is thirteen. And I like coaching softball.

Shanna A.: My name is Shanna. I have been a resident of Concord for ten years. I have a full time job and I have a side business as well. And I have two sons. And I like to play golf.

Interviewer 1: Great.

Harmony D.: I am Harmony. I have three dogs and two cats in a way too small house and I make jewelry. And I work at Starbucks.

Interviewer 1: Nice. Thank you.

Marian H.: I'm Marian and I have two sons and five grand children. And I have one dog, two cats, and I like to swim, read, play cards. You know all of the above.

James M.: I'm Jim. Central County. I've lived here since '65. I work construction. I'm a fitter. Four dogs, four chickens…

Interviewer 1: Wow.

James M.: Lots of fishing. I play some golf and I like to fish.

Interviewer 1: Nice.

Interviewer 2: I'm Nick! Hi, I introduced before. I love to tell people where the bathroom is. It's one of my absolute favorite things in life because one of my least favorite things to do is to tell is where the bathroom was when they missed it. And you know, I have a number of animals that have been living under my car for longer than I even remember now.

Interviewer 1: Thank you. Alright, just a quick reminder especially people sitting a little further, if you could just speak up, project a little, I think it can catch us, so no need to yell. And I'm sure that we will all be respectful and speak one at a time so that it's clear for the recording. Okay so let's just get started. So lawn care…kind of get into that mode. I know we're a lot of different things in this world, but we are talking lawn care so just try to think about that and bring your perspective. So the first question that I have to put out to you is, just do you have the need to…Oh hi you can just sign in…

Kat K.: Okay.

Interviewer 1: Do you have the need…or first of all do you have a garden or lawn? What do you guys all have?

Willie S.: Yes.

James M.: Yes.

Harmony D.: Yes.

Collene T.: All of the above.

Shanna A.: All of the above.

Harmony D.: I don't have an actual lawn of grass. But my husband likes to water the weeds that grow there naturally. Like Meyer's lettuce and we also have a plant. And I do garden in the summertime.

Interview 1: Do any of you also garden?

James M.: Yes.

Interviewer 1: No? Marian?

Marian: I have two gardeners.

Willie S.: Extensively. We got like seventeen fruit trees at our house and a vegetable garden.

Interviewer 1: Okay, so we got a good mix. That's good. Hi, can I ask your name?

Kat K.: I'm Kat.

Interviewer 1: Hi, Kat.

Kat K.: Sorry I tried to get into the wrong elevator.

Interviewer 1: It's okay we just got started. Okay good. Okay do you garden or have a lawn or anything?

Kat K.: We have a small lawn in the front.

Interviewer 1: Okay.

Kat K.: We used to have a lawn in the backyard, but a few years ago we dug it up and now it's concrete patio now so there's not very much to be watered back there.

Interviewer 1: Okay, got it. So lets go around this way, clockwise and just answer if you guys ever in gardening or whatever have the need for pest managing?

Collene T.: Yes.

Interviewer 1: So pests being bugs, weeds, rodents, all the above.

Collene T.: I don't use any kind of bug killer on my lawn or my plants. I just let the birds eat the bugs, and all the other bad things. I try not to use anything because it isn't healthy. It goes into your water supply, or some things will even harm animals.

Interviewer 1: Okay, so you got bugs.

Collene T.: I guess so. I don't see them. Out of sight out of mind.

Interviewer 1: Gotcha.

Collene T.: You know, you have sometimes snails that will munch on some of your plants. If I have a lot of snails I just set a dish of beer out there.

[00:05:09]

Interviewer 1: A dish of?

Collene T.: Beer. And they'll climb in it and they're happy to die.

Interviewer 1: Die a good death. Okay, Willie?

Willie S.: I use chemical fertilizers. I have to cut back because I have a well so I don't want to over fertilize. I don't put chemicals too much down. I'll put some of those bait and stuff, but very small amounts. Now I have chickens, now I don't. My wife says no more, put nothing. So now I'm trying to figure out to fertilize the lawn without, because you know they like to eat the fertilizer and stuff.

Interviewer 1: Okay.

Willie S.: So I'm trying to find a safe way to fertilize.

Interviewer 1: So mostly your problem is with the weeds…herbicides?

Willie S.: Yeah, herbicides.

Interviewer 1: Not so much the bugs?

Willie S.: No.

Interviewer 1: Okay, okay.

Willie S.: Not now. Once you have chickens you don't have bugs.

Interviewer 1: Oh gotcha. Thank you.

Shanna A.: I tried to have an organic garden. But the insects I would sometimes use insecticidal soap. Just right on the spot that's it. And I do fertilize my lawn twice a year. Spring and in the fall and it's regular chemical fertilizer.

Harmony D.: We do get gophers, but we just let them be. We are animal lovers. So we don't do anything to the gophers other than when they [hibernate] in we take them back out. And the bugs don't bother us. We tend to have bugs like in the tomato plants so we just kind of let them have their tomato, and I take the ones that they didn't eat.

Marian H.: I also have a yard and I do fertilize my lawn. But bugs I don't really have a big problem with that.

Interviewer 1: Okay.

Marian H.: So it's not too bad. I have cats for rodents, so they are very good about that.

Interviewer 1: Okay.

Marian H.: At least once a day there will be two or three of them.

Interviewer 1: Oh wow. Jim?

James M.: Okay…the raised beds, I raise tomatoes, squash of all kids, char, spinach, I raise some corn and they get infested with caterpillars. I use malathion primarily. Spray as needed. I use dormant oil on my apples, oranges, and lemons, which also helps cuts down on the bugs. The chickens also come in handy for some of this, but they can't get high enough and I keep them at it in my garden. I fertilize with 10/10/10 ammonium nitrate. I spray for hornets and bugs like that. I use snail bait. I'm into the chemicals. Organic is the nice thing, but I like having nice yields. So you get that with fertilizers of various kinds…and keeping the bugs down.

Interviewer 1: Great. Wow, sounds like you use a bunch of different tactics.

James M.: If Ortho makes it, I've tried it.

Interviewer 1: Okay, Kat?

Kat K.: Well we have some bugs. Nothing too much, we get ants. And sometimes we'll spray the perimeter of the house with Raid, which I really hate. If they get in we usually use like baking powder or something…

Interviewer 1: You hate the ants?

Kat K.: Well I hate when they come in.

Interviewer 1: Oh yeah.

Kat K.: Or find their way into the house. Weeds, you know we have some weeds. But most of the time we just pull those. My husband sometimes will use weed killer, which I absolutely hate.

James M.: Round Up.

Kat K.: Yeah.

Interviewer 1: How much?

James M.: Right now I'm spraying every two weeks because you can pull some out, but some of it might have gotten into the pea gravel and walkways and stuff like that. You can spray it, mainly out front. All the dogs and cats are in the back so I don't use as much there. There I pull weeds and things like that. Or the chickens, you just simply bring them over and stick them in an enclosure where the weeds are and they'll eat them. But of course they come back, so eventually sometimes if they get bad enough I will spray.

[00:10:04]

Interviewer 1: Okay. And over here I heard someone say you also use Round Up.

Willie S.: I do on occasions. I'll use it about every…this time I did it about two weeks ago. I won't do it for another two weeks and that's it for the season. If you keep it down a little during the spring, you won't get as many later on. We also have a lot of birds. My wife is a fanatic animal lover [xx]. I got twelve birdhouses up. Every year I get about ten more.

James M.: When the birds spritz, especially the Blue Jays will throw stuff out of there all over the place. And next thing you know you will have millet and everything else also growing up out of your grass. So thank god for Round Up and stuff because you can only do so much.

Collene T.: Not if you buy patio mix. Where it is evidently sterilized. It won't grow anything because I got bird feeders all over the place and I don't get anything growing from it because I buy the better mix from the bird store.

James M.: [xx] my dear old dad is living with me and he's a bird biologist…

Collene T.: I'm sorry what?

James M.: My father is a bird lover and he uses all kinds of…so a lot of the stuff he uses sprout. Concord Feed loves him because he will go down there and buy various odds and ends. He'll have a feeder over here for the finches and a feeder over here for the Golden Finches. And he's got [xx] seeds for them and over here he's got sunflower seeds for the jays and some of the other birds. And he lays stuff out for the [xx] and the doves. So next thing you know…

Interviewer 1: Stuff is going to sprout up.

James M.: Something is going sprout up in some place.

Interviewer 1: Okay thanks. Over here Kat, you said you hated it when your husband sprayed, why?

Kat K.: I just don't like anything like that. I was born and raised on a farm and we didn't use a lot of chemicals. Even back in the day when they had DDT and stuff like that, I am just really against anything harsh like that.

Interviewer 1: Okay, what does your husband use when he uses the weed killer?

Kat K.: It's probably Round Up. I don't think we've had anything the last couple of years.

Interviewer 1: Okay, cool, and anyone…you guys don't really?

Harmony D.: No the only weeds we really worry about are in roses. And we like to hand pull those and I enjoy doing that.

James M.: So you guys don't use parathion or dithianon?

Harmony D.: I have no idea what any of that is! I know what malathion is. It's very scary.

Interviewer 1: Does anyone else know what those are?

Collene T.: I have about twenty rose bushes, but I don't put anything on them. If anything for some of the stuff I use Amway's LOC, which is a very good biodegradable type of material and you can put that little spray bottle and

water it down. You can always spray if you have problems. And it's also great to keep down ants. If you have a trail of ants…I just put a little thing of the Amway LOC and they won't cross it.

Interviewer 1: Okay.

Shanna A.: Every year, I usually put down a pretty thick layer of mulch and it keeps the weeds down too.

[Group Mutters]

Collene T.: Yeah…the bare areas.

Interviewer 1: The physical bare areas.

Collene T.: I put a little bit down. I don't get any weeds. I don't have any plastic or that down, but just the sidewalk part. It discourages the weed growth.

Marian H.: My dear old mother loves to go after the weeds. She's out in the yard. She's everyday out there. Just say...

Interviewer 1: Therapeutic?

Willie S.: She must have great knees and a great back then.

Marian H.: Yeah I'm telling you, at ninety-three she's out there everyday.

Willie S.: That's what keeps her going.

Marian H.: Exactly, yeah.

Interviewer 1: Okay.

Marian H.: So I never use weed killer.

Willie S.: Well I do use sparingly. Besides I use a well for my own fruit trees. So I don't want to get the chemicals into my drinking. I don't drink it, but I use it for irrigation for my fruit trees and all that.

Marian H.: But you know what's good for roses? Banana peels.

Willie S.: Yeah. And egg shells, you mix those in.

Marian H.: Banana peels. Chop them up, leave them, and then dig them in the roses.

Interviewer 1: Does everyone know about these home remedies? No?

Kat K.: mmm [no].

James M.: [xx] he has a column and they talk about kitchen and gardening and all that stuff.

Marian H.: Yeah.

Interviewer 1: So it looks like we are split half and half? Or?

Shanna A.: Probably.

Harmony D.: I'm going go look him up now though.

Marian H.: [xx] snails.

Interviewer 1: Okay.

Collene T.: Yeah.

Willie S.: It's all on the Internet you can look it up.

James M.: Library.

Interviewer 1: Okay.

Interviewer 1: Have any of you ever thought of hiring or do you higher a landscape company or anyone to come into either you lawn or garden?

[00:15:06]

Collene T.: Yeah, yeah I have.

Interviewer 1: Collene?

Collene T.: Two gardeners. One does the mowing and takes care of the grass. The other fella generally takes care of the shrubs and keeps them trimmed. I do the flowers and things like that.

Interviewer 1: Okay.

Willie S.: I occasionally have them come in if I have big stumps that need to be removed. I have one guy that does my pruning for me. He's a really good professional. I have his crew come in because I have so many fruit trees. I do a couple, but after a while you get tired and you have so many other things to do. He does a good job. So he is a professional. And I give him plenty of fruit that way.

James M.: It's a barter.

Willie S.: But that's about it. It's just for pruning the trees and taking out the stumps and that's it. But everything else I do. I rototill, I take the manure into the compost pile.

James M.: Do you ever have the stump grinder that you rent?

Willie S: I've torn my stomach using a [xx] before.

James M.: So in that case have somebody do it.

Willie S.: I have an account with Wally's Rent and they see me coming and they say [xx].

Interviewer 1: So you do most of it yourself. You don't usually ever hire, anyone?

James M.: Well if it has to do with a neighbor then I have to hire somebody. We had a Liquid Amber. We had a big storm a while back and so it lost a really big limb. It came down and landed on some of the wiring and PG&E won't do that. You got to do that yourself. And part of the fence came down, it's a mutual fence, and it was big. He wanted it done right away, and this is an [xx] job so I hired somebody.

Interviewer 1: What about maybe to do with managing the plants you are growing or the flowers? I see a no.

Harmony D.: My husband and I we have it split. I do the roses and a tomato garden. We also have peppers. And he does everything else.

Interviewer 1: Okay.

Harmony D.: I guess that he actually mows the weeds because he calls it his lawn. But we never fight over it.

Interviewer 1: Okay.

Shanna A.: I don't. The only thing I hire is for tree service to trim the trees.

Interviewer 1: Tree service for pruning and stuff like that?

Collene T.: I have a lot of flowers in pots and even one of my lemon trees is in a big pot. So if you fertilize that it doesn't go into the ground water because it's in a pot.

James M.: So you're into dwarf trees? Oranges or lemons?

Collene T.: Lemons and tangerines.

James M.: Oh okay.

Collene T.: Tangerines kind of produce two different things. It produces something like oranges, but they are sort of a hybrid fruit or something like a lemon.

James M.: Is it a three foot pot or something or?

Collene T.: It's a big pot.

James M.: Oh okay.

Interviewer 1: And the people you hire do they work with that at all or?

Collene T.: No I take care of those. One guy mows the lawn, mows and blows. The other guy trims shrubs. I tell them what I want. Then I hire a professional to do the tree trimming.

Interviewer 1: And Marian?

Marian H.: I actually…for just trimming the tall trees.

Interviewer 1: So pruning.

Marian H.: I have a mother remember, who does everything else? For digging holes I have sons.

Interviewer 1: So you have a big family, you're set. Kat, do you guys ever hire?

Kat K.: Usually just once a year, mainly like the palm trees.

Interviewer 1: So what about for infestations? I know you said you get ants. Do you guys use insecticides? What about for that? Have you had any outbreaks of bugs?

James M.: No.

Collene T.: No.

Willie S.: Yeah, I have cockroaches from school dumpster across the street. And then I have to put out traps and I told them. They moved it and since then I don't have any problems. I do have some in the orchard. I do walk out in the orchard and I'll see cockroaches, but that's nature. They're just doing their thing.

Interviewer 1: So no one else really has a problem?

Harmony D.: We have a lot of spiders. I don't know if it would classify as an infestation? I just don't like them so…

Willie S.: They're good.

Harmony D.: He does not allow me to kill anything at all. Not that I could kill a spider if I wanted to, and we've been there for two years so we've haven't had any problems.

Collene T.: I welcome the spiders they eat the bugs.

Harmony D.: Yeah, they're okay if they stay outside.

Collene T.: In the house they die, outside they're fine.

[00:20:05]

Willie S.: Yup. I have lizards at my house too and the cats [xx].

James M.: I tell my neighbors anytime you run across a [xx] nest or something, let me know I'll get it, bring it, and throw it in my yard.

Collene T.: What kind of nest?

Willie S.: Preying mantis.

James M.: Or buy some ladybugs.

Collene T.: Preying mantis, yeah I have some of those.

Willie S.: Every year I buy one or two things at Home Depot and I just put them out.

James M.: Ladybugs are great. For a week or two they'll just eat everything. It's great.

Collene T.: I used to have more things like that. I think that's why I think a lot of people use more pesticides and why so many of these little creatures that was very helpful, you don't see them anymore. When we first moved in forty-seven years ago we had all kinds of things and it seems like in later years so much of that has gone down.

Interviewer 1: So you think maybe…

Collene T.: You don't see the bees.

Interviewer 1: So you think the ecology is just…

Collene T.: With all the rose bushes that I have which are about, eighteen rose bushes. And I used to have thirty-three before I redid the yard. And I don't see bees anymore either.

James M.: Where do you live?

Collen T.: Behind John Muir hospital in Walnut Creek.

Interviewer 1: Do the rest of you find that? Like there used to be more different things? Would you attribute it to the pesticides?

Willie S.: I would think it's the chemicals.

Collene T.: I think it's the chemicals, I think so.

Willie S.: I think they over do it. There's so many people doing it and the problem is: it's safe, it's fine. But I see so many idiots doing this; they're over doing it. And I see a lot less bees. That's just a problem with overuse and not using it properly. I mean the chemical is good if you use it properly.

James M.: Well bees are having trouble everywhere, you've heard of [xx] collapse?

Willie S.: Yeah.

Collene T.: Mhm.

James M.: Well it has to do with mites everywhere so a lot of it has to do with bee mites everywhere.

Interviewer 1: Can I hear from the three ladies over here?

Harmony D.: I haven't really noticed it, but honestly we just bought this house two and a half years ago and before that I was living with my parents or living in an apartment so I wouldn't really notice it that much so…but I haven't noticed any change in the past couple years that we've been there.

Interviewer 1: Yeah okay.

Shanna A.: This year I've noticed ants are really a problem. I spray inside the house.

Marian H.: Well every three months Terminix comes to the house.

Interviewer 1: Who does?

Marian H.: Terminix. Every three months because I don't want any bugs in the house. Outside I have everything else. Bees out there, sometimes wasp, I also have lady bugs it's amazing you know?

James M.: It means you have a very healthy garden.

Marian H.: My mother is a farmer.

Interviewer 1: So when you, when Terminix comes do you know what solution they use?

Marian H.: No, I don't they write it but I don't really look at it you know?

Interviewer 1: They take care of it; you don't worry about it.

Marian H.: Every three months I give them a call.

Willie S.: Out of mind, out of sight.

Marian H.: Until all the bugs are gone, I don't want any bugs in the house.

Interviewer 1: Is that the case with whatever it is that you spray as well?

Shanna A.: I do it myself.

Interviewer 1: Oh you do it yourself.

Shanna A.: Yes.

Interviewer 1: What do you use?

Shanna A.: It was something from Home Depot like Ortho pest control, but I spray it only inside.

Interviewer 1: Okay.

Collene T.: I used to have my olive tree sprayed some years ago, but I stopped because they are spraying all the chemicals…just spray it twice just when the blossoms, so you don't get any olives. I stopped doing it because I think because they would just put so much chemical.

James M.: Was it a dormant spray or dormant oil?

Collene T.: I'm not sure what they used.

James M.: Did your trees produce any olives or did they not?

Collene T.: I still get lots of olives. Even if I get it trimmed I get some olives. Now I get a lot of olives.

Interviewer 1: So what made you decide to change your mind and say no more?

Collene T.: I guess because I am a health professional. [I'm] very cognoscente of chemicals and how they affect people. And I have been a health professional for fifty-two years.

Interviewer 1: So at what point did you make that decision? Was it when you saw the way they were spraying?

Collene T.: No, no I just thought about what they were putting on the tree and I thought about the chemicals. It's in the air. You know a certain amount of it is going to get into your water table; there would be a little here on the ground and I thought this is not healthy. And you know so many of these chemicals are going to produce cancer in people. You want to really keep it at a minimum and you get some into the water. You know we are just going to have more and more problems.

[00:25:09]

Interviewer 1: Okay, I see some heads nodding. Do most of you agree with that?

Kat K.: Yeah, absolutely.

Shanna A.: Yes.

Harmony D.: Yes.

Willie S.: Yes.

Interviewer 1: Marian?

Marian H.: Do I agree with her? Of course I agree with her. I still don't want bugs in my house.

Interviewer 1: But you don't want bugs in your house. Great. So you have used various different things some of you sprayed at home yourself or maybe your husband did. When they have leftover so do you know, I'll ask you first Kat. Do you know what your husband does with any leftover stuff that he has laying around?

Kat K.: He just stores it. Keeps it. He keeps telling me…

Interviewer 1: He keeps it in the garage?

Kat K.: Garage, yeah.

Interviewer 1: Thanks.

Collene T.: Any type of household products that I have or whatever, I take them to the place just past [xx]. What is it?

James M.: San Martinez fill.

Collene T.: Yeah San Martinez fill.

Willie S.: Recycle.

Collene T: They recycle. They take any kind of household paints or anything like that, that are left. Actually I have a box right now.

Interviewer 1: Okay, so you all seem…does anyone not do that?

Shanna A.: I do that.

Harmony D.: For most of the chemicals, but as far as things like paint we for sure take it. But right now we are still keeping it for touch up. We would definitely take that stuff to the hazardous materials place.

Interviewer 1: Shanna, what are you about to say?

Shanna A.: I was going to say that I take all that stuff to the hazardous waste.

Interviewer 1: Okay great.

Collene T.: I wish it wasn't so far.

James M.: Doesn't Walnut Creek take stuff at their cork yard?

Collene T.: I don't know.

James M.: Off of [xx].

Collene T.: That's a good question.

James M.: They used to.

Collene T.: I have to give them a call because otherwise I would have to take them out to [xx]. Oh I know where they are yeah, but in order to get on the freeway you have to go right pass it.

James M.: There's a recycling thing they run right there.

Willie S.: I do three separate trashcans, why don't they bring out and pick up the white stuff where people put their extra out? People in the old days of my dad…I used to see him pour it down the drain our pour it out, but the attitudes have changed.

Interviewer 1: Do you know where it goes when you pour it down the drain? Does anyone pour this stuff down [his or her] drain?

Shanna A.: No way.

Harmony D.: It goes to the ocean. I'm not doing that, or it goes to our water that we're drinking.

James M.: It goes to the treatment center, where [xx] kills all the bacteria.

Collene T.: I don't even throw garbage down the drain…the disposal. I save it all for recycling. I call my "uck bucket." It gets pretty "ucky" just after a few days.

Shanna A.: Compost.

Collene T.: Yeah put the green can. Compost.

Interviewer 1: So you guys mentioned, a few if you using Round Up. Where do you usually buy that?

James M.: Down at Orchard Supply Hardware, is close by, or Home Depot. Lowes.

Collene T.: Yeah, Costco carries it.

James M.: They usually have it on sale if you watch the ads.

Willie S: I usually go to [xx] or to John Deere out there on [xx] boulevard. There are bigger cans. I buy one big can of that and it'll last me three or four years.

James M.: Because the price only goes up.

Willie S.: Oh yeah.

Interviewer 1: So do you use Round Up because it's…what's your main primary reason for choosing that over anything else?

Willie S.: My understanding of it is that it's biodegradable. So I mean it's going to kill things [xx] and shrivels up the roots. So it's safe, it degrades after a while. So it's one of the safer weed killers if you're going to keep the weeds down. Otherwise, I think they're just way too strong. That's why it doesn't harm the wildlife here. Round Up, it's biodegradable. Use it sparingly.

Marian H.: It's good to know.

Kat K.: I didn't know that was true.

Willie S.: Yeah.

[00:30:02]

Interviewer 1: What do you know?

Kat K.: If that's true I was not remotely aware of it. It's something that stays in the ground and doesn't dissipate.

Willie S.: Yeah.

James M.: Hmm.

Shanna A.: [xx]

Willie S.: Depending on what concentration you use it last about three months or something like that and it'll go away.

Kat K.: In the soil?

Willie S.: If you get a lot of rain two or three weeks it's gone.

Kat K.: Where does it go?

Willie S.: Oh it dilutes.

Kat K.: Okay, but it's still there.

Willie S.: It's a [xx] salt. It decomposes into its component parts.

Kat K.: Okay so it's no longer remains.

Willie S.: [xx]

Collene T.: I think I had a chemical in my yard, the gardener decided…I wanted him to weed whack the weeds down, just in the areas where I put my garden and he went out there and he sprayed it with something. I asked him what he sprayed it with and he did know. I said [xx], "Where's the can?"… "Well I threw it away" [the gardener said]. I had no weeds grow there at all for over a year. Oh my god, I can't plant my vegetables because who knows it can do that.

Interviewer 1: Did you try to plant your vegetables?

Collene T.: No, I wouldn't think about it because if weed doesn't grow, they're being poisoned so I'm not putting my vegetables in there. I don't want to get poisoned. Yeah I was very upset.

Willie S.: So many alkaloids will do the same thing.

Collene T.: I'm sorry?

Willie S.: Some of the alkaloids will do the same thing. But some of them are persistent and you don't want to use them.

Collene T.: Oh he didn't even know what he used.

James M.: That's scary. Oh I'm just spraying this stuff down here.

Interviewer 1: Your gardener?

Collene T.: My gardener, yeah. I had a fit because I didn't know he would do this.

Interviewer 1: Did he bring it himself?

Collene T.: Oh yeah, I don't know what possessed him. I had no idea because I just wanted him to weed. Just weed whacker. I have two.

Interviewer 1: So he didn't even ask.

Collene T.: Just weed whacker.

Interviewer 1: Just take the shortcut or something.

Collene T.: Just turn it over when I want to plant. I can just turn it over.

Interviewer 1: So what do you guys think to be the most economical approach to taking care of just pest for those of you who have pest problems?

Collene T.: Doing nothing to it.

Interviewer 1: Doing nothing?

Collene T.: It's the most economical.

Willie S.: Depends on what chemicals you use. Use chemicals sparingly. If you have ants, I'll put ant bait out stuff like that. Outside is fine. I have lizards and animals and stuff out there and they're eating the bugs. Inside I'll use a little spray here and there. I don't have to worry about mice because I have two cats.

Collene T.: That's right.

Willie S.: But otherwise, I only use a little bit. I don't really find it that much of a problem. But when I do need it I will use it.

Harmony D.: We have field mice in our backyard. They like to come and eat all the birdseed that the birds flail all over the place.

Collene T.: What does?

Interviewer 1: Field mice.

Harmony D.: Field mice, you know the ones with the long-long tail? They'll disappear because there's an owl in a tree next to it. I don't mind. I really love animals, so I won't do anything to them. And that's economical for sure.

Collene T.: I don't like rats. I don't want rats. I don't keep the poison out, but I bought this thing at the hardware store that will electrocute. It sound disgusting, but it's just going to kill the rats. And rats they are conveyors of disease. So I'll put it in the shrubs and I turn it on at night and at dusk. I quickly turn it off early in the morning so I don't get a squirrel. If you put a little bit of dog food or something in there, and the go it goes [xx]. Goodbye rat.

Harmony D.: I wanted a bug zapper, but my husband won't let me.

Marian H.: Oh really?

Harmony D.: I just like them because my grandpa had one and it reminds me of childhood. But I'm telling you he will not kill a single bug with the exception of fleas. I kill the fleas because we love our dogs and cats more.

Interviewer 1: So it's just not the spiders it's any bugs?

Harmony D.: Well I don't like bugs…he accidently killed an ant the other day and he was really upset about. He went to shut the garbage can and he was like, "I cut an ant in half and all the other ants are freaking out." I'm pretty sure the ants were not freaking out, so it'll be okay. He's a big softie. He worked around [xx] for a long time. He's really into conservation of animals and stuff. As long as he takes the spiders, and takes them out, I don't care if they are alive or dead just get them out of here.

[00:35:20]

Collene T.: Sometimes I get crickets in the house. I just scoop them and take them outside.

Harmony D.: Yeah, I'll actually pick them up because they're not scary.

Interviewer 1: What about your neighbors? What do you think that they do? Just picture your immediate neighbors. I don't know if you have family living in the area. The people you know, let's go around this way. Do you know some of them? What are their methods? What kinds of the [xx] that they use?

Kat K.: I guess I really don't. I don't notice. I know one of our neighbors has their lawn done once a week someone comes in, so I don't know. We do have a community among our community its within our planning unit

development a park. We have gophers and we have landscapers once a month. I heard they were pouring poison down the gopher holes, which I put a stop to that because I didn't like it. I guess I don't really notice my neighbors do a lot of their own.

Interviewer 1: What were they poisoning it with?

Kat K.: They said it was some type of poison corn. I don't know what they were using but like I said, I just became president of the homeowners association so I made them stop.

Shanna A.: As far as pests and things I don't know.

Interviewer 1: Jim?

James M.: They call me, or my dad. My dad is a retired etymologist of the State of California. He is an expert in control in solid waste management [xx] control. We have roof rats. We pull out the Warfarin. We have bait spread around the neighborhood. If they have an insect problem…like Phil or Gladys comes over and bangs on the door. We come over and use some spray, it depends on what it is. I they just have things like wasps or ground wasp or [xx] paper wasp, we just use [xx] Raid wasp [xx]. We give it a spritz at night when they are dormant and then run like hell. We use some live traps to find out what they are. If they are Norwegian or roof rats, and you simply drown them. Warfarin will cause them to bleed out. It works pretty well on the bait. Warfarin it's safer than [xx].

Collene T.: The pet might eat them.

James M.: Well what you do is you put them where they won't. Warfarin will come in like a Dixie cup, which is a combination of [xx] and grain. It has a little wire in it and you wire it up where the pets can't get at.

Collene T.: Yeah, but if the animal has Warfarin in their system...of course they're going to slow up. They're not too healthy, so any neighborhood cat or any other predator that would eat a rat then too will die. If it's a small rat, an owl could take it. Or mice eating it, then you have somebody catch it and that animal will die. I know that because [of] my cat. I have caught a rat and brought it to this dog's door, and my daughter happened to come home and the cat had ripped opened the belly. And my daughter walked in before the cat had a chance to eat it and she saw the belly was all blue because the Warfarin is a blue color. She could see it. She caught a hold of it and she threw it in the garbage before the cat could get it. It could've killed my cat. Anything that would eat them, like owls or whatever will die along with the rats. That's why I like electrocution.

Interviewer 1: Marian?

Marian H.: One of my neighbors used to have a lot of rats so we put poison out. I don't know what kind of poison. But when I got cats, somehow one of my cats is a super killer. Some of the neighbors say that your cats are the best things that ever happened. Sometimes I have two sometimes I have three. They bring it and show me how big they were. I had to call one of my kids, and say please come. One time I called the Terminix guy because they said if you have a problem, call them. So I said, "Excuse me I think there's a rat out there that's not quite dead."

[00:40:35]

Willie S.: I think there are places where they could use that, the poison, like in downtown San Francisco where you don't have the predators and cats outside. Out in the country, out here where you have more predators I don't think you should be using that.

Marian H.: No he only came to pick up the rat. He did not poison it or anything. Just picked it up and took it away. So that's good, I'm out of here.

Collene T.: He didn't bring it to you for a present?

Marian H.: I already had a present, remember? Really oh my god, I couldn't believe it I thought it was dead and all of a sudden it moved. That I can't handle.

Harmony D.: I know one neighbor doesn't have a whole lot of plants, but most of his yard is concrete. I do know he does put poison down in the holes. And then the neighbors behind us have a really big plot. I've never seen them spraying anything, but they told use that they actually bring in feral cats. We have a lot of feral cats now in the neighborhood, which is not so great. But I've never seen them spraying anything in their yard so I don't think they do. We only have two neighbors. We kind of live in a country neighborhood.

Interviewer 1: Okay.

Harmony D.: But I know my neighbor has a bug zapper too. I still want my bug zapper.

Interviewer 1: What area did you say you lived?

Harmony D.: In Martinez. The house that we live in, the main house that we were staying at that they brought in the feral cats. They were the original house in the neighborhood had the whole area. Our house was built as their caretaker's house. I think our house was built in 1926 and theirs was 1850-something. So there [are] literally only three houses on our street.

Interviewer 1: Oh okay, Shanna do you know what your neighbors do?

Shanna A.: I do not. I just know that the house next door to me, for several years they have never seen bugs. Whatever they took down, it made them all come to my house. So I had a little bit of a roach problem for a while and I did have to spray the front of the house once, but that was about it.

Interviewer 1: Okay.

Shanna A.: As far as rodents and things like that people around me have so many cats that it really keeps the population down to a minimum. I have a rat terrier and he will actually kill the mouse in my house also. They're hunters, the dogs are. I really don't have any problems, I have more problems with raccoons, which come out of the sewer and they're all over the place and opossums.

Collene T.: Why don't you shoot them?

James M.: You can't shoot them if you're in a city. If I could do away with it I would.

Shanna A.: Opossums have a litter every year in my backyard, so I have a problem with those, but actually [the] cats killed a couple of the big opossums. So the cats really keep down things a lot. As far as insects go, I really don't know what the people on the other side of me do, but I do know whatever they sprayed it must've been really good because they never have any. They haven't been there in three years. Whatever they put down must've been…

Interviewer 1: Really strong. And you said you went around to spray around the house, what did you use that time?

Shanna A.: I put it in a stream and I just put it right at the foundation. I don't spray it around anywhere. It's a stream that goes right at the foundation.

Interviewer 1: Okay.

[00:45:00]

Shanna A.: They cross that line and they die.

Marian H.: That's what the Terminix guy does too. He doesn't spray anything, just around.

Interviewer 1: What made you choose the product that you use, I mean when you're standing there? Why that one? I'm sure there [are] many, many choices.

Shanna A.: Well I know I choose things like insecticidal soap because it's a little safer on the environment than a lot of things and it does the job. I have several rose bushes and they get aphids every spring and I do it right on the spot right where I see them. I don't do it on the ground. It seems to take care of the problem. I try to find things that are as environmentally friendly as I can. Sometimes there isn't anything and I have to use something a little stronger.

Interviewer 1: Do any of you feel that stuff like that might just cost more or too much? The organic spray, or maybe the bottles are smaller?

Willie S.: I do look at the store when I go buy it, and see which one is more biodegradable and stuff. They're a little more expensive and I will buy them. I also look at price and if it's too much I won't. I try to buy the biodegradable stuff.

Shanna A.: There's not that much price difference.

Kat K.: Some of my roses, I actually mix soap and water. I do a soapy water mix myself and spray it. It's really cheap.

Collene T.: That's why I use the Amway. It's the same thing. It just takes care of them. Once I had ants in my [xx], it took care of it and of course it's biodegradable. I use their laundry soap too, which is also biodegradable.

Interviewer 1: So you're saying Jim, right now about aphids?

James M.: She was talking about aphids and soapy water.

Marian H.: Soapy water.

James M.: They work for small infestations. They do definitely replace [other chemicals]. The only trouble is that they're not persistent and they wash out real quick. Some of the [xx] lasts longer and is more persistent, but they will eventually breakdown. Some of the pesticides depending which one you use have longer lives than others. You can't get [xx] anymore because they are illegal. They used to be fantastic. Depends how bad of an infestation you have.

Willie S.: I try to keep it under control a little infestation doesn't bother me. As long as it doesn't overbear, it's not a big problem. Sometimes I just take a garden hose and wash them off. They're gone for a couple days and then they come back, I spray them again. If I get rid of my ants, then I don't really have a problem with the aphids.

James M.: There is a time of year when I use. Right now I am using Round Up quite a bit because of the rain I can't use other types of sprays, and it's not necessary you don't need them. Do you spray your apple trees or buds?

Willie S.: My apple trees I don't. My apple trees I just [xx] and that's with the bulk oil and stuff. That's about it. I get a little scale; I get some [xx]. I pick that hand; I pick it up when it's young. Don't put the leaves on the ground. I don't have that much of a problem, I get a little bit but not much.

Interviewer 1: So it seems like rodents are the problem that you guys all kind of deal with in different ways. A little bit [of] weeds here and there, but you don't do much. It's just hand pull and you'll spray Round Up every once in a while. With the bugs it's mostly when it's infesting your house, but not so much the garden. In the garden you use a lot of home remedies. Is that pretty…not so much?

James M.: Not so much. I'm not into the home remedy. It's not worth your time. You got eight raised beds, four by eight, vegetables. And over here you have another full of chrysanthemums, which someone is raising for their [xx] on a farm. He cannot stand having insects working against his prize winning little babies. If you have something attacking the fruit trees then you nuke them. That's [xx] the whole style. We have new things now that are probably more help [and] nicer. When it comes to things like rats, Norwegian or roof rats, they are not tolerated at all. Gophers the same way we bring out the [xx] and the apple bits.

[00:50:45]

Interviewer 1: Do you ever find that they build resistance to stuff or it works pretty well every time?

James M.: It pretty much works well every time.

Harmony D.: I find that we do it on such a small scale. I [have] three tomato plants and eight rose bushes. I don't mind sharing, but my roses are just for me so if I have little bugs on them I'm okay with that. If the bugs want to eat some of my tomatoes as long as they leave some for me. On a small scale it's not really an issue.

Willie S.: One of the old fashion things my grandma says [is] plant marigolds between beds and I agree it does keep them down.

Shanna A.: Yes.

Harmony D.: Yes.

Willie S.: Marigolds.

Interviewer 1: Oh marigolds, yeah.

Willie S.: Marigolds between the vegetables, the smell of them, the bugs don't like them. My tomato plants and stuff, I have them grown [ther]. If I have the tomato worms I just take those and throw them on the roof, and let the birds eat them.

Harmony D.: I haven't gotten any of those. Oh my god, my [xx] hates tomato worms. She would invent ways to kill them. She was really into it. She would stab them. She would set them on fire. Every year was something new with how she wanted to kill her…I don't think she ever sprayed them with poison… that must run in our family we're kind of hippies so I don't think we like to use that kind of stuff.

Willie S.: Chickens love them.

Harmony D.: Really? But we didn't get any tomato worms on our plants, hopefully we won't.

Willie S.: I got them last May. My daughter got straight A's. I said what do you want? She said, "Chickens." So I built a huge coup that's eight by twelve.

James M.: Do you let them run around your garden?

Willie S.: Every day. Two or three hours we let them out and range. That's enough for them.

James M.: What about your lawn, do they just try to destroy?

Willie S.: Yeah it's a little bit. But it makes my girl happy.

James M.: I bought all kinds of this [xx] for ground cover and it's everywhere now; total waste of time.

Willie S.: With a big enough yard…but a big orchard. I separate my yard. I have the lawn and then the orchard. There's a four-foot fence that separate them. I don't have any snails anymore and actually I have two yards that they go through.

James M.: Cool, that's the best way to do it, bio control.

Interviewer 1: So you hate those tomato worms, what is the public enemy number one kind of pests that you guys have on your not wanted list?

Collene T.: Roof rats. I don't worry about the other stuff.

James M.: So much damage.

Willie S.: More rats and stuff, all the garbage. They live in the palm trees; the neighbors have five or six running around.

Collene T.: I wish my neighbor would cut down her palm trees, those big fawns in my yard.

Willie S.: My mother-in-law used to feed them. My mother-in-law used to put food out on the fence at their house in Lafayette. One came out and my fathers says, "[xx] stop feeding the animals." One day there's one and all of sudden there's five on the fence there.

James M.: Cat food, dog food, bird food. They go after everything. And they gnaw at everything. They destroy. They taste anything plastic, rubber, they get into your garbage containers, and they eat holes around the cables. I had to have the cable guy come out three different times to replace cables because the rats love that stuff.

Harmony D.: I've never seen a rat at our house but if I did I would have to change my policy because I will not have rats in my house. Or even in the yard.

Willie S.: I live by a school so I see the wires [xx]. But mostly, I don't see that at any or my house. Like I said I have cats and dogs. They take care of it.

James M.: The cats are locked in at night. We do get birds.

Marian H.: My cats lately have not got that many because I guess there aren't that many around anymore. I go to the neighbors and I say, "You can't just drag rats from across the street into my front yard."

[00:55:10]

James M.: If you ever want to find out if you have rats, it's real simple you go to [xx]. You buy one of those skinner traps to bait trap. And you get a little cracker, some cheese or peanut butter. They love peanut butter, and put it on the tray and simply set it up on the fence somewhere. Check it every couple of days and if you ever have one you'll find one in there. And when there's one there's lots.

Marian H.: Will the cats go in there too you think?

Collene T.: No.

James M.: No.

Collene T.: What do you do with them if you catch them in one of those traps?

James M.: You drown it.

Collene T.: Oh.

Marian H.: Oh god I can't do that.

James M.: You take a five-gallon bucket of water, you fill it with water and you put the whole trap in there. You come back ten minutes later they're dead and you just throw them in the trash. And you do it with gloves. You don't touch them because they're full of fleas and disease stuff, you don't want any contact with the rat.

Collene T.: No.

Shanna A.: That would be my public enemy number one, the fleas.

Interviewer 1: The fleas.

James M.: The trouble is we got cats and rats, the cats attack the rats and then the cats pick up the fleas and bring them into the house where you are.

Collene T.: My cat is an inside cat so I don't want fleas.

Harmony D.: I don't have any cats. I have two dogs and they only got fleas once and I just use the Frontline.

Shanna A.: A couple years ago they were really bad.

Kat K.: We have to stay on top of the fleas, my old dog has a skin condition so if we're not right on time with his flea treatment he looses all his hair and its very [xx]. So I do the Frontline, it's not always the Frontline. My husband purchases it, but the stuff you put on once a month. We do keep flea shampoo just in case we need it. Every time we do give them a bath, which is not very often.

Interviewer 1: What about the bombs? Do you ever bomb the house?

Harmony D.: I haven't.

Willie S.: I bought six bombs about fifteen years ago and they're still in their caps. I never use them. I tried to use it and then I said, "no."

Shanna A.: I'm just scared of that.

Interviewer 1: Shanna you were saying?

Shanna A.: Only if the fleas are very bad. Then they do get big at my house with the bombs, but not very often.

Collene T.: I have great aversion to that stuff, but I did use it once. Somehow, my cat is an inside cat but she got a flea it must've jumped off her. I got a planter along my whole couch with plants in them and I sit on the couch next thing you know I had about twenty fleabites on my neck and shoulders. I did bomb the house. I don't like chemicals, but I have twenty fleabites on my neck and shoulders it was awful.

Harmony D.: Yeah I have one in my cupboard. We just haven't had the need to use it. I've noticed fleas in the carpet. Every animal has a flea here or there. As long as we're not always seeing them, and my animals are not scratching, and I'm not getting bit. Then I don't worry about that.

Willie S.: How often do you wash their bedding?

Harmony D.: Well they sleep with me so quite often. Yeah just about.

Willie S.: I don't know, the flea stuff I just use on my dogs and cats maybe once or twice a year when I see some. I don't really have a farm of fleas at my house. All the animals are kind of lucky. The lady next to me has almost half an acre and all they do their management is they rototill the yard twice a year and that's it. It's a nice yard I'd like to buy it.

Interviewer 1: What was that Jim, you hate people that...?

James M.: Some folks their idea of a garden is they go out and rototill everything. And the when the weeds come in they just rototill the weeds under and that's it. They have a few trees maybe a little plot of grass and that's it. I have a neighbor that does that.

Interviewer 1: Do you see it as just a waste or ineffective?

James M.: Non-productive.

Interviewer 1: Waste of land, unattractive that too.

James M.: It's just the opposite side of the guy that goes outside that concretes the entire outside, or put lava rock or river rock or whatever or likes to use stone everywhere. He puts down the geo tech cloth, covers it up with [xx] or rocks or slabs. He never has to water. He never has to weed. He has nothing growing at his house front and back and I just look at that and say "what a way to live."

[01:00:17]

Collene T.: I have a rental and what I did in the front yard. Very small little pebbles and I put it all plants that were desert type plants. And I have a sprinkler system that actually waters once a week about every two weeks. It just gets them water underneath and that's their front yard.

James M.: That's smart.

Collene T.: Yeah, and in the backyard. A small area of grass for them but they have some shrubs and some [xx] and things around.

James M.: Did you design it yourself or have somebody do it for you?

Collene T.: Basically I had somebody that was going to do the work. And we talked about it together, what I wanted to do, and we drew pictures and whatever. Did it that way. But in that way, in renting, I had so many people come in and they just destroy your lawn. We put in good shrubs they don't water them. This way it's an automatic system and they don't have to use too much water so they don't have a big water bill. Because water is very expensive, so they won't water.

Interviewer 1: So I heard this brought up a few times in our discussion, everyone seems to agree. But what do you guys see as the specific environmental effect to using pesticides?

Willie S.: Well I think it's overused. I think it ought to be curtailed actually, or taught how to do it professionally. I don't see professionals use it wrong. I've seen it. I used to work in a [xx] irrigation business. Guys buying stuff, they don't know what they're doing. They're over doing it. I just think we are poisoning ourselves by using too many chemicals.

Collene T.: (agrees).

Willie S.: I use them, but sparingly. I just think there are so many clueless people, and too many people using too many chemicals. And we're poisoning ourselves.

Collene T.: It'll get into the water.

James M.: You can read directions.

Willie S.: Yeah, but a lot of people don't and that's were you run into the problem. There are people who use them sparingly and wisely. I think most of us do. But I see it all the time.

Interviewer 1: Do you ladies over here feel the same way or do you don't…

Harmony D.: I have no idea what those chemicals are going to do and that's scary to me. I also just worry about having them in my house because what if a child or my pets…I have a puppy that get's into everything. I can't seem to hide things good enough for her so I worry about that. If it has all these warning labels telling us about it, I have a feeling there's more stuff that they're not telling us. We just don't know what the effects are and that worries me, besides the fact that we don't like to kill things anyway. I worry about the air quality if it's something that is sprayed. I definitely worry about the water because you are going to spray something eventually at some point eventually it's going to get washed out. It's going to end up back in our water system or sent into the ocean. And in the bay and killing all kinds of wildlife, so just based on the fact that I don't know what's it going to do I'd rather not use that.

Shanna A.: More importantly I think commercial use of pesticides…I was just reading a story about strawberries on the Internet that if you choose. If there's a fruit that you choose not to eat, do not eat strawberries. They are so heavily covered in pesticides. It takes so many pesticides to keep them pretty that they said they're one of the worst fruits to eat. It's linked to cancer and stuff. It's a no brainer.

Collene T.: There's this one produce store in Walnut Creek, on the way to [xx] and they have a lot of organic things in there and the apples aren't always that pretty. They're not all shined and polished or whatever, but they don't have a lot of chemicals. The stuff we get from the stores and many of them are ripened using a certain kind of gas that causes them to get the color, but they don't have the flavor of a good ripe thing of that something you grow. The difference between store tomatoes and what you have in your garden is like night and day. They use a lot of chemicals just to get the color that we expect on our produce. And things like apples they put something on the outside to make them shiny and we eat it.

[01:05:06]

James M.: Wax.

Collene T.: Yeah.

Marian H.: They say we have to eat fruits.

Interviewer 1: So I've heard air, water, but what do you think is the actual down the line effects or it doesn't matter? Do you [you all] kind of feel like it's probably dangerous? We are going to avoid everything?

Willie S.: I think it's going to poison us, the chemicals eventually. I think it goes downstream and like anything its accumulation. And if it's not done right, I think you'll see an increase in cancer.

Kat K.: It's the soil. It's in the water table and if the fish don't die from it. They're carrying pesticides or chemicals or [xx], which is [sludge].

Collene T.: Look at tuna.

Kat K.: We eat those and it's a cycle. It's a very vicious cycle. It's circular.

Shanna A.: They wash down.

Collene T.: They tell you not to eat tuna too many times a week because of the mercury.

Harmony D.: There [are] so many things nowadays, for example autism. There [are] lots of different theories about what cause it. Who knows? You'll see an ad for take this drug, check this out. You know the next ad is…did you take this drug? Did it mess you up now? So call this number. I don't think we know enough. We're learning more and more about these things and about how bad they are, but I think they find new bad things about them all the time so I tend to not trust anything like that. Like I said if it already has one warning label like this could burn your skin, it can cause blindness, it might cause something else maybe I won't have kids if I have this around my house, I don't know. It just worries me, because I don't think all the information about the long-term effects of these chemicals can be doing.

Interviewer 1: Okay.

Kat K.: Not only killing…certain things like ants you can also end up killing bees. Whether it's from chemicals or whatever, it's killing something off and it's going to mess up the whole…

Collene T.: Ecology.

Kat K.: Exactly, the whole balance.

Collene T.: Ants are good they eat the aphids. The aphids eat your rose bushes so you welcome the ants because they'll keep the aphids off.

Kat K.: Right, it needs that balance. Thinking out there a little too far, but I see it could be possible.

Interviewer 1: So it seems like we have here for the most part, this group [is] all kind of in an agreeance to be conscious about this stuff. What about…I did hear you guys say my neighbor sometimes does this...over sprays

here. Is there anything, maybe if you knew the neighbor a little, you feel that you have the power to influence them to think along the same lines or not really?

Shanna A.: Suggesting some of these things that people brought up tonight is a great way to maybe change their minds about something they are using. Say something like, "Oh you know this works just the same." Education.

Interviewer 1: But do you feel like you've actually had the opportunity to do that?

Willie S.: You know if I talk to the neighbor and they ask me. If I see him throwing the engine oil down the storm drain I'll say something, but generally unless somebody asks me or if I see [him or her] using something wrong I won't say anything unless they ask me.

Harmony: I know with my neighbor, we have a semi-friendly relationship. When he told me he was poisoning gophers I almost started crying. I don't really understand why he does it. He has a few plants; he's not a commercial farmer. So I don't know if he's stopped, but I never spoke to him about it again because it is his property. I just don't have the right to tell him, but I do bring up the fact that I have animals and his daughter cats well. What if one of the other animals gets into this or gets the gopher? So I hope I maybe I changed his mind, but I don't know.

Collene T.: It's too bad that he uses poison because there are gopher traps that you put in down the gopher hole.

Kat K.: They're so cute.

James M.: They are pests.

[01:10:01]

Harmony D.: It actually wasn't that cute when my husband wasn't home and I had to catch one and take it outside.

Willie S.: Well if you have a nice vegetable garden, they are all in it.

James M.: If they're in my stuff, they're going to die. They'll mess up your irrigation system. For some reason gophers like your irrigation system, little black spaghetti things. I look over and the damn thing is chewed up because the gopher gets them. They die. They die.

Collene T.: I was bit by a gopher. Well he was walking into the grocery store. I said, "Oh my gosh if he gets into the vegetables, some lady is going to pick some vegetables she's going to die of a heart attack if she sees the gopher." I had my purse with me and I tried to get it out the door. The damn thing jumped up and bit me, so I told the [fellas] in the front of the store. He took one of the wands for the carpet cleaner and he finished off the gopher. And I don't know if they carry rabies or not so I insisted that they keep the gopher. And they called me up and asked me if I wanted to put it in my refrigerator and I said no you have a bigger refrigerator than I have. You can put it in box…because I called and they're going to pick it up and test it. I had to go to John Muir and get this treated.

Marian H.: It didn't have rabies?

Collene T.: Pardon me?

Marian H.: It didn't have rabies?

Collene T.: No, it didn't. He wasn't too happy about being [pushed] out the store.

Interviewer 1: So back to influencing or possibly influencing, it happened once you had an experience and you tried and maybe that helped. Did anyone have an experience maybe not as similar?

Marian H.: I had a friend of mine who had a beautiful little dog and the dog got out. [It] got under the fence and they had rats. They left poison out for the rats and the poor dog got into the poison. That was really bad so the whole area, they went from house to house said, "Please do not, because anything can happen you know."

Interviewer 1: It's kind of a reactive after something bad happens.

Marian H.: Because I think they realized it and felt bad. Of course they hated the rats but they hate cats, you know?

Collene T.: But you could kill everything that way. I have raccoons. I have opossums. I mean I live in a city with sidewalks and the whole nine yards. I have skunks. My cat jumped off my lap and ran to the door. I was like, "What's with her?" And I went over and I flipped on the light its rear end facing my door so I turned off the light I grabbed the cat and moved back. We got all kinds of things, but to put out poison you will kill us. I have a lot less squirrels than I used to have. I used to have a dozen squirrels, one of them would come right up and come to my door and I'll give it a peanut. The next day it might be back again.

Marian H.: I see a lot less now.

Collene T.: Obviously they have been poisoned.

Marian H.: My neighbor used to have a Walnut tree. [xx] squirrels. I found Walnuts in everything in my yard, in every pot.

Harmony D.: My dog eats those.

Interviewer 1: I know we talked a lot about rodents, a lot about bugs and weeds. What about other stuff, do you have trouble with fungi, molds…?

Marian H.: Not really.

Collene T.: No.

Interviewer 1: All right, so I think we covered a lot of stuff here today. You guys are a really good representation for Central County here. I learned a lot. I don't have any more questions for you. Is there anything else someone feels important to put out there?

James M.: I am curious about what are you going to use with all this information? Does somebody want to band all insecticide use or herbicide use? Are they are going to raise our rates? Are they going to raise our water rates?

Interviewer 1: We don't have that kind of power even if we wanted to.

Willie S.: I think it's more for education.

Interviewer 2: Essentially what we are doing at this age is getting what you guys think. What the goal is when you're in city hall is to have platforms for programs that are being driven by the people: what you guys are seeing, what you're feeling, [and] what you're understanding. So what we're doing is going to different areas and seeing

[if] this what everybody is thinking. There is no ulterior… you know what we are going to ban this, so we are going to push this or do this…this is very grassroots, seeing what people are feeling thinking and building platforms off that.

[01:15:35]

James M.: How about the salt concentration in our water? I have a father that has high blood pressure. I have high blood pressure. In our water there's a bunch of salt in it. Is there any way to get salt in it?

Shanna A.: How can we do that?

Interviewer 2: That my friend I cannot tell you.

James M.: Okay well that's the kind of thing I'm interested in because I drink the water.

Collen T.: Buy a Brita filter.

James M.: I already have, I already use it.

Harmony D.: I think my water is good out of the tap, but I never drink tap water anyways. I always filter all my water.

Shanna A.: A little mailer or something like that with all these great little ideas that everyone has, just on our basic problems like rodents and fleas and all of that…like a natural alternative.

Interviewer 1: But do you think people read their mailers?

Shanna A.: I think a lot of people would.

Willie S.: I think a lot of people will, not everybody will. Some people really care what they do. I think the more you educate [xx].

Marian H.: There are some books out about everything natural.

Willie S.: Sometimes you have to look for information. I think if they put the information out for people and say, "Hey look at this."

Harmony D.: [xx] sends me, I don't know if it's monthly or bi-monthly. It will have things like that. It's different every time. They have their little animal preserve up there, which is really cool. My mom used to work there so I know how stuff works. It is interesting and if they were to send out ideas like how to conserve water or how to spray soapy water on roses, that's cool. I like that. So I think that would be a great idea.

Willie S.: You need more information is what you're saying.

[Group muttering, cannot decipher 01:17:45]

Collene T.: I think that you should have a program designed for children. I work with Bancroft school, volunteering. Kids are very, very susceptible to learning about these things and doing something about it. I remember a time when I had a little boy that was four years old and we visited my father-in-law in Iowa. He woke up at six o'clock in the morning and his cigarettes have disappeared. And so he didn't know where they went, and all of sudden he sees them outside in his flower box. And he says, "How did I get them in the flower box?" And I

said, “I have two good ideas.” So I brought up the two kids and I said, “How did grandpas cigarettes get in the flower box?” And my four year old, must have seen this on TV. He said, “I didn’t want grandpa to have Cancer Society Heart Association.” So you see, the child is thinking grandpa shouldn’t smoke it will make him ill. I think one of the best thing you could do, is start with the kids because they will tell their parents. Their parents buy something they will say, “That’s not a good thing to have daddy or mama because it can kill animals or whatever.” I really think that having a program for kids would really start to make improvements. Kids want their world to be safe. They want to grow up knowing they are healthy and safe.

Shanna A.: I am really sentimental because I work with young people and they are just really into conservation stuff.

Willie S.: I think more public announcements.

Shanna A.: Well that too.

[01:20:17]

***Contra Costsa - South Region***
Danville Library
2:00 pm Saturday, February 23, 2013

[00:00]

Starts: [01:02]

Interviewer 1: So again, no right or wrong answers, we're just having a discussion. I'll be putting questions out, so let's go around and do introductions. I'll start, let's do kind of a quick little ice breaker thing where you say your name and if you have any children, grandchildren, or pets and maybe one thing you like to do. My name is Philip, I'm from Dallas, Texas originally and I don't have any kids. I have a wife and a dog and I like to swim and be in the ocean.

Michelle G.: I'm Michelle and I'm originally from Bakersfield but I like in San Ramon. I have a husband and a nine month old daughter, Athena. And I, when I get time not working, I guess we like to go hiking.

Interviewer 1: Okay, thanks.

Peter S.: Peter, I'm originally from the East coast, I currently live in Lafayette, married, son in college, and a daughter in high school. I really like to work out. Specifically I like to cycle.

Interviewer 1: Oh, cool.

Bruce K.: I'm Bruce, I'm from San Ramon, I have a wife, two children, one is going to Berkeley, one other one graduated [xx] and is a nurse and I like to paint.

Yi Mun S.: I'm Yi Mun, and I was originally born and raised in Singapore, and I moved here about 10 years ago because of my husband. We have a nine year old, I work at Lafayette pack raton spa in wholesale marketing, right by where you live.

Bruce K.: Yup.

Yi Mun S.: When you said Lafayette, I'm like oh, I just work there. Where do you live in Lafayette?

Bruce K.: Off of Maroga road.

Yi Mun S.: Oh okay, that's the way I go to the San Merias College.

Bruce K.: Yes.

Yi Mun S.: And my favorite thing is I run.

Interviewer 1: Okay thanks.

Georgia L.: My name is Georgia, I live in Alamo, I have a husband and a son. My son is 25, he is a sports editor for the Martinez Gazette and he also works for the Oakland A's and the Oakland Raiders. And anytime they have a world series in San Francisco he gets hired by major league baseball to do the World Series. So he's done two World Series in San Francisco and he wants to be a on air commentator and sports person, but right now he churns out two pages every other day for a newspaper or a sports staff and he does the A's and the Raiders. Which sort of he has three jobs and he doesn't make enough money to be like really [alone]. So he lives at home in an apartment with our house with his girlfriend. He has a dog named Endo, I have a cat named Crackers. My cat, Frank who was a Himalayan had to be put down a week ago, Friday because he had saddle thrombosis, unknown to me he had hypertrophic heart something rather. Anyways he woke up Friday morning and he couldn't walk behind so he got to go to the vet and get put to sleep, which is very sad. I have 14 horses.

Group: Wow.

Georgia L: And I have 30 chickens. I did have 50 something chickens but we have, there is a flock of four immature golden eagles that come to my house. And I have to drag the chickens away from them. I stare down eagles and they turn their wings at me and go 'rrrgrgh" and I'm like your 15 pounds of feathers, I don't care if you're a protected species, I'm gonna kick your butt, give me my chicken back. They eat a whole bunch of chickens. I have two great horned owls that come and eat chickens and unfortunately we have an immature coyote who actually comes in my barn and eats the chickens. So I've lost like 20 chickens in two weeks, it eats like two or three chickens a day and one of my horses will chase the coyote cause she doesn't like it and she'll chase and try to paw it, but the coyote is scared of her. Grew up in Orinda, didn't get very far away and I'm a retired lawyer and lived in Lafayette for ten years off Release Valley road.

[05:23]

Interviewer 1: Okay.

Georgia L: Before I moved to Alamo but I moved to Alamo, twenty-two years ago.

Yi Mun S.: You have all your 14 horses in Alamo now?

Georgia L.: No I have eight horses in Alamo, I have one that's in the hospital at UC Davis, I have one that's with a trainer in Turlock and I have four of them that are out in [Railmix] which I was working with this morning.

Interviewer 1: Well, good to have you, thanks for being here.

Georgia L.: Amazing.

Interviewer 1: Yeah, sound like a busy woman. Joyce?

Joyce B.: My name is Joyce, I'm widowed. I'm originally from Ontario, Canada. I've been in the Valley for 45 years. I have two daughters, one that lives with me, with her partner at my house and another daughter that lives across the Bay and one granddaughter that six and knows everything. And when I have spare time I paint, I walk and I read.

Interviewer 1: Okay nice.

Vilcia R.: Hi my name is Vilcia, and I live in Danville, I have 4 boys and a little yorkshire terrier.

Georgia L.: That keeps you busy.

Vilcia R.: Yeah they all keep my busy. We moved here a year ago, so we're in the process of remodeling our house so that's what's keeping me busy right now.

Yi Mun S.: Where did you move from?

Vilcia R: San Jose area, so we did interior already so we're doing the landscaping in the backyard, so during my spare time that's what I'm doing, if I'm not cooking or cleaning.

Sue S.: I'm Sue, I live in Danville. I have two boys, 26 and 23. I'm a realtor and I like to be outside and I have a yellow lab, Lucky and he is lucky.

Yi Mun S.: Is the market getting good right now?

Sue S.: Yeah it's super hot.

Yi Mun S.: Yeah it's picking up? Good to hear.

Sue S.: There's nothing out there.

Yi Mun S.: Oh wow.

Sue S.: Inventory is really really low.

Interviewer 1: Okay, so it sounds like we got a good group here. A lot of families, a lot of pets and stuff. I want to talk about lawns and gardens and kinda what you do there, then we'll get into [introductions]. So the first thing is you're all here because you took a survey, over the phone and you do have some sort of lawn or garden; that's basically all I know about you. So if we can go around one more time and maybe we'll go this way and just talk about what we have. Do you have a lawn, do you garden, do you landscape?

Sue S.: Yeah we have quite a bit of lawn and we have redwood trees and shrubs and all kinds of stuff that it's been really challenging because our yellow lab likes to dig and eat.

Georgia L.: If she get's gophers, tell her to come over to my house.

Sue S.: We're the best water conservation people because these torn up sprinkler systems that we have to hand water our lawn. So we're out in the yard quite a bit cleaning up.

Interviewer 1: Okay, so you got...

Sue S.: We also have a swimming pool. Yes we have a front lawn, lots of [unique] water, because we don't have water.

Interviewer 1: So no fruits or vegetables or?

Sue S.: I've planted some vegetable garden stuff, I do that but I haven't since we had Lucky. They don't stop [xx]. So I keep my herbs and stuff that I can grow in the kitchen window.

Interviewer 1: Okay, cool.

Vilcia R.: So like I said earlier, we're in the process of actually landscaping our backyard. It's not a big backyard thankfully. We used to have a big backyard in Santa Fe and it was a lot work to maintain. So right now we're in the process of trying to figure out what we're trying to put in there and I do like to cook a lot. So I would like to have herbs and vegetables and fruit trees. We also have a huge open space behind our house and it could be an extension of our backyard. So we...

[10:00]

Interviewer 1: You got some plans?

Vilcia R: Yeah, we have tons of redwood trees all around the property. They're beautiful, but the roots got into our sewer line and our sewer line collapsed a week after we moved into our new house. So we had to replace our sewer lines. So at that point, happy, happy, joy, joy. They weren't looking so beautiful at the moment, but that was one of the selling points for us, for the house because it's a lot of open space and a lot of nature.

Interviewer 1: Okay great, thanks.

Joyce B.: I have a front yard, backyard. I think probably quite small, not a lot of grass. We ourselves remodeled the yard probably 3 years ago I guess and cut it back quite a bit. Put in more patio area, more rock streams, that sort of thing and I do have a vegetable garden. More of a perimeter garden, around a small area. And I do more in the winter than I do in the summer because don't have to bother with it.

Georgia L.: I have a little bit over an acre of which about is half is dedicated to the horses and the other half is the house and garden. I used to have 7,000 square feet of lawn, I know that because I put it in with sod and that's how much I had to order and I used it all. I'm gradually chipping away at the lawn. I'm going to have about half that lawn in front of the house and last summer I spent the entire summer putting in, well not me personally but supervising my workers putting in, I don't know about 6 or 700 feet of brick walls and stuff. So I have a bunch of brick walls and some of those manufactured stone walls that fit together that you glue and put the things in. Yeah

I did some of those and Marvin, my brick mason unfortunately last October, got appendicitis and he developed [parenitis] and he got really really sick. He went home to El Salvador to heal and I think he's coming back this month, so hopefully we're gonna get finished. And I'm relandscaping, and right now I'm at the point to where I'm trying to, I used to have a whole sprinkler system put in that watered the 7000 square feet of sod, etc., which was a lot. And then I used to have, where the barn is now with horses. I used to have half acre vegetable garden and my water bill would go up 4 or 500 dollars a month and in the summer time I was like why am I going vegetables? I could buy them, it's cheaper. So I have about a 40 by 20 vegetable garden that last year I planted in the ground. I moved up a couple tons of horse manure and Amed did the soil and it was pretty good garden. But this year I think I'm going to put raised beds in there, because it'll be easier. And I'm right now to the point where I need to get the rest of an automatic sprinkler, bubblers and drip and stuff put in. And then I'm gonna figure out how to plant, but I'm doing stuff like, some of the places where I took out lawn, I've now made a 4 foot high mound that's like 4 foot by 25 by 30 feet and I'm gonna plant some trees on it and some shrubs and put some loose hedgestones around the bottom. So it's gonna be different, instead of being...

Interviewer 1: So you got a whole project going on here.

Georgia L.: Yeah I got about 15 fruit trees that I'm gonna put in some more and...

Interviewer 1: Okay great. How about...

Yi Mun S.: Well we have a smaller front yard and a larger backyard. Before we had our boxer we had a lot of fruit trees, but since we had the boxer 2 years ago, she destroyed whatever she could destroy and there was one year it was a frost and most of the fruit trees died. I did not replace them just because of the dog.

Georgia L.: Was it citrus?

Yi Mun S.: Citrus, yeah we had all of them. We had lime, lemon, the only thing we have right now is the blood orange tree, some cherry trees and the pear and the apples all that too.

Interviewer 1: Mostly trees, what about gardening?

Yi Mun S.: The front of our house, we have roses.

Interviewer 1: Roses?

Yi Mun S.: Not bushes but trees, tree roses.

Interviewer 1: Okay.

Yi Mun S.: And we have talked about maybe building a pool or doing relandscaping but with the dog and the current economy, honestly I think we are kinda concerned about having cash on hand then investing in a 50-60 thousand dollars pool. It may be a future project.

Interviewer 1: Got it. Thank you.

[15:00]

Bruce K.: Backyard and frontyard, raised boxes in the backyard and took out the lawn. Most of it I have a foot square. A lot of, gone to a lot of succulents because of the water system situation. Couple fruit trees, we grow heirloom tomatoes and squash, but more and more I think about not having such a big front yard lawn. Rock, not a rock garden but a rock stream, and I find that the succulents are really hardy, they survive the frost. I had to put some plastic down a few nights.

Interviewer 1: Thanks.

Peter S.: When we lived in Connecticut, we had a beautiful New England Colonial with the rock wall and an acre of property, and I miss it desperately.

Georgia L.: You should come over and visit my house. It's a three story center home colonial.

Peter S.: Now in Lafayette, we have our house is about a third of an acre and about 10 years ago we put an addition on our house and because we put an addition on our house, we ended up relandscaping. Basically everything, and so the size of the front yard has remained about the same, but we have more garden with shrubs and things like that in it. Then we also have a side around a corner, so we have a side yard as well and we put a little patio in there and a hot tub. And we still have some lawn space and then in the back of the house, we used to have this old asphalt sports court which we replaced with concrete sports court. At the time our kids were younger and a place to play basketball and what not. We also have a lawn area, our house is shaped like an E and so between each of the wings of the house we also have patio space, between the living room and the bedroom area. I have a lot of roses in pots and so just to bring a lot of color into that area.

Interviewer 1: Okay.

Peter S.: And then we have a grass area, and then we have a section which is, we also put in an outdoor kitchen with a couple of barbeques and a fireplace and it's a really nice area to enjoy. And then we have a lower area where we have a nice meyer lemon tree, which is still producing lovely fruit. And we have raised boxes for doing tomatoes and whatever use you want to grow and it's got gravel all around the boxes.

Interviewer 1: Wow, okay.

Michelle G.: We live in a townhome so our front yard is maintained by the homeowners association, but there's grass and a tree. And we have a decent sized backyard for a townhome and it's mostly herbs between flagstones, a couple fruit trees but the soils entirely clay, so nothing grows appropriately and some roses.

Sue S.: All the grass out here, I mean the ground is clay.

Michelle G.: It's horrible, from Bakersfield there's fantastic soil, everything grows, here, it's nothing.

Georgia L.: That's why God made horse manure. It's free, it's plentiful and it amends soil.

Interviewer 1: It seems like most everybody, or for the most part, has some sort of gardening operation going on. We got some fruit trees, it seems like most people do. You have lawns; you have grass that if you have kids or you have dogs play in. Is that about it?

Yi Mun S.: They love that, yeah.

Interviewer 1: Yeah okay.

Peter S.: I forgot to mention that I have three cats but they're indoor…well for the most part.

Interviewer 1: So, when you're out and about, do you have issues with pests? What I mean by pest are anything from weeds, to bugs like aphids and caterpillars or whatever.

Group: Ants.

Interviewer 1: Ants to rodents.

Georgia L.: Gophers and ground squirrels.

Bruce K.: Because they're green do weeds count as garden?

Interviewer 1: If you consider them pest, they're pest.

Bruce K.: Yeah, they're pest.

Interviewer 1: Let's just do this by show of hands, because we've got a big group here. How many people are weeds a big problem?

Yi Mun S.: Well...

Bruce K.: It's a problem, but not that big.

Interviewer 1: Looks like it's a problem, but not a big one. What about insects in your garden?

Bruce K.: Occasionally.

Sue S.: My roses.

Yi Mun S.: The gophers.

Bruce K.: Aphids.

[Group talking over each other]

Sue S.: My roses get those.

Bruce K.: Yeah you get the aphids and the whiteflies.

Georgia L.: If you have chickens they eat everything in your garden that's a bug. You have no snails, you have no slugs, you have no aphids.

[20:04]

Michelle G.: I have snails

Bruce K.: See but if your chickens went vegetarian then the eagles wouldn't want to eat them.

Georgia L.: No but they eat all the slugs and snails, I love them, they fight over them.

Vilcia R.: I have a lot of open space behind and in front of my house. In fact, this week when we started our landscaping project we found some snakes in the backyard.

Georgia L.: What kind?

Vilcia R.: I don't know. They killed them.

Georgia L.: Did they rattle?

Vilcia R.: Yeah I don't know, they killed them so I don't know what kind. In fact, we ended up taking out our, we had this beautiful rosemary bushes that I really enjoyed. And we ended up taking them out and we're not going to put any bushes in there just because of that reason.

Interviewer 1: So who went and got them?

Vilcia R.: Our landscaper got them.

Sue S.: We've had a couple of gopher snakes but they never hurt anyone.

Vilcia R.: I'm hoping that what they were.

Sue S.: Yeah but the only poisonous snake around here are rattlesnakes and you know.

Joyce B.: Our cat catches snakes.

Sue S.: Yeah.

Interviewer 1: Okay.

Sue S.: We have a lot of squirrels.

Joyce B.: Garter snakes.

Yi Mun S.: We have gophers.

Georgia L.: Ground squirrels and gophers.

Interviewer 1: Those are a pest because they dig holes or?

Georgia L.: They make holes.

Yi Mun S.: Big ones.

Georgia L.: And they burrow under the front brick portico of my house and got under the house and ate up my [ductwork] and it cost five thousand dollars to replace the [ductwork]. I hate ground squirrels. I hate ground squirrel and I don't know why the coyotes, and the hawks and the eagles and the horned owls don't eat the bloody ground squirrels they eat the chickens because the chickens are easy.

[Group talking over each other]

Yi Mun S.: Summer, there's flies.

Interviewer 1: Sorry, I don't mean to interrupt you all but just for the recording if we can talk one at a time, it's gonna be easier for the transcribers to do their work.

Georgia L.: Chickens eat fly larvae too.

Yi Mun S.: Oh yeah?

Georgia L.: Chickens are good and they lay eggs.

Interviewer 1: Sue was saying rats, grass?

Sue S.: We had a rat issue.

Interviewer 1: Okay.

Sue S.: We had our house rat proofed, twice and...

Interviewer 1: How do you have them do it?

Sue S.: We have somebody that came in and made sure everything was sealed, and we had...

Interviewer 1: So they can't get in?

Sue S.: Yeah, you don't want to get, kill them inside, you want to keep them from coming in.

Georgia L.: Right.

Sue S.: So he showed us all the areas that we needed to...

Interviewer 1: Problem areas.

Sue S.: Problem areas, we put screens around the house if any of them were broken.

Interviewer 1: Okay.

Sue S.: Which you don't realize, like for our pool, when they put our pool in they ran the gas line through, I don't know wherever they run it and it came out of one of our vents because something was running under the house and it was electrical. So they poked a hole, to come out the vent, well that screen is...

Georgia L.: Rats going in and the ground squirrels.

Sue S.: So they foamed it and did things like that, you know if your roof is not fitted correctly.

Interviewer 1: One time though, before all that, they did get in?

Sue S.: Oh yeah they've been in.

Interviewer 1: What did you do about that?

Sue S.: I scream.

Interviewer 1: Yeah, how did you take care of it?

Michelle G.: Did you see them inside?

Sue S.: No, I've never seen a rat in my house, I've seen mice but we had an exterminator come in and trap them.

Michelle G.: Did they fumigate your house with that kind of stuff? Or did they...

Sue S.: No they just traps.

Michelle G.: Just traps inside the house?

Sue S.: Yeah, and our attic.

Michelle G.: Oh okay.

Sue S.: Yeah I've had a mouse that kept coming in the kitchen area and my pantry. So we put a trap.

Michelle G.: Oh wow.

Sue S.: But I don't do, years ago they used to, the fire department used to give you this thing that you nailed on the fence of something and I don't do that because I have a dog. Plus that makes them go to water and we have a pool.

Interviewer 1: I see, oh cause it dehydrates them?

Sue S.: It dehydrates them and then they explode? It's pretty gross.

Peter S.: We have a [xx] near our house, and there are rats in there. We also have a crawl space under our house, which varies in height from two feet to about four or five feet. And since I don't go down, we don't keep anything down there and so if they're down there, they're having their own party. But we used to have a cat that would go out and he did bring a rat out to the door one day.

Michelle G.: A nice present.

Vilcia R.: You know the one thing that I was surprised about when I moved here was the ant problem. Because we never had that ant problem and it's huge here.

[25:04]

Interviewer 1: Do other people have that?

Georgia L.: I get ants every July.

Yi Mun S.: Only flies and ants in the summer. Only summer, not in the winter.

Interviewer 1: Summer ants.

Georgia L.: July, they come in my kitchen.

Sue S.: When we moved in 6 years ago we had a horrible ant problem, they were in our kitchen just about every day and used those outside stakes where you pour the hot water on it around your house. Never had one since, haven't seen a single ant.

Yi Mun S.: Oh.

Georgia L.: We had an ant service come and they used to spray outside, but I don't like poisons and so what I do now is when they come in the house, I get them with white vinegar. You spray white vinegar on them and it's not poisonous and you wipe it up with water and it doesn't kill anything in your house. It might smell like your trying to make Easter eggs or something.

Vilcia R.: But they keep coming back.

Georgia L.: They finally get deterred, if you do their ant trails they finally, I mean it takes a couple of weeks but...

Michelle G.: Bay leaves work for ants too. Yeah.

Sue S.: I've heard cinnamon stick as well and I've heard eucalyptus branches work too.

Georgia L.: And when you have the gophers and stuff coming around your foundation. Coffee grinds, you get them from Peet's. Used coffee grounds, you sprinkle them all over your ground, helps your soil and it deters pest.

Yi Mun S.: I've heard that.

Georgia L.: I've got tons of coffee, but something just dug a hole this big underneath my foundation.

Interviewer 1: Joyce do you have issues with pest?

Joyce B.: Not ants, I mean I think there are some ants out in the area of the yard but I just leave them cause they aren't bothering nobody. I don't have any mice or rat issues. I have a cat that would take care of mine and plus the neighbors all the way around.

Interviewer 1: Okay, you seem pretty well set up with all that.

Joyce B.: Pardon?

Interviewer 1: You seem set up, you don't have pests?

Joyce B.: Well, yeah because she takes care of me and she feeds her family well.

Interviewer 1: What about the inside of your house, do you get bugs?

Joyce B.: No, not really, we're pretty field.

Sue S.: Some are spiders yeah.

Peter S.: You have spiders? Bugs?

Yi Mun S.: Yeah a little bit of the spiders, but not too many.

Interviewer 1: Do you feel like they might help the control of the other pest?

Sue S.: I don't care, I just hate spiders.

Anonymous: I hate spiders.

Georgia L.: I relocate them outside, I don't like to kill them, I take them outside.

Peter S.: Yeah my daughters are totally frightened of them, but that's what I do too. If they're in the house I'll take them out.

Georgia L.: Now if I see a black widow, it dead in a darn ounce. Watch it, but if it's not a wolf spider or black widow, they can go outside.

Peter S.: We used to have an ant issue a few years ago, but we had one of those services that would come in and spray.

Yi Mun S.: Terminix, that's what we have.

Peter S.: And we had that for about two years and then we stopped and nothing has come back. So I don't know if we just got rid of ant trails or whatever, but they haven't found their way back yet but...

Interviewer 1: Okay.

Peter S.: Something that, it's hard to call a pest but the road that we live on off of backside Lafayette reservoir and as you can imagine all sorts of creatures live there and so we have wild turkeys coming down to our yard.

Vilcia R.: We have that too.

Peter S.: And sometimes they can dig up stuff but usually the mommy and the little ones trailing behind and also deer and anybody who have roses get high fences because we had a hole in our fences and for whatever reason they would know when those roses were gonna bloom.

Georgia L.: Yes.

Peter S.: And they would come in and totally decimate your roses.

Georgia L.: Yup, I had a boars [xx], it displaces the deer.

Bruce K.: Put egg yolk.

Michelle G.: Egg yolk on the roses?

Bruce K.: Mmhmm, deers don't like eggs.

Michelle G.: Oh really?

Yi Mun S.: You put it all over, or just?

Bruce K.: Yeah you whip up a bunch of eggs and you sprinkle it over the bushes.

[Group talking over each other]

Peter S.: I used to get the wolf urine.

Group: Yeah.

Georgia L.: Oh yeah, you can get zoo doo.

Peter S.: But that didn't work.

Georgia L.: Supposedly hanging Irish spring soap on the branches helps too, they don't like that either, but I've never tried that.

Interviewer 1: Okay.

Bruce K.: Do you guys didn't have any, or do you guys live, no all but a lot of you live up in the hills or are surrounded by open land? No raccoon problems?

Yi Mun S.: Oh, a little bit.

Sue S.: I've had raccoons roll up my lawn.

Vilcia R.: I've seen coyotes.

Sue S.: We thought it was my son's friend.

[Group talking over each other]

Sue S.: I thought it was kids like where they TP your house… I came outside one day because we had laid sod down and it was perfectly rolled up and we were like, "What the heck."

Peter S.: It was looking for grubs.

Sue S.: It was raccoons and for grubs.

Peter S.: After yours, we had that too when we first put our sod in, but after it gets really established it doesn't happen anymore.

[30:02]

Sue S.: Oh no we had we lived in our house probably 10 years, our lawn was at least 10 years old.

Peter S.: Oh really?

Sue S.: They rolled it right up. I mean it looked like sod. They rolled it right up.

[Group is amazed and talking over each other]

Georgia L.: Raccoons would come in and eat the heads off the chickens, they only like to eat heads, [and] they leave the body.

Sue S.: Oh it's hilarious, at first I thought "Really? An animal can actually do that?"

[Group talks over each other]

Bruce K.: Then you can cook them.

Georgia L.: No, I give them burials.

Interviewer 1: Okay, so rodents are an issue, mammals. Let's talk about…

Georgia L.: Oh yeah, we have a bobcat too and if you can tell me how to get rid of coyotes, I'd really like to get rid of them without hurting the coyote. If I could get a coyote to stay on Mt. Diablo, it's just two blocks that way, just stay there.

Yi Mun S.: They all come up for food.

Interviewer 1: Okay so let's talk about in your garden, when you have aphids, I think you raised your hand, and caterpillars. What do you about that kind of stuff?

Anonymous: Caterpillars?

Sue S.: Aphids on my roses, I spray them with soapy water.

Georgia L.: Chickens eat aphids.

Interviewer 1: Okay that's a good one.

Peter S.: I never tried the soapy water, that's a good idea because I have those powders and the sprays and stuff like that, but I don't like, I rather use soapy water.

Sue S.: Yeah I don't like to use anything that smells and soapy water works great.

Vilcia R.: Since I have two small kids, a 3 year old and a 2 year old, that like to play in the back yard. I try not to use any pesticides or anything out there because I know they're out there picking up and putting things in their mouth and everything, so natural stuff. This conversation is really fascinating because I'm picking up tips.

Interviewer 1: What kind of, when you say natural stuff you mean like home remedies?

Vilcia R.: Home remedies, yeah.

Joyce S.: Organic.

Vilcia R.: Organic, but mostly home remedies, so that way...

Interviewer 1: Rather than buying, going out and buying products.

Vilcia R.: Exactly.

Interviewer 1: Even if it's an organic product or?

Georgia L.: Organic doesn't mean safe.

Vilcia R.: Yeah, it just all depends, because of the kids, I just feel like if they touch something that was sprayed with soapy water I know they're not gonna, you know, I don't have to worry about taking them to the emergency room. But if it's organic, I don't know how to read those labels, so I don't even know what.

[Group talking over each other]

Michelle G.: Well if it has a poison control number on that container...

Georgia L.: Then it's not a good thing to put.

Anonymous: Use.

Georgia L.: Yeah, if it's got the organophosphates, you don't want to use them.

Interviewer 1: Joyce, do you?

Joyce B.: I just use the soapy water or something to that effect. Basically it's usually the aphids that attack on something. If it's a tomato worm or something they just get plucked.

Interviewer 1: Yi, how about?

Yi Mun S.: We don't have anything on the roses because maybe we have Terminix, so they come monthly.

Interviewer 1: And take care of it.

Yi Mun S.: So yeah.

Interviewer 1: So you don't worry about it?

Yi Mun S.: I don't worry about that, we pay for the service.

Interviewer 1: Georgia you said you have chickens.

Georgia L: Chickens get rid of the fly larvae. I used to use equitrol which is a feed through fly killer that you feed to your horse and it does something to their manure. So that the larvae die, but then there was a big lawsuit because it turned out it was teratogenic, and it was changing, it was mutating. I breed horses so it was mutating the horses and they were coming out with birth defects.

Group: Wow.

Georgia L.: And I didn't need any filament flapper horses, so I stopped. One day I was feeding a horse and some quail ate the horse food that had the equitrol in it and the quail went crazy for 10 minutes and then died. And I took him to the Linsey museum and demanded that they autopsy him, but they wouldn't. And I said, "But something killed him but I think I know what it was." But they didn't. But then there was a big lawsuit over the equitrol in Southern California. A big race horse farm and they lost a million dollar judgment. So I said I'm not using them anymore, and then I got chickens.

Interviewer 1: Okay.

Georgia L.: They have their own thing, they make a lot of chicken shit and the roosters make a lot of noise in the morning, which doesn't bother me but bothers my husband. Probably bothers my neighbors, but oh well. But they do make really good eggs. The eggs are dynamite.

Sue S.: Yeah, my sister had chickens and I love her eggs.

Georgia L.: Yeah the eggs are killer.

Michelle G.: Do you have some green eggs?

Georgia L.: Green eggs, brown eggs, blue eggs.

Interviewer 1: Bruce, how about...

Bruce K.: I think I use a combination of pesticides and then when I get desperate.

Interviewer 1: When is that? What do you mean when it gets desperate, how do you know, what's that point?

Bruce K.: When I get frustrated with the other products.

Interviewer 1: Frustrated like when they are taking too long or...

Bruce K.: Or they're not effective.

Interviewer 1: Not effective.

Bruce K.: Grass infestation and just got down in the dirt and pulled them out. Spring, I'll be resodding. It's the only way to get them and I don't know how many I can see, I don't have any crabgrass.

[35:03]

Yi Mun S.: That's what happened just three years ago. I tried everything, we had to remove and regrow grass. Yeah it was bad.

Bruce K.: Yeah.

Yi Mun S.: And it manifests itself too.

Bruce K.: It spreads everywhere.

Georgia L.: Crabgrass grows by rhizomes, so it's under the ground.

Yi Mun S.: You have to pull.

Georgia L.: It's really hard to get all the rhizomes out. The only thing kinda do is take everything off the soil cover it with a black tarp and let it sit for a month or so and the hot sun and black tarp burns everything up that's in the soil. And then your soils basically weed free and you can start over again.

Yi Mun S: [Start all over].

Georgia L.: But who wants a big black tarp in their front yard.

Bruce K.: Sorry going back to what Sue said about the rat proofing and mice proofing your house. It's pretty much free to complete if you live anywhere in this valley or anywhere in the succeeding corridor and have ants but I had those and they went away, I haven't seen them in a long time. There was, before I had the house rat proofed, I had yellow jacket infestation. There was a nest in one of my walls. There were thousands of yellow jackets.

Interviewer 1: And how did you get rid of those?

Bruce K.: I hired a professional for that, and left the house. They went into the wall to smoke it.

Georgia L.: Back on the ants there is some entomologist through, I don't know, the San Francisco Zoo, the museum of natural something in San Francisco. A guy, along with school children is mapping the ants in the bay area and he'll come out and look at your ants and everything because evidently our native ant population has been taken over by I believe are Argentine ants that look different and act different. So he's mapping ants and he's got school children out finding ants and bringing them to him and then he plots. So you can go online and you can find out what the ants are like.

Interviewer 1: Cool.

Peter S.: Our house has large eaves, it's not really a flat, [and] it's a flat roofed house except the roof's slope gradually. But we also have large eaves and we have vents in the eaves and usually every summer we'll get a couple of wasp nest.

Bruce K.: I have those too.

Interviewer 1: What do you normally do about the wasp?

Peter S.: I try to, if I see them early enough, I try to knock them down and run fast. And if they're knocked down they don't come. They usually don't come back.

Interviewer 1: And if they did or you don't catch them early?

Peter S.: Then I will get some spray that shoots really far.

Interviewer 1: Do you usually hire somebody to do it or do you do it?

Peter S.: I do it.

Interviewer 1: So you go to home depot or?

Peter S.: Ace.

Interviewer 1: Cool.

Sue S.: We some [bad bugs] this summer, we didn't know where they were coming from. Turns out those little buggers came from our small hole in the back of the timer for our irrigation in the backyard. They had built their nest and took over the entire thing behind all the electricity of it. And we had to get a can of Raid and my mom with lots of strength, just tore it off, sprayed it really quick and we ran inside. But it was the only time we ever had it go that bad. Usually we kinda knock them off too. That's probably the biggest pest that we have out there. Other than that we ever only had to use anything in our backyard for pest. Those stakes I was talking about earlier were nice.

Georgia L.: Well if you yellow jackets you can use the big stinky, which are stinky but.

Vilcia R.: I wonder if I can ask something. In the family I'm more of the one who is kinda like "Oh leave them in the backyard." whatever the pest may be, obviously if something stinks or anything. But my husband is more like the go to Home Depot get like three different products, try them all at once or call the exterminator. He has less patience for that stuff.

Interviewer 1: Gotcha.

Vilcia R.: He usually gives me a couple of weeks to try out my methods and when they don't work, then he moves in and...

Interviewer 1: Gotcha, okay, I think I'm hearing a pretty coherent thing which is we all have these issues for the most part. Joyce has less than everyone else it seems like. And we sometimes take matters into our own hands, we'll get Raid or buy some spray, like your husband, and if not you go out and hire people. Okay so who by the show of hands, who has hired like...

[Group talks over each other]

Sue S.: I never had to spray.

Interviewer 1: Just rat proof?

Sue S.: I just had the rats.

[40:00]

Yi Mun S.: We have a contract with Terminix so they come.

Interviewer 1: Regularly?

Yi Mun S.: Regular.

Interviewer 1: Do guys do it more ad hoc...

Anonymous: Yeah. One time.

[Group talking over each other]

Georgia L.: Eighteen years ago we used to have a regular monthly service but we canceled it. Now I just…

Interviewer 1: When needed?

Georgia L.: No, I don't. I just do it all myself. I just do the vinegar.

Interviewer 1: Okay.

Joyce B.: I've had that for about a year I had a service that come out.

Interviewer 1: And you stopped because you don't need it?

Joyce B: Yeah.

Interviewer 1: And you spray yours?

Anonymous: Yeah I just do it all.

Interviewer 1: For those of you who do. We can go around, can you tell me, first say maybe who you hire usually. If it's more than one that's fine and if you know what they use.

Peter S.: It was Terminix and I doubt I know what they use. They have these big containers in the back of their trucks.

Vilcia R.: And they just go around and spray everywhere.

Bruce K.: It's pretty indiscriminate that's one of the things I didn't like. It was just everywhere.

Vilcia R.: Generic.

Interviewer 1: Okay they just kinda...

Bruce K.: They spray everything.

Peter S.: They used to spray around the base of the house and I can't remember if they would spray the…

Georgia L.: My guys came in the house, they would spray my kitchen.

Yi Mun S.: Mine was it's just outside.

Georgia L.: They would spray all the bottoms of the floors and stuff it just made me nervous because I had a little kid.

Peter S.: Ours were only outside.

Yi Mun S.: Yeah, just exterior.

[Group talking over each other]

Interviewer 1: Exterior?

Anonymous: Yeah.

Vilcia R.: I don't remember the company, I remember when we had the ant problem we call several exterminator types of companies and none of them returned our calls. So our neighbor happened to be getting her house sprayed for the ant problem so we just asked them. But I can't remember the company.

Interviewer 1: Okay that's fine.

Vilcia R.: But they came outside and inside and they did that so.

Interviewer 1: Did you know what they used?

Vilcia R.: No, but it did work, but they told us it was safe for the children and the dog. And they did it inside and there was no smell or anything like that, unlike other products that we used in the past.

Interviewer 1: Okay

Yi Mun S.: I really don't, but they just tell us it's safe and it's outside so it's not in our home.

Interviewer 1: What if you were to ask them? Do you think they would tell you?

Yi Mun S.: I think they would if you asked them.

Bruce K.: I think it depends who it is that comes out. A lot of times...

Interviewer 1: You think they know themselves?

Bruce K.: Yeah, a lot of times they have part time help or not people who are just making the minimum wage to get out and do that. All they need to do is fill the tank and spray.

Sue S.: I can say that I am not one for spraying and it's because years ago, 25 years ago. I lived on a peninsula and we part of the Mount Ion spraying, where, I don't know if any of you know that. You have to stay inside and if you can keep your cars inside and the helicopters come and they spray. And it was a huge thing that went on for months and months. It smelled, it's like in your car, it had like a stickiness to it.

Bruce K.: Yeah, it was on the surface of your car and you couldn't get it off.

Sue S.: Yeah and I worked for an insurance company at the time and we had a boat load of claims of the smell of ion. Where it would ruin peoples paint. Just that remembrance of it, it's kinda like eating something as a kid and not wanting to ever eat it again. That's the reason I don't like sprays.

Peter S.: That was for mosquitos wasn't it?

Sue S.: Yeah, I think...

Georgia L.: I thought it was for the moths.

Sue S.: Flies.

Georgia L.: It was the fruit fly. Med fly yeah.

Bruce K.: Yeah.

Sue S.: And they still, and I don't know, I have a tree in front of my house that has box in it and they come.

Georgia L.: Oh yeah, I get a box put in my apricot tree a lot.

Sue S.: Yeah.

Interviewer 1: What do you mean a box?

Georgia L.: It's to catch pest, it's the California Department of something.

Sue S.: The County or something.

Georgia L.: They come and they put up a little box and they take it down every month.

Interviewer 1: Okay.

Georgia L.: And sometimes they'll put up a new one, but they check to see what kind of bugs they're getting.

Yi Mun S.: For all types of fruit trees or?

Georgia L.: They... I don't know.

[Group talking over each other]

Sue S.: We call it the bee tree because it's a flowering tree that in the summer, you...

Georgia L.: Collect bees.

Sue S.: Yeah I go down to the mailbox and and they are like "BZZZZZZZZZ" I mean they're just like thousands of bees.

Georgia L.: Well that's good you're here supporting the bee population that's collapsing.

Bruce K.: Plus it's illegal in California to kill bees.

Sue S.: It is?

Bruce K.: Yup.

Interviewer 1: They pollinate.

[45:00]

Bruce K.: Yeah.

Sue S.: Really?

[Group talking over each other]

Georgia L.: Yellow jackets and wasp you can kill indiscriminately.

Anonymous: Just not the bees.

Sue S.: No, I wouldn't a honey bee, my sister is [into bees]..

Peter S.: When we moved here...

Interviewer 1: Sorry to interrupt you but Joyce is...

Joyce B.: They created a nest in an old milk can that I had painted that I had turned into a water feature. I gave just a tiny little hole for air pressure and all the honey bees got in there. So we had to call the honey bee man out and I didn't know I created all that honey.

Georgia L.: Well he was probably happy.

Joyce B: Oh he was very happy, but he still charged me and I didn't get any honey.

Interviewer 1: Oh, that's not right.

Sue S.: That's not right at all.

Georgia L.: That's not right cause he got all your bees too.

Joyce B.: He got my bees.

Georgia L.: He got your bees and put them in a box.

Peter S.: I was just gonna say that when we first moved here, because we were moving in from out of state. Somebody from some agency came to our house and inspected all of our outdoor furniture and anything else we had that was outdoors to make sure we didn't bring anything into the state.

Georgia L.: Any Connecticut pest.

Peter S.: Okay, exactly.

Michelle G.: Really?

Peter S.: They forgot the one that's sitting here.

Interviewer 1: Bruce, I want to ask you something. You said that when you get desperate, when you get frustrated then you turn to spraying with your vegetables even? Is that right?

Bruce K.: No, I try not to spray...

Interviewer 1: Okay.

Bruce K.: anything that's edible.

Interviewer 1: Yeah?

Bruce K.: I'm eating that.

Interviewer 1: Is that true for you Yi Mun? Do you do your fruit trees or anything like that?

Yi Mun S.: No we don't spray anything on the fruit. On the roses, cactuses, yeah around the house but not on our fruit trees.

Peter S.: We used to have, before we relandscaped our yard, we had a peach tree, and number of palm trees and an apple tree. Most of which were really old and needed to be replaced anyways. But the peach tree used to get like a curly leaf something and...

Anonymous: Yeah, yeah.

Georgia L.: You have to spray it with copper sulfate in the spring before the leaves come out.

Peter S.: Yeah.

Georgia L.: Otherwise they die. I lost a white peach that way.

Michelle G.: Yeah my mom had that happen, that curly leaf.

Georgia L.: Peach tree curl.

Michelle G.: Yeah.

Peter S.: Except we would spray that, it would be the only thing that we would spray on to.

Interviewer 1: Okay, okay so I think that we covered rodents a lot and bugs and when I said weeds, a lot of you said not so much. A few of you rose your hands. Weeds?

Joyce S.: I have weeds, I pull my weeds.

[Group talks over each other]

Georgia L.: I've eliminated my starthistle. The starthistles are gone but I still get the purple thistle thing. I get some of those and what else do I get. I get those prickly bur things, those round bur things. I get those and I get some nasty sticker things.

Interviewer 1: Okay you just kinda, well it's not that bad.

Georgia L.: I just keep pulling them up. I do also have three gallons of Roundup but I've had it for two years but I haven't used it. I keep threatening them, I look at them, "I can get Roundup on you, give up."

Interviewer 1: So when you pull them, do you pull them or do you hire someone to pull them.

Georgia L.: Sometimes I pull them, but mostly I hire people to pull them.

Interviewer 1: Does anyone else do anything similar or mostly you go out.

Sue S.: I pull them.

Interviewer 1: You pull them?

Sue S.: Or have my husband do it other way.

Vilcia R.: Family event in the backyard with the kids.

Interviewer 1: You had a few?

Vilcia R.: Yeah.

Sue S.: My gardener would usually pull a weed if he sees it but we're pretty on top of it.

Yi Mun S.: We get sometimes periodically, mushrooms.

[Group talking over each other]

Sue S.: And that means there's too much water in the soil right?

Yi Mun S.: We get that a lot.

[Group talking over each other]

Georgia L.: Of course it might be toadstools too.

Interviewer 1: So would you just leave them or?

Georgia L.: Toadstools are poisonous.

Yi Mun S.: We leave them.

Georgia L.: Some mushrooms are too.

Yi Mun S.: We also have a gardener so they come every week, so when they mow it, they all gone when they mow the lawn.

Anonymous: I take them out because...

Anonymous: Oh sorry.

[Group talking over each other]

Sue S.: Yeah I do the same, because I'm afraid the dog might eat them and he doesn't know any different.

Interviewer 1: So you treat them kinda like weeds?

Sue S.: Yeah.

Yi Mun S.: Without knowing what kind they are.

[Group talking over each other]

Joyce S.: I pull all mine and we had a lot and I've called the various nurseries and they said you probably have wood under the soil. You probably water too much and I can't see that. I barely water that yard.

Sue S.: I don't get them in the summer, as much as the winter.

[50:00]

Yi Mun S.: The rain.

Sue S.: Yeah.

Yi Mun S.: When we have a lot of rain.

[Group talking over each other]

Yi Mun S.: December, that's when I saw them the most.

Sue S.: Yeah.

Interviewer 1: Do you guys have problem with Fungi?

Sue S.: Yes, mostly in the front yard, but...

Georgia L.: I'm too arid.

Interviewer 1: So you guys rarely ever go and use herbicides on any of that stuff? It's all by hand?

Bruce K.: I admit, I occasionally.

Interviewer 1: It's okay.

Bruce K.: But I try to use the quote "organic."

Interviewer 1: But how do you know if it's organic or not? Does it say on the bottle?

Bruce K.: Hopefully it says on the bottle, I curiosity glance at the ingredients. Not that I'm a scientific genius but you look at round up and there's a lot of nasty stuff in there. But I've used it from time to time again.

Interviewer 1: Okay. Actually that brings us to another question. Is that when you do go with certain products, whether it's Raid, or Roundup or whatever, are you ever looking for a eco-certification or organics or anything like

that? Or do you kinda you don't really discriminate? Is it something you look for or not and it's totally fine either way.

Vilcia R.: I try to but in all honestly, like I don't know really how organic they are when you... Just because it says on the label, it just doesn't really sell me on it. And then I don't know how well they're gonna work and most of those products are very expensive too. So I mostly rely on either the sell staff to recommend something or my friends who have used a product that has worked from them, to recommend something, but the organic label is not a for sure selling point for me.

Interviewer 1: Okay, so when you, do you feel that if it says organic and it's expensive, it might also mean it's probably less effective?

Vilcia R.: Sometimes I do, because I've had that experience before, where I bought things that have been organic or have said organic and then...

Interviewer 1: It's just not...

Vilcia R.: It's just not as effective.

Interviewer 1: Do other people... Sue, do have the same kind of view?

Sue S.: I'm kind of a weird person. To me organic means, that I should be able to, if it's not gonna hurt anybody then it's gotta be common things that we have access to. So I'm an internet junkie and if I have a problem with anything, I go on the internet to find out how I get rid of it. And nine times out of ten it's not, well go buy this, it's this is what you can do and it's usually household stuff.

Michelle G.: Yeah.

Sue S.: That you can deal with.

Interviewer 1: So you rather just do like home remedies?

Sue S.: Yeah, there's too many. You look at bug spray and how do you pick which one? You Raid, you got the Ortho. You have all these and you looking at them all. What makes one better than the other? It's like medicine, you find the common denominator and then that's what you need to use. So that's how I do that.

Georgia L.: Well, FYI on Raid ant spray, if you spray it on marble, it ruins the marble. My husband did that in the middle of a marble floor and my hall bath and it ate the marble. It made it porous.

Vilcia R.: So does white vinegar.

Georgia L.: Yeah, but the white vinegar you wipe up.

Vilcia R.: Well I know but if it gets on there, it doesn't...

Georgia L.: Well the white vinegar you dilute with water, you don't put it on straight.

Vilcia R.: Yeah, yeah, I just set the bottle down while I was doing something and I had a ring on the countertop.

Interviewer 1: Sue? I mean Joyce?

Joyce B.: I kinda check them but I try not to use anything anymore than absolutely possible.

Interviewer 1: Yeah. Okay.

Joyce B.: I try to keep it natural as possible.

Interviewer 1: But back to that question about, do you pay at all any attention eco friendly or eco certified?

Joyce B.: I would be more inclined to look at that.

Interviewer 1: Like when you see them all on the shelf?

Joyce B.: Yeah, I would definitely.

Michelle G.: I would as well but I'd pick that same type as Sue. Although I didn't do it myself, the incident with the wasp was anomaly because they really just needed to get out of there. But I had a three month this time, but other than that I would just go online and look on how to do it myself. But if I were in the circumstance, I would be more inclined to go toward something that would be environmentally friendly rather than the hardcore chemicals.

[55:05]

Interviewer 1: Even at a higher cost?

Michelle G.: Yes.

Peter S.: The same with me, they're just becoming a lot more available now. Back in the day you only had the Raid or the Ortho.

Bruce K.: I've had somebody said on the other side of the table, you buy the product and you're not sure the something...

Interviewer 1: Right.

Bruce K.: That's why I go back to the name brand products. Occasionally, because I'll try one of those and be awfully disappointed and have spent a lot of money.

Interviewer 1: Gotcha, for the people who do pay attention more to the eco stuff, do you even know which certification might…

Michelle G.: No, and again I'd probably go online and look at reviews first to see what other people say about it, first off. I can't think of a situation where I have though.

Interviewer 1: Okay, that's fine.

Sue S.: I've know this is stupid, but every time I see good housekeeping seal on something I think, well okay let me look at this…'cause I don't know if that applies to yard stuff or not. I don't buy it enough to even notice that would be a seal on there. I think seals on there that say something, give you the impression that might want to look at it again versus one that didn't.

Yi Mun S.: I agree, yeah.

Interviewer 1: But sometime it seems like you're not willing, you wouldn't, the name brands ones are trusted and you know they work and you really need to, you'll just, that's the one.

Yi Mun S.: No, that's a good question as I was thinking, as I'm growing older, I'm more eager to go organic than just a name brand though.

Joyce B.: I always think of the runoff and what's happening there. If I...

Interviewer 1: What's happening?

Joyce B.: Well I wouldn't want to use the poison and it would runoff into the sewer system because I would be polluting the bay and that always enters into my mind too. If I were to have more the...

Interviewer 1: Okay, for the people who… I'm sorry, Sue?

Sue S.: Oh no, she brought up a good a good point because we had a fly issue. Our dog he's like a horse, for some reason flies kept eating his nose and I don't know why. This was our last lab and everyone was giving me stuff to use, like spray and stuff to put on him and I thought, well our dog's a swimmer and he goes into the pool. So I can't put anything on him, that's gonna end up in our water of our swimming pool and her saying runoff. If you have a swimming pool and you're using something. If I'm using some sort of pesticide own my lawn and my dog rolls around on my lawn and then jumps in our pool. That's going in my pool, where I go.

Interviewer 1: Okay.

Georgia L.: If you have problems with your dog again, Skin-so-soft by Avon.

Sue S.: Avon? Yeah. I know it works for humans but...

Georgia L.: It works for animals too and there's a recipe that you can make a fly spray with skin so soft and citronella and I think eucalyptus oil and something else and you can spray it and it works pretty good.

Sue S.: Yeah, I know, well but we don't have that dog unfortunately anymore but skin so soft I know we use that when we travel for bugs because I don't like the bugs.

Georgia L.: Well it's good because it's got sunscreen in it and it protects you from ticks.

Sue S.: Yeah.

Georgia L.: So whenever I go to Point Reyes I put it all over.

Sue S.: Right, right.

Interviewer 1: So the people who do have sprays, to go off of what Joyce and Sue were saying. When you spray around the house with regular, how often would you say Yi Mun?

Georgia L.: She's monthly.

Interviewer 1: Monthly? Okay.

Yi Mun S.: Well that's on the exterior, not...

Interviewer 1: Yeah, yeah.

Yi Mun S.: Yeah, monthly.

Peter S.: We had a monthly service when we had it, but we haven't had it in a long time.

Interviewer 1: So just any spray at all, even exterior, do you have any opinions on runoff or concerns about that?

Yi Mun S.: Never thought of it, but I'm more aware interior, just because I have a nine year old and a dog and us. So obviously it's a good question, I never thought about anything that is exterior because I would make her...

Interviewer 1: Out of sight out of mind?

Yi Mun S.: Not just that because every time she goes out she come and she knows she needs to wash her hands. Since young, she rinses herself off, so I never thought about it. But everything inside, because we touch it, we eat, we pick up stuff from the floor and the table. So I'm just more aware of what's happening inside the house.

[1:00:15]

Interviewer 1: Okay.

Peter S.: The times that I used products, it's been a directed, targeted thing and I usually spray it into the eaves of my house, so it's usually not a runoff issue.

Interviewer 1: Okay anything to say on that Bruce?

Bruce K.: You know I think about it when I use the products that I know are toxic.

Interviewer 1: So it sounds to me like, especially for people with kids, it's a worry that it'll get on them whether it's in the pool or outside. So you guys seem to be, where that might affect human health right? What might some of those risks be?

Bruce K.: Whether it's the poison contact, inhale it, or ingest it.

Yi Mun S.: Well the first thing is eczema.

Group: Skin.

Yi Mun S.: Skin reactions.

Interviewer 1: Yeah.

Michelle G.: I think for me it's just that even though my house is baby proofed and everything. Parents here know that it takes a split second for a child to get themselves into trouble. So to the best that I can, I try not to keep anything that's poisonous in the house. Even when it's out of reach for the kids because you just never know…But I just think that, I have one boy, my second oldest, he has asthma, so that's always in the back of my mind as far as what I have around my house, sprays and things that could trigger something for his asthma.

Interviewer 1: Yeah, sure.

Vilcia R.: To piggyback on your comment, my two year old is so close to our dog, the yorkie. He's constantly hugging him and kissing him and letting him lick him and if my dog is out there and...

Interviewer 1: And bringing stuff.

Vilcia R.: Bringing stuff in, that's an issue too.

Interviewer 1: Okay, so we've talked about this stuff and human health and I know your thoughts on that. What about any other negative...

Georgia L.: Well you don't want it to get into the runoff that goes to the Bay. There's lots of streams and tributaries in this valley that run out. I think they go out through, Walnut Creek drains to Martinez and out to the bay. But I think the San Ramon area drains out through Castro Valley or something and goes out to the Bay. Once I saw those maps and you don't want to put stuff in the water that's going to end up in the Bay.

Interviewer 1: Okay.

Georgia L.: And then you come out with fish with four eyes and weird flippers and stuff like that.

Sue S.: Or the term DDT, if anybody...

Georgia L.: Yes.

Anonymous: Yeah.

Sue S.: When I was in [Aspring], but that would concern me greatly and even was it three years ago when they were spraying for mosquitoes they had to do this, sent out warnings and get approval to spray for mosquitoes in shrubby areas. That concerned a lot of people obviously.

Georgia L.: Well, the gross one is, I think it's Monsanto, now developed a corn that is immune to Roundup.

Peter S.: Oh they've had that for a long time.

Georgia L.: Yeah, but they're doing that, we're eating GMO corn and you don't even know you're eating it. But they are going through and Roundup-ing the entire field and so...

Interviewer 1: Yeah, not to get in the, it's a big issue but, part of that is that they make Roundup.

Georgia L.: I know.

Interviewer 1: Okay.

Georgia L.: I know that they make more money and now they developed alfalfa. They just announced they developed alfalfa that is immune to pesticides, so they can go through weeds.

Interviewer 1: Yeah.

Georgia L.: So they can grow thick, fancier alfalfa. I don't want my horses, I don't want cows which mostly eat alfalfa eating GMO alfalfa and I'm eating and drinking the milk.

Peter S.: My background is in biotech.

Georgia L.: Oh, so now you're gonna defend them.

Peter S.: No, the modification that they make for those foods are so that they put a gene in there that will inactivate the Roundup.

Georgia L.: Right I know but I don't think I want to consume that gene. I've already had breast cancer thank you very much. I don't want to get cancer again. I don't like putting weird stuff in my body. I try to stick to milk, sugar, you know, vegetables.

Peter S.:There is usually an enzyme that will inactivate the specific chemical that is the active agent, but that's all I'll say.

[1:05:07]

Georgia L.: I know it still scares me, I'm still not 100% sold on that.

Interviewer 1: Yes, Skepticism for human health and what you're ingesting but nobody seems to be super sure what it might be but you know you don't want to use it on your vegetables or anywhere where your kids might...

Georgia L: I know that they can feed more people by farming more efficiently if they can use the chemicals, they can have greater yield of rice which feeds a lot of people. Greater yields of corn, etc. I understand the concept but I'm not sure that it's healthy or that it's healthy for the earth. I think it's better to grow cover crops and knock them down and not use all the [organo] chemical stuff to fertilize them but that's just my...

Interviewer 1: I hear you, but let's focus on the...

Georgia L.: I'm sorry.

Interviewer 1: Weeds. That's a big issue. I'd like to know what you think about, I've heard a lot about what each of you do and what each of you think. What do you think about your community? People living in your neighborhood, your neighbors, maybe your friends and family if they live around you. What are they doing with lawn care and pest, and including weeds, fungi. Just think about the street you live on and the people around. Do you want to start?

Michelle G: They probably do the same. I don't talk to my neighbors very much. My in-laws live in Danville and they are more inclined to the big name brand that we're considering and they have a monthly service.

Peter S.: Most of my neighbors are very eco friendly. One of my neighbors has chickens, one of them flew over the fence. I'm running around in my backyard trying to chase down this chicken was fun.

Georgia L.: Do you feel like Rocky?

Peter S.: Yeah, and I would say that our neighborhood, they do a lot of organic farming and they got compost piles and things like that and so they're very conscious about what, in terms of...

Interviewer 1: Okay.

Peter S.: This is in Lafayette. Actually Lafayette has a, going out it's located across from the reservoir, the East Bay mud set aside a community farm and people can go there and they have their own plots.

Interviewer 1: Okay, good.

Bruce K.: Well having actually done the poll, I would just see who actually works on their yard and who doesn't. Talking to them, I would say that maybe 30% of my neighbors are organically conscious and the other ones use whatever's convenient.

Yi Mun S.: We live on a cul-de-sac, only five houses and most of them are original owners except us. So they have lived there forever. All very hands on, a lot of them are retired or semi-retired, older. The kids are all out in college or working and all very hands on. They work on their backyard, every weekend you see them doing all their work and I don't think they are using organic stuff. I think to me they are just using regular stuff that they can find. Maybe because it's just traditional for them? Traditional.

Interviewer 1: Yeah.

Yi Mun S.: Yeah.

Interviewer 1: What area is that?

Yi Mun S.: Back in cult ranch in Danville. It just happened to be in that cul-de-sac that we live. It's just five houses. That's why I notice, they're always working in the backyard.

Interviewer 1: I want to go back to Bruce, are people working on…are they like you and they have veggies? And growing stuff?

Bruce K: A couple of my neighbors do, but I don't again in the immediate say five houses left and five houses right. There [are] at least three families that grow their own vegetables, not in volume. Just that it's nice to go out and pluck your on tomato and throw it in a salad. That's what they like to do.

Interviewer 1: Yeah.

Bruce K.: But there's also a lot of people in the area that, and I'm sure they're not concerned with organic. They just get it down and get out and go the next work site.

[1:10:00]

Georgia L.: My neighborhood everyone has to have at least a minimum of an acre, and there [are] about a hundred houses in our area that's a dead end street. I mean there [are] a couple streets in there but they're all dead ends. And so about maybe, I don't know a quarter of the people there have like tractors and make a big garden and do that. So they are pretty hands on.

Interviewer 1: Yeah.

Georgia L.: A bunch of neighbors, like my cross the street neighbor kind of like benign neglect. They have oleander bushes all around their pool and their front yard they have it plowed twice a year to get rid of the front half acre that have it plowed to get rid of weeds, to do the weed of [aidment] for the fire department. The neighbor next to me, she has gardeners come in all the time and she waters too much, and she probably spent 3 or 400 thousand dollars on her landscaping. I know she spend over 2 million dollars remodeling her ranch house which is stupid. She could have leveled it and built a nicer house, anyway but that's what she did. She inherited a lot of money, so more money than good sense. And then my neighbor on the corner they've got like three or four compost piles and they got 20 fruit trees and they got elaborate, lots of flowers but all sorts free forming vegetables and I've got vegetables.

Interviewer 1: Do you know what they do with the pest? Are they similar to you?

Georgia L.: I think Barbara and Law, I think they pretty much use all natural organic stuff. Barbara works in the garden like every day and she's got great fruit trees and stuff. Her fruit isn't perfect so they're not spraying a lot. But she compost and turns over the soil and her husband drives the tractor around and stuff. And then we got one guy down the street that, he's only lived there about eight years but he terraced his whole front yard and he just drives his tractor around. And he plows and he's got some fruit trees and his kids sell vegetables in the summertime. So they're growing vegetables. I've never seen them spray, but he grows a lot of weeds and he whacks them all down with his tractor and starts over again with more weeds.

Interviewer 1: What is the name of your community again?

Georgia L.: We live in Alamo Oaks which was the original subdivision in Alamo.

Interviewer 1: Okay.

Georgia L.: And it never changed from being one acre minimum zoning. So some houses have more than what we have. Chickens and goats and geese and cattle and sheep and horses.

Interviewer 1: Thank you. Joyce?

Joyce B.: My neighbors, I know they don't have yard service maybe up the street a little bit, but most of them do their own. And I don't think that there's much of anything put on there as far as poisons, because their yards aren't all that green. I can kinda tell, and I don't think that they're over watered either. They seem to conservative in that regard and with the [amendments] that they may add and they pretty much all do their own. San Ramon, South San Ramon.

Interviewer 1: South San Ramon, okay.

Vilcia R.: So our neighbors, a lot of them have been there, if they're not original owners, they're close to being original owners. So they are older and close to retired or semi retired. I don't see a lot them working on their yards, front or back. I think they have pretty low maintenance. The HOA maintains the front yard and they come every week. I don't know if they use, I'm sure they use pesticides, but I don't know whether they're organic or not. But they do a good job in maintaining and getting rid of all the weeds and that stuff. I think in general I get the sense that the neighbors do care about the environment and they are conscious about the environment and the reason why I say that is because you see a lot of recycle happening on the street. They are recycling cans, they're full, so that gives me kind of an indicator that they do care about that or they don't want a bigger garbage can.

Sue S.: I don't really know what my neighbors do. Most of us have the same gardener. I know one of my neighbor uses. They do have the greatest lawn in the neighborhood. I don't see. They also have like I don't know, Clarks or somebody spray. A couple of my neighbors have Clarks. I figure let them spray because then the bugs won't come to mine.

[1:15:00]

Georgia L.: They diminish the population anyway.

Sue S.: Both of my neighbors on both sides of us and I kind of live in a semi court and they both use some kind of service but I think they're both pretty conscious of it because I know both my neighbors, the wife has severe, severe allergies. So she's pretty natural on everything she does.

Interviewer 1: Okay so it seems to me like this group really kind of knows your neighbors. What was your area?

Sue S.: I didn't know we had an area. I live on the edge of Danville. Danville Ranch area.

Peter S.: The neighborhood that we moved into was developed in the late 40's early 50's and who ever developed, it's again a cul-de-sac with like eight houses on it. They put in a community pool and so we have this little private pool club.

Interviewer 1: So it brings people together?

Peter S.: Yeah and so we barbeque and have annual summer cookouts. It's really a lot of fun.

Interviewer 1: I mean your neighbors names.

Georgia L.: Yeah we have a 4th of July parade in our neighborhood and we have a Christmas party.

Interviewer 1: Alright, only a couple questions left. One is, those of you who do take matters into your own hands and you spray stuff down, what do you do when you're done with that stuff? Do you move it around or like the bottle and the leftover spray, maybe your husband...

Sue S.: I go to the hazardous waste when I get rid of all my stuff in Martinez. I paint and I'm a big person on that. Unless it's totally empty then I'll rinse it out then I'll put the container in the, but usually when it's something full it gets in the recycle.

Bruce K.: Does Danville use Waste Management?

Sue S.: Ally? Allied?

Bruce K.: Oh you have another company because Waste Management in San Ramon has a service where now they pick up paint, old paint.

Sue S.: Really?

Anonymous: Yeah.

Georgia L.: And you can go there and get free paint too. You can look at all the half empty cans and something.

Anonymous: Wait, where?

Georgia L.: Somewhere in Danville, San Ramon, it's San Ramon.

Bruce K.: It's San Ramon, it's energy station as you're going up Crow Canyon heading towards…

Anonymous: Oh.

Bruce K.: Towards the canyon.

Yi Mun S.: The dune? The one with the big dune?

[Group talking over each other]

Sue S.: Wait, wait, wait, so all you have to do is be a San Ramon resident?

Bruce K.: Yeah you call for it, they give you a plastic bag, you mark what's in it, paint, bug spray or whatever.

Sue S.: Oh really?

Bruce K.: And they come and get it for free.

Sue S.: We own a property in San Ramon also, and I used to go to the recycling center there in San Ramon and you can bring garden stuff. You couldn't really bring hazardous stuff down by, I don't know, Windmill farms? I know they closed that, and it was a Goodwill with all kinds of recycling stuff there and I could do that because I could show them that we own property there even though I lived in Danville. The guy didn't care he knew me, so I wonder if I could. Because I have to go way up in Martinez.

Georgia L.: Well there's one in Walnut Creek, there's a recycling place on Walnut Creek too.

Sue S.: Not for paint, it's hazardous waste.

Bruce K.: No they will come and get it.

Sue S.: Oh really? Oh.

Bruce K.: And they started the compost thing, where you have, they're trying them biodegradable bags and you put it in with your leaves and things. So all your food waste isn't going to the...

Anonymous: Right.

Sue S.: Yeah we had, they gave us a little, to put compost stuff in. I don't know if anybody here has that. It's in a little tiny thing and I had way more in a week. I just put it in my green can anyway.

Peter S.: Yeah that's what you're supposed to do, as soon as you fill it and just put it into your green waste bin.

Sue S.: Yeah.

Georgia L.: I give most to my chickens, they recycle. Chickens eat everything.

Sue S.: Sorry I was off topic there.

Interviewer 1: No that's alright. We're almost done. You were saying?

Vilcia R.: I was just going to say that, coming from Santa Clara County, their recycling and household hazardous waste and all that program is so extensive and easy. I was really surprised when I came to Contra Costa. Especially in Danville because my friend just moved to San Ramon and I started looking up the garbage and everything. The services there are far more than here through Allied and so it's almost like there's no incentive, that the city, that the town or the company doesn't give you any incentive. I feel like, but I don't know if that's, but I'm new to this area.

Interviewer 1: So you feel that there is less programs out there .

[1:20:01]

Sue S.: I think there's way less programs for Danville residents then there are in San Ramon.

Vilcia R.: I didn't know if they were less programs but it sounds like they're are, or less education about them because when I moved to San Jose, the first thing that I got from my realtor was the cities new resident packet. And they you gave this nice, colorful like...

Sue S.: That's your realtor. You got the wrong realtor in Danville.

Georgia L.: I thought it was the chamber of commerce that did those things. Well it all depends.

Vilcia R.: I thought there was, almost like a calendar and outlined all the important phone numbers or locations and everything for household hazardous waste and what went into the recycling, what went into the garbage, what went into all that stuff. When I came here I was trying to figure out, I went on the town's website to see who collects my garbage. I don't even know.

Sue S.: Yeah your realtor should [have] given all that.

[Group talking over each other]

Interviewer 1: Okay if you all were to go look for stuff like that, where would you go?

Vilcia R.: Not on their town website.

Sue S.: Internet

Group: Yeah.

Georgia L.: Phone book because I'm old school.

[Group talking over each other]

Vilcia R.: Yeah it's just mostly the internet.

Sue S.: I actually read where, when I get my water bill and there's always a newsletter.

Anonymous: Yeah billing.

Sue S.: I don't even pay my water bill, I mean I pay it but it's automatically paid every month. So I don't really need to open it.

Georgia L.: As opposed to siphoning it from your neighbors.

Sue S.: That's how I fill my pool.

Yi Mun S.: You siphon it from your neighbors?

Georgia L.: You have to get one of those keys that open the.

Group: Fire hydrant.

Georgia L.: You get the fire hydrant and the hose and the pool fills up real fast.

Sue S.: Yeah they do have sometimes; they have really good information in there that you don't know about.

Interviewer 1: Yeah.

Vilcia R.: I feel like there needs to be more communication or more education about it. I'm learning a lot from this discussion here and San Ramon seems to have the better programs.

Yi Mun S.: I'll be that they do. Danville, there's really not much.

[Group talking over each other]

Interviewer 1: Have any of you heard of, by a show of hands heard "our water our world?"

Anonymous: That's familiar.

Peter S.: No.

Interviewer 1: A couple people maybe it it sounds familiar but do you know what it is?

Sue S.: No.

Michelle G.: No.

Vilcia R.: Something about water production?

Yi Mun S.: Our water our world?

Sue S.: I've never heard of that.

Michelle G.: It sounds like I've heard it but...

Sue S.: Sounds like I've heard it but I don't know what it is or is referenced too.

Georgia L.: Save our bay.

Interviewer 1: It's kind of vague.

Vilcia R.: I think through my kid's school or something?

Interviewer 1: Okay.

Yi Mun S.: If I ask my daughter or you tell me.

Interviewer 1: I'll tell you after we finish. I think that's about it, we talked about a lot of stuff here. Does anybody have any strong feeling about things we didn't touch on that you think is important to get out there?

Sue S.: Well, I don't know what you're looking for, but one of the things that [are] important, water to me is a big important thing. Conserving water and it really bothers me when I see water, sprinklers and stuff just flooding the street in the city or being on when it's pouring rain. I know it's automatic but Danville, isn't that big? It doesn't seem like it would take three hours for someone to fix something. Why should water be running for three hours?

Interviewer 1: Yeah.

Sue S.: So that's what bothers me. I don't mind doing my part conserving but when see the city that I live in not conserving...

Bruce K.: Explain my wife why...

End [1:24:29]

# APPENDIX I: CAR WASH OUTREACH

## Action Campaign: Modify At-Home Car Wash Techniques

***Objective:*** 25% more people know about at-home car wash behaviors that are water friendly relative to those who didn't participate in the campaign. This objective seeks to increase knowledge. It does not aim for increased interpersonal communication, willingness, or behavior change.

***Audience:*** The target audience for this promoted behavior is single-family home dwellers that wash their cars at home (29.9% of all single family home dwellers based on survey results).

***Messaging Strategy:***

- Focus on highlighting the top 2-3 car wash tips that are the best for the environment
- OK to make the connection between car wash behavior and water quality.

***Campaign Approach:*** Campaign tactics will seek to overcome the lack of knowledge barrier by increasing resident's awareness of the negative environmental consequences associated with current car wash techniques, while demonstrating the environmental benefits associated with modified techniques. As there is an array of potential techniques, we will need to develop and prioritize a list of specific end-state behaviors (i.e. modified car wash techniques) to promote. In prioritizing this list, we will compare the various end-state behaviors to one another to work out which are worth promoting. This comparison will evaluate each behavior according to the following three filters: (1) *the activity's level of impact*; (2) *the difficulty in performing the activity*; and (3) *the appropriateness of the activity for the target audience*. The last two filters help to determine the probability around the target audience actually engaging in the promoted action. Approximately two to three of these behaviors will then be promoted by the suite of tactics described below.

The campaign will also draw on the 'peer-pressure' motivator by eventually creating a social norm around sustainable car wash techniques. Lastly, since survey results indicate that those who wash cars at home have higher internet usage, we will place considerable emphasis on the use of online marketing tactics to promote this specific behavior change.

### *Develop an Infographic*

To promote campaign messages, we will develop a simple infographic on the cccleanwater.org site demonstrating the modified car washing techniques and how these actions help to protect water quality. Campaign advertising will then direct residents to this infographic to reinforce messages.

***Form Key Partnerships***

To increase campaign credibility and cost-effectively diffuse messages, we suggest forging partnerships with key homeowner's associations in targeted areas across the County. Groups such as *Riders Recycle,* a campaign aimed at getting motorcyclists to properly recycle their used oil, may also be a good partner as a way of reaching a broader audience the encompasses cars and motorcycles. Possible avenues that the program could leverage in disseminating messages around eco-friendly car wash techniques include:

1. Place an article promoting campaign messages in the association's newsletter (print or online)
2. Include a banner, button, or link about the campaign on the association's website
3. Encourage associations to promote the infographic on any of their existing social media channels or email notifications
4.

***Advertising Campaign***

The advertising campaign messaging will focus on increasing resident's awareness of the negative environmental consequences associated with current car wash techniques. Several distinct advertisements will be developed, each promoting one of the selected modified techniques to increase message impact.

These advertisements will largely be placed online given the particularly high frequency of regular internet users associated with at-home car washing. The use of traditional paid online advertising will be limited to highly targeted outlets. Online ads will also be placed in spaces that are near in both location and frame of mind to the desired behavior. Like the pay-per-click advertising method that will be used in the previous *Action Campaign*, online placements will appear during Google searches, using specific search terms (examples include "car" or "car wash"). Additionally, because car washing is seasonal in that it frequently occurs when rain is not looming, ads will be placed during late Spring-early Fall.

**Table 1.** Audience Roles for *Action Campaign*: Modify At-Home Car Wash Techniques – Advertising Campaign

| Value Setters | Influencers | Polluters |
|---|---|---|
| **Share** the infographic with their networks<br><br>*Anyone who washes their car at home and has practiced any eco car washing BMP, including the 2-* | N/A | **View** and **click** on the ad to view the infographic<br><br>**Take a survey** to determine changes in knowledge |

| | | |
|---|---|---|
| *3 recommended by the program* | | *Anyone who washes their car at home and is not currently practicing all 2-3 of the recommended BMP* |

# APPENDIX J: COMMUNITY BASED SOCIAL MARKETING AND SOCIAL PSYCHOLOGY PRINCIPLES

### What is Community Based Social Marketing?

Community-based social marketing is based upon research in the social sciences that demonstrates that behavior change is most effectively achieved through initiatives delivered at the community level which focus on removing barriers to an activity while simultaneously enhancing the activities' benefits (McKenzie-Mohr and Smith, 1999; Alcalay and Bell, 2001; Neiger, Thackery, Merril, Miner, Larsen and Chalkey, 2001; Walsh, Rudd, Moeykens and Moloney, 1993). In contrast to large information-driven campaigns, CBSM aims to promote changes in behavior within a target population by focusing outreach efforts on specific behaviors through direct contact with the individuals (Schultz, 2002; Schultz and Tabanico, 2008).

CBSM is used to assess message effectiveness before implementing a larger campaign across a community by utilizing ***Audience Analysis*** within a target population for the purposes of message distribution (Walsh, Rudd, Moeykens and Moloney, 1993). As a result, CBSM principles are especially well adapted for translating complex scientific messages and behavior change strategies, such as the case for stormwater pollution prevention, into effective outreach programs and communication campaigns (Lefebvre and Flora, 1988).

***Figure 1.*** **Community-Based Social Marketing**

The model first identifies benefits and barriers to a particular behavior. Behaviors are determined using qualitative and quantitative information. For example, quantitative information is found through literature reviews and samples taken from community surveys, and qualitative information is gained through observational studies and focus groups. Throughout this process benefits and barriers to the identified behavior are recorded.

The next step in the model is to organize the public into groups that have common characteristics, as well as perceived benefits and barriers to the identified behavior, in order to determine a

"target audience." At this point a program is created using behavior change principles such as commitment, feedback and social norms. Then, the strategy is tested for effectiveness before launching the program across the target audience. Finally, an evaluation of the program's impacts on a community-wide scale is completed. A graphic display of the model is shown in ***Figure 1***.

**CBSM Step 1 - Identify Target Barriers and Motivators to Target Behavior**

Central to the development of a CBSM program are three questions: 1) What behaviors should be promoted? 2) Who should the program address or target? and 3) What conditions will an individual face in deciding to adopt a new behavior (McKenzie-Mohr and Smith, 1999)? These questions provide the framework for the crucial first step in the CBSM process: developing a complete understanding of the target audience.

**CBSM Step 2 - Develop a Campaign Based on CBSM Tools**

The next step in the process is to develop a strategy that incorporates the use of certain principles or tools that have proven successful in changing behavior. The social science field has identified numerous tools to change behavior. The community-based social marketing model applies five of these tools. They are: commitment, prompts, norms, communication, and incentives. A brief definition and description of each tools is described in ***Table 1***.

**Barriers & Motivators: A Case Study**

An effective social marketing strategy removes barriers to the behavior to be promoted. For example, in fostering the purchase of products with recycled content, the King County Commission in Washington State first identified barriers to their purchase and then systematically removed them (Herrick, 1995).

Survey and focus group research indicated the existence of five barriers to the purchase of these products. The commission felt that little could be done with respect to two of these barriers: the perception that these products cost more and were of inferior quality. The three other barriers, low awareness of which products had recycled content, suspicion regarding environmental claims of manufacturers, and the difficulty of quickly identifying these products while shopping, could, however, be overcome.

Although this program utilized traditional media and in-store advertising, it relied primarily upon a shelf prompt that advertised that a product had recycled content. The results from this social marketing strategy demonstrate the importance of first identifying barriers and then systematically removing them.

Analysis of electronic inventories of participating retail stores indicated that purchases of recycled-content products rose 27% as a consequence of this social marketing strategy. This successful program has now been adopted by a number of cities throughout the United States.

***Table 1.*** The Five Tools of Community-Based Social Marketing

| PRINCIPLE | DESCRIPTION |
|---|---|
| **Commitment** | The commitment tool is utilized by asking a person to make a commitment to change using a verbal or written agreement. The argument behind using this tool for behavior change is that once a person commits to a certain idea or action a subtle shift occurs in their attitude toward it. This shift in attitude causes that person to act with consistency. |
| **Prompts** | Prompts are visual or auditory aids that remind a person to carry out an activity that they might otherwise forget. Prompts are useful in community-based social marketing campaigns because they can be used to target specific behavior and don't need to be costly additions to the program. Sometimes, a person simply forgets to act, so by hearing or seeing a prompt they are reminded. |
| **Norms** | Norms guide how a person behaves because they look around for clues on how to respond. Behavioral norms influence change through techniques such as "modeling" desired behavior. |
| **Communication** | Communication is used to effectively persuade, educate, and communicate desired behavior changes in a community based social marketing campaign. Without creating or "framing" a message, new ideas and attitudes could not diffuse through a community. |
| **Incentives** | Incentives are a tool used to motivate a person to continue performing a desired behavior, or to change from an undesirable to a desirable one. Some common incentives include user fees, refunds, variable rates, preferential treatment, and social approval. |

Source: McKenzie-Mohr and Smith, 1999

**Obtain and Build Commitment**

Commitments use a "foot in the door" strategy to engage with stakeholders through in-person and online outreach efforts. A "foot in the door" approach provides a small and easily attainable request that creates a sense of involvement on the part of target audience members. In a wide variety of settings, people who have initially agreed to a small request have subsequently been found to be far more likely to agree to a larger request. Stakeholders should be encouraged to become involved through a step-wise approach, beginning with actions that are relatively easy and moving up to actions that are more complex, building greater commitment through these "requests" over time.

***Figure 2.*** The Behavior Change Continuum
Increased levels of commitment can bring increased levels of behavior change

There are likely two reasons why seeking commitment to an initial small request is effective. First, when people go along with an initial request, it often alters the way they perceive themselves. That is, they come to see themselves, referencing the recycled products case study, as the type of person who believes it is important to purchase products that have recycled content. Second, people have a strong desire to be seen by others as consistent with outwardly-made commitments (Katzev and Wang, 1994). Indeed, society emphasizes consistency and people who are inconsistent are often viewed negatively. For example, if a person agrees to wear a button supporting the purchase of recycled-content products, it would be inconsistent not to purchase these products when shopping.

Written commitments appear to be more effective than verbal commitments. In a study investigating the impact of verbal versus written commitments, households were assigned to one of three groups. In the first group, homes simply received a pamphlet underscoring the importance of recycling newspaper. In the second group, households made a verbal pledge to recycle newsprint. In the third group, households signed a statement in which they committed themselves to recycle newsprint. Initially, the households that made either a verbal or written commitment recycled more newsprint than households that received only a pamphlet. However, only the households that committed themselves by signing the statement were still recycling when a follow-up was conducted (McKenzie-Mohr and Smith, 1999).

Obtaining public commitments is also important. In a study comparing private commitments versus public commitments (for which names were published in a local newspaper) those who agreed to a public commitment saved significantly more energy than did householders who did so privately. Even after the researchers informed the participants who had agreed to a public commitment that their names would not be published, they continued to save energy. While the names were never publicized, simply asking for this permission brought about a 15% reduction in natural gas and a 20% reduction in electricity use. Importantly, these reductions were still observable 12 months later. Public commitments are likely more effective because of people's desire to be consistent (McKenzie-Mohr and Smith, 1999). In short, the more public a commitment, the more likely people are to honor it (Lokhorst, van Dijk, Staats, van Dijk and de Snoo, 2010).

### *Provide Incentives: Positive Feedback*

To maintain and strengthen the commitment built within the community, it is important to regularly provide feedback to the community[13] about their progress in reaching the goals of the program. Providing feedback about a program's success reinforces the behavioral changes that people have made (Peterson, Shunturov, Janda, Platt and Weinberger, 2007; Wood and Newborough, 2007). This is particularly important when the behavioral change is repetitive and when meaningful impact can only be obtained when numerous people engage in the action, which is certainly the case for a problem as large and complex as stormwater pollution (Mckenzie-Mohr and Smith, 1999).

**Providing Feedback: A Case Study**

Since residential water use is quite high in Melbourne, Australia, a pilot program was designed and implemented in 1994 by the local city government to lower consumption (Aitken, McMahon, Wearing, and Finlayson, 1994).

First, a literature review was conducted to identify behavior change tools effective in reducing water use. Based on this review, the practitioners used feedback as their primary tool in the pilot program.

Households were initially contacted through a mailed questionnaire. Then, experimenters hand delivered cards which reminded the recipients of the completion of the questionnaire and their agreement with conservation responsibility statements. In addition, feedback was given on these cards as well. The feedback gave the average consumption of the participant's household. Data was collected through water meter readings, providing an accurate and quantifiable measure of behavior change.

Although households who already exhibit low water use did not reduce consumption substantially, feedback did have a positive effect on high consumption households. These households reduced their water use by 4.3%.

### *Establish Social Norms*

Individuals tend to mold their behavior to social norms by not only doing what is socially acceptable, but what is popular (i.e., the norm) within their group/community. Groups internalize norms by accepting them as reasonable and proper standards for behavior within the group. Once firmly established, a norm becomes a social fact, and thus, a part of the group's operational structure (Cialdini, 2003; Gardner and Abraham, 2010; Kennedy, 2010).

One of the most impactful strategies for establishing a social norm within a community is to make the norm visible. For norms to influence the behavior of others, those community members not participating in the target behavior must be aware of the norm (Cialdini, 2003; McKenzie-Mohr and Smith, 1999). To make the target audience aware of participants'

[13] Feedback can be provided to a community where all members have already made a commitment, or where only a subset of that community has made a commitment to change their behavior. By making the feedback public, even those community members who have not made the commitment will benefit from the feedback as this public recognition will help to set a social norm that reinforces the behavior promoted by the commitment.

adherence to the promoted behavior, the program should consistently publicize these actions through several channels.

Publicizing the positive actions that others are taking through community feedback should serve as a cornerstone of CBSM efforts to reinforce the social norm. Campaign messaging will therefore feed into the perception of wider-based community involvement in the desired behavior. Depictions of negative norms, as true to reality as they may seem, could serve to be counter-productive because they reinforce a negative social norm. For example, telling people that they should not litter because littering is rampant could actually encourage littering behaviors since it is being depicted as the norm. Instead, messages should reinforce positive norms by expressing that "everyone else is keeping the community clean, and so should you," whether or not that is truly the case (Cialdini 2003; McKenzie-Mohr and Smith 1999).

### *Evaluation*

Community-based social marketing stresses evaluation of implemented programs prior to broad-scale implementation. In addition to survey assessments, in an ideal case, data should be collected at intervals following the completion of campaigns in order to assess whether or not the behavioral change strategy is having a long-term impact.

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# APPENDIX L: OBJECTIVES

[i] The engagement objective for CCCWP is an estimate taking into account two main sources: (1) Past programs led by SGA that consisted of a similar range of outreach tactics: LA Stormwater Program (LASW) and the PV Shelf Fish Contamination Education Collaborative (FCEC), and (2) Projections from other planned initiatives not outlined in this document, such as the Bringing Back the Natives Tour and Coastal Clean Up Day.

(1) *Past programs:* LASW averaged ~4,100 hours of work per year, over the course of 5 years, and ~172,500 residents were engaged with the campaign out of a possible 3.5 million. FCEC averaged ~7,400 hours of work per year over the course of 5 years, and ~169,500 saltwater anglers were engaged with the program out of a possible 402,490. For CCCWP we assume an average of ~1,700 hours of work per year over the course of 4 years, attempting to reach a possible 816,000 residents over the age of 18. Calculating for hours/engagement for the two past programs and applying the factors to the CCCWP figures, it is reasonable to expect to engage anywhere between 2% and 7% of the possible pool in Contra Costa, equivalent to between 16,200 and 54,000 residents.

(2) *Projections:* Bringing Back the Natives Tour engages ~5,000 residents per year within our target audiences. Coastal Clean Up Day engages ~12,000 residents per year within our target audiences. If other activities are assumed to reach ~3,000 residents/year, the total projected engagement number from activities outside this plan is roughly ~20,000/yr, or ~80,000 interactions over the course of 4 years.

Summing the projections and estimates derived from past SGA programs, we can reasonably set the engagement objective to be within the range of 96,200 and 134,000 engaged residents over the course of this program. We have set the number at the high end of the range to be our engagement objective for CCCWP: 134,000 interactions.

*Note: Reports from the programs used in this comparison do not take into account how budget was spent or the exact questions asked during evaluation, among other possibly differentiating factors.*

[ii] Of the CCCWP Action Campaigns outlined in this plan, one aims to foster only awareness (Try a non-toxic alternative) and two aim to foster awareness as well as attitudinal shifts (Buy a less-toxic pesticide/herbicide alternative and Hire an eco-certified pest controller). All objectives are described as percentages comparing the knowledge differences between equally sampled groups (campaign participant group vs. non-participating control group). The knowledge objectives take into account results from three past programs that focused on raising awareness and/or attitudinal shifts.

*Past Programs*: Maine's "Who's Willing to Protect Water Quality" Ad Campaign (14% increase in ad recall, budget $252,156); King County Natural Yard Care Advertising Program (40% awareness without baseline, budget $375,000/yr over 2 years); and the U.S. EPA Fish Contamination Education Collaborative (66% increase in awareness, budget $860,000/yr over 2 years).

On average, the past programs spent ~$21,000 per % increase in awareness. Assuming a third of CCCWP's budget goes towards achieving awareness and attitudinal shifts, we can reasonably expect a 13% increase. However, unlike the post programs being compared to, we plan to evaluate only persons who participate in the campaigns (as opposed to randomized samples of entire populations). Therefore, we have doubled this increase to determine a final knowledge objective for CCCWP: 26% increase.

*Note: Reports from the programs used in this comparison do not take into account how budget was spent or the exact questions asked during evaluation, among other possibly differentiating factors.*

[iii] Objectives for Interpersonal Communication for each Action Campaign are described as "minimum number of incidences of discussion". Therefore, they are established by simply dividing the minimum number of interactions determined for the Engagement objective (1) across the three campaigns,

spread based on estimated level of resource allocation per campaign (2). This minimum number is the low end of the calculated range, which also does not include interactions projected to come through other planned initiatives not outlined in this document, such as the Bringing Back the Natives Tour and Coastal Clean Up Day since they are not part of the Action Campaigns.

(1) *Minimum number of interactions: 16,200 interactions*
(2) *Estimated resource allocation:* Try a non-toxic alternative: 60%; Buy a less-toxic pesticide/herbicide alternative: 20%; and Hire an eco-certified pest controller: 20%.

The final interpersonal communication objectives are determined to be: Try a non-toxic alternative: 9,720 interactions; Buy a less-toxic pesticide/herbicide alternative: 3,240 interactions; and Hire an eco-certified pest controller: 3,240 interactions.

[iv] Willingness objectives can speak to the efficacy of a program in the absence of behavior change numbers. They are especially useful when there is lag time between when a target audience member receives outreach and when the behavior itself occurs. Therefore, the willingness objectives for the two Action Campaigns that have them outlined (Try a non-toxic alternative and Buy a less-toxic pesticide/herbicide alternative) are simple increases in comparison to a baseline control.

*Baseline Controls:* For Try a non-toxic alternative, the control group is a sample of residents not exposed to the program. For Buy a less-toxic pesticide/herbicide alternative, the baseline willingness score to improve upon is the 7.63 rating given by people who report to currently be using eco-friendly pesticide to manage lawn/garden pests.

[v] Behavior change objectives are a function of several factors, one of which is the current starting point (or current participation rate) for the typical target audience member. In establishing this final objective for the Try a non-toxic alternative Action Campaign, we looked at past programs with measured behavior change components for comparison:

*Past Programs:* Irvine Used Oil Recycling Program (8% recycling contamination decrease, 1000% increase in filters recycled); FCEC Pier Outreach (20% decrease in contaminated fish consumption); King County Natural Lawn Care Program (48% increase in participation in 8 of 24 behaviors); Austin Lawn and Garden Chemical Education Campaign (13% increase in organic fertilizer use, 8% decrease in undesirable fertilizer behaviors, 21% weed management behavior change)

Without knowing how much of past program budgets were allocated for meeting actual behavior change objectives, it is not possible to draw a straight comparison by calculating amount spent per percent increase. Therefore, in this case, we look at the overall range, 8% to 48%. In comparison to the programs listed, our Action Campaigns have a very low current participation rate. Therefore we can skew towards the lower end of the range. Of those initiatives, Austin Lawn and Garden's participation rate for use of organic fertilizers is assumed to be closest in line with our current participation rate for using non-toxic alternatives. Therefore, we have set our final behavior change objective to be 13%.

**Bringing Back the Natives Garden Tour**

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**Final Report**

**Why a Native Plant Garden Tour?**

The spring 2013 Bringing Back the Natives Garden Tour was held in order to showcase pesticide-free, water-conserving gardens that reduce solid waste, provide habitat for wildlife, and contain 60% or more native plants.

The tour enlists local residents to demonstrate by example that seasoned and novice gardeners can garden with good results without the use of synthetic chemicals, and with minimal supplemental water, while providing food, shelter, and nesting areas for wildlife. The gardens on this tour show that it is possible to implement sustainable garden practices and still have beautiful places for people to relax in and enjoy. The goals of the Bringing Back the Natives Garden Tour are to motivate attendees to eliminate pesticide use, reduce water use, generate less solid waste, and provide habitat for wildlife in their own gardens.

Why California natives? Once established in the garden setting, California native plants need little or no summer water, as they survive naturally with only fall-to-spring rainfall. In addition to being water-conserving, California natives are hardy, and they do not require the use of pesticides and fertilizers, as many non-natives do. Native plants need less pruning than many non-natives, such as lawn, ivy, or cotoneaster, thus generating less green waste. Natives also provide the best habitat for birds, butterflies, beneficial insects, and other forms of wildlife.

A four-year study of water use, green waste generation, maintenance hours, and maintenance labor costs between a traditional garden and a California native plant garden was conducted by the City of Santa Monica. (See http://www.smgov.net/Departments/OSE/Categories/Landscape/Garden-Garden.aspx). The results of this study showed that the native garden used one tenth of the water that the traditional garden did; generated 40% of the green waste; took 20% of the time to maintain; and cost 75% less to maintain than the traditional garden.

Bringing Back the Natives Garden Tour gardens contain minimal or no lawn. This is of particular value since the majority of the chemicals purchased by homeowners support lawn care, and the majority of water used in home gardens is applied to lawns. According to the U.S. Fish and Wildlife Service's Division of Environmental Contaminants publication, "Homeowner's Guide to Protecting Frogs—Lawn and Garden Care," homeowners use up to ten times more chemical pesticides per acre on their lawns than farmers use on crops. In addition, half of the water used by the average household is applied to the landscape—with most of that water being applied to keep turf green. Only 4 of the gardens included on the tour had any lawn at all, and these were reduced in size to 10% of the gardened area.

**Award**

This year Tour organizer Kathy Kramer received the Jefferson Award for the Bringing Back the Natives Garden Tour. Right before the Tour, this piece was shown on CBS three times, and the Tour and award were promoted on KQED twice:
http://sanfrancisco.cbslocal.com/2013/05/01/jefferson-award-winner-teaches-others-the-values-of-native-plants/

**2013 Bringing Back the Natives Garden Tour events: Spring Tour and Native Plant Sale Extravaganza; Fall Native Plant Sale Extravaganza; and Select Tours**

In 2013 the Bringing Back the Natives Garden Tour expanded its offerings to include not only the spring Tour and Native Plant Sale Extravaganza, but also a Fall Extravaganza, and a series of Select Tours. These are described below.

**Ninth Annual Bringing Back the Natives Garden Tour and Native Plant Sale Extravaganza**

The Ninth Annual Bringing Back the Natives Garden Tour, which took place on Sunday, May 5, 2013, showcased forty three gardens and nurseries located in fifteen cities and unincorporated areas in Alameda and Contra Costa counties (Berkeley, Concord, El Cerrito, El Sobrante, Fremont, Hayward, Livermore, Martinez, Moraga, Oakland, Orinda, Pleasanton, Richmond, San Lorenzo, and Walnut Creek).

A variety of gardens were featured on the tour. The gardens ranged from Al Kyte's forty year old wildlife habitat to a number of gardens that had been recently installed, and from very large lots to small front gardens in the flats. Tour gardens contained everything from local native plants to the horticulturally available suite of natives from throughout California. A quarter of the gardens were designed and installed by owners, and the rest were designed and installed by professionals. Almost all of the gardens were landscaped with between 70% to

100% native plants. Twenty-five percent of the gardens on this year's tour were offered by former registrants who had attended a previous Bringing Back the Natives Garden Tour and become inspired to transform their own garden.

**Spring Native Plant Sale Extravaganza**
In additional to the May 5, 2013 tour day, on which forty three gardens and nurseries were open for viewing, the spring Native Plant Sale Extravaganza took place throughout the week-end of May 4 and 5, 2013.

During the spring Native Plant Sale Extravaganza a number of native plant nurseries—some not normally open to the public, and others normally open only for limited hours—were open from 10:00–5:00. Bringing Back the Natives Garden Tour registrants took advantage of this opportunity to shop for unique or hard-to-find native plants that are not normally available in most nurseries. This year nine nurseries took part in the Extravaganza, and more than $10,000 worth of natives were sold over the course of the week-end.

**Number of registrants, volunteers, and garden visits**
The tour received overwhelming interest from the public; this year there were 5,773 registrants. The bulk of the registrants (5,580) registered for the tour in advance, and on-line. On the day of the tour an additional 193 people visited the same day walk-in registration sites, which were set up in Berkeley, Concord, El Cerrito, Hayward, Livermore, Martinez, Moraga, and Oakland.

This year 12,831 garden visits were made on the day of the tour. See the end of this report for a list of the number of visitors counted at each garden.

Nearly 200 volunteers either worked at gardens for a half-day shift on the day of the tour, or helped with tour preparation and clean-up, contributing more than 800 hours of time to the tour. The 43 hosts put in countless hours preparing for the tour, and more than 300 hours on the day of the event.

**Garden Talks**
More than 40 garden talks and demonstrations were given throughout the day on a plethora of subjects. Talk topics included how to: retain stormwater on-site; remove a lawn; select, plant, and care for natives in general, and select natives for specific areas; design a simple, low-maintenance native plant garden; how to attract bees; choose appropriate natives; design and install a native plant garden; create a low-maintenance native plant garden; garden on hillsides; purchase native plants; control weeds without using herbicides; water efficiently; maintain a native plant garden; design and install a native garden yourself; garden for wildlife in general, and native bees and butterflies in particular; and how to control erosion, among other topics.

**The website**
The website contains numerous photographs of all of the gardens that have ever been on the tour (information on prior tours remains accessible on the website for reference), extensive garden descriptions, plant lists for each garden, and some garden-specific bird, butterfly, mammal, reptile, and amphibian lists, as well as resource information on how to garden with California natives. The resource information includes contact information for landscaper designers with gardens on the tour, a list of Easy-to-Grow East Bay Natives, lists of nurseries that carry native plants, lists of reference books, "How I got started gardening with native plants" essays by a number of the host gardeners, and more.

In order to attract hosts and volunteers, and to thank them for their time, two Garden Soirees—free, private tours of native plant gardens—were held in 2013. Garden Soirees offer host gardeners and volunteers the opportunity to see tour gardens that they would otherwise miss. They also create a feeling of camaraderie between hosts and volunteers, and provide a venue for people who are both knowledgeable and passionate about gardening with natives to meet and exchange information.

**Misc. details**
Eighteen of the gardens were at least partially wheelchair accessible. Eighteen of the gardens were also certified by the National Wildlife Federation as Backyard Wildlife Habitat Gardens.

**Fall Native Plant Sale Extravaganza**
In the fall of 2012 a Native Plant Sale Extravaganza was held. Nearly $11,000 worth of native plants were sold at eight locations. These included three private gardens (in Moraga, Orinda, and San Pablo), San Lorenzo High School in San Lorenzo, the U.C. Botanic Garden in Berkeley, East Bay Wilds in Oakland, and Markham Arboretum in Concord.

**Select Tours**
In the fall of 2012 and the spring of 2013 a series of Select Tours (small, private tours with themes) were coordinated. These included a tour of a garden with an extensive graywater / rainwater catchment system; three "Meet the Designer" tours (with noted designers Michael Thilgen, Kelly Marshall, and Liz Simpson); three hands-on sheet-mulching workshops; one hands-on Netafim installation workshop; a tour of a large organic garden that stored 10,000 gallons of rainwater on-site, had chickens, and had extensive native and edible gardened areas; and a Meet-the-Do-It-Yourselfers tour of three gardens designed and installed by homeowners.

**Tour Partnerships**

The Bringing Back the Natives Garden Tour created partnerships with a variety of organizations that share common values—that chemical-free and water conserving gardening preserves water quality and quantity, and creates wildlife habitat. The list of major sponsors and supporters of this year's tour includes a flood control district, two county stormwater programs, three water districts, four cities, an unincorporated area, and a private foundation. The list of tour sponsors is provided below.

**Sponsors of the 2013 tour**

**$15,000**
Alameda County Flood Control and Water Conservation District

**$10,000**
Contra Costa Clean Water Program

**$5,000**
Jiji Foundation

**$4,000**
Contra Costa Water District

**$2,500**
County Clean Water Program (Alameda)
Contra Costa Watershed Program

**$2,000**
Bay Area Water Supply and Conservation Agency
City of Richmond

**$1,600**
California Native Plant Society (East Bay Chapter)

**$1,500**
City of El Cerrito

**$1,000**
City of Antioch
City of Pittsburg
Zone 7 Water Agency

**$500**

Alameda County Water Agency
City of Walnut Creek

**Host Gardeners**
The gardens selected to take part in the tour are chemical-free and water-conserving landscapes that provide habitat for wildlife. Hosts were chosen because of their willingness to be on site on the day of the tour to explain first-hand the techniques they use in their gardens, and their enthusiasm for, and commitment to, educating others about how to garden in environmentally sensitive ways.

Host gardener recruitment began in the spring of 2012 for the 2013 tour. Potential candidates completed an application, and applicants who met the criteria received a site visit. Host criteria were as follows:

- Gardener must reside in Alameda or Contra Costa County.
- Gardener must use organic and/or natural techniques for pest control rather than synthetic pesticides.
- Garden must demonstrate water conservation techniques. Examples include mulches, groundcover plants, drip or soaker hose irrigation, and the use of plants that do not require excessive watering during the dry part of the growing season.
- Gardener must be a good ambassador for chemical-free, water-conserving gardening: enjoy educating the public; and have the knowledge base to employ natural gardening techniques and share this information with the public.
- Garden must provide food, shelter and nesting areas for wildlife.
- Garden must contain 60% or more California native plants.
- No invasive plants are found in the garden.

Host's gardening experience ranged from native plant novices to professional landscape designers. All of the host gardeners were good ambassadors for natural gardening techniques.

**Host Comments from the 2013 evaluations:**

- The greeters that you lined up for us were a great help. The garden guests were pleasant, asked good questions, and many of them thanked me for opening our garden to them. I recognized several of the guests from two years ago, when we first placed our garden on the tour; one of them told

me that our garden had inspired her and that she removed her lawn and now has a native garden of her own. It was a great day overall!

- Thank you so much for all the years of wonderful tours. I've been so impressed with how it has really made a difference educating people about native plants and sustainable garden design. I no longer have people ask me 'why natives'. Instead they know why, are excited, and have more specific questions as to how to create a drought tolerant earth-friendly garden. I love that the tour is free - anyone can attend and donate at the level that works for them. I love how inclusive and open the tour is for everyone.

- Many people learn from and are inspired by the tour.
- As usual, excellent up-front organization and communication from Kathy Kramer to hosts. Good catalog, and good media coverage. Awesome job, as always.

- The Tour was well advertised, and the visitors were very appreciative and friendly. It was very well organized, making it easy to be a host.

- I've had my garden on one different type of garden tour before. What I found very interesting and unique about this tour was how interested the visitors were in learning how to create this type of garden. I had questions about the process of removing the grass, design, irrigation, plants, and more. This tour was much more than just coming to look at the pretty flowers.

- This year I added photos of some of the more spectacular blooming plants (which were not in bloom at this point). I printed out the pictures on regular printer paper, put them in plastic sleeves and hung them from the relevant plant with fishing line. People seemed to really enjoy seeing them. The volunteers were all outstanding and enthusiastic. Thanks so much for all you do, Kathy! And congratulations on your recent award! I think this tour has done so much to increase awareness of use of native plants in the garden. I also noticed greater diversity among the visitors.

- What a lovely day! People streaming into my garden and telling me how much they liked it, who wouldn't love that!? Thank you so much putting on this event. It is exciting to see people becoming interested in something so good for our environment and community.

- The guests' obvious enjoyment of and appreciation for my garden was very gratifying.

- Lots of very interested and friendly folks visited our garden. I thought the level of expertise shown in the questions about my garden was a higher than in previous years. If so, it's a sign that more people are becoming more informed about native plant gardening.

- The website and tour guide are beautifully done and very valuable. The Tour is popular, and well-attended. Many people learn from and are inspired by the tour.

**Volunteer Comments from the 2013 evaluations:**

- This Tour is really bringing about important change! My compliments for and admiration of Kathy for smoothly coordinating such a major event each year. The concept of gardening without pesticides, and for nature, is reaching so many different people in so many different ways and at different levels...to the benefit of us all.

- Keep doing what you're doing. The Bringing Back the Natives Garden Tour is an amazing contribution to bettering our environment; I love that instead of just wringing our hands, it shows ordinary people a beautiful way to act on behalf of all of us.

- The Bringing Back the Natives Garden Tour makes a difference for our planet!

- The volunteer experience was marvelous. The organization was like no other garden tour in the Bay Area. I knew exactly what to anticipate and prepare for; this contributed to a wonderful lasting impression on all garden spectators.

- Wonderful program, excellent ideas, lots of really inspirational people -- I volunteered at Glen Schneider's, and found him to be delightful and informative.

- The Garden Guide was an invaluable informational and well-crafted tool; it helped me to find the information needed efficiently, and the design was beautiful. I enjoyed being a volunteer. Thank you.

- Over 300 happy people came to the garden where I volunteered! A lot of people are interested in bringing back the natives and seeing how others are doing it.

- I think you do a FANTASTIC job!!!! It's astounding how well you put such an elaborate set of gardens and impressive booklet together.

- I am always impressed by the thoroughness of the printed tour guide and the website, as well as the enthusiasm and helpfulness of everyone involved.

- The tour is awesome just the way it is. The fact that it is free is so wonderful. So many people can become educated about native plants.

- The ease of the maps, the descriptions, the photos on the website; all were well-done. Everything was SUPER well-organized.

**Tour Survey and Evaluation**

Two surveys were offered to the tour's pre-registered participants. The first was available as part of the registration process. Below are some statistics taken from this survey.

The 2013 tour attendees were highly motivated to learn new gardening techniques. When asked what they would like to learn from the tour the majority of respondents (83%) wanted to learn how to select native plants; 58% wanted to learn how to conserve water; 56% wanted to learn how to garden for wildlife; 33% percent wanted to learn how to reduce pesticide use; 33% wanted to learn how to remove their lawns; and 23% wished to learn about composting.

| What do you want to learn from the tour? | **2012 Responses** | **2013 Responses** |
|---|---|---|
| How to select native plants | 72% | 83% |
| How to reduce water use | 51% | 58% |
| How to garden for wildlife | 51% | 56% |
| How to reduce or eliminate pesticide use | 30% | 33% |
| How to replace a lawn with a garden | 30% | 33% |
| How to compost | 19% | 23% |

**Evaluations**
There was a return of 475 registrant evaluations. 98% of those filling out the evaluations rated the tour "Excellent" or "Very Good."

This year 70% of the registrants were repeat visitors, and 30% were attending the tour for the first time.

**Motivation and Behavior Change**
The registrant evaluations were split up into two groups—those who had attended the tour before, and those who had not. The data for Repeat Registrants and First-Time Registrants was tabulated separately. Both of these categories are discussed below.

**Repeat Registrants**
72% of registrants who had attended a previous Bringing Back the Natives Garden Tour, and who filled out the evaluation form, said they had changed their gardening practices because of their participation in the Bringing Back the Natives Garden Tour.

The first column below shows the percentages of the repeat registrants who changed their gardening behaviors after attending the Bringing Back the Natives Garden Tour. The second column shows the percentage of repeat registrants who plan to change their gardening behaviors.

Evaluations of repeat registrants from the 2013 tour showed that after attending a prior Bringing Back the Natives Garden Tour: 19% of respondents had incorporated natives into their gardens (thereby reducing herbicide use and conserving water); 13% were encouraging wildlife with plant choices; 14% had grouped plants by water needs and incorporated drought-resistant plants into their gardens; 10% had increased the density of plantings to out-compete weeds (reducing herbicide use and conserving water); 10% were tolerating some insect damage; 8% had begun mulching; 10% had amended their soil; 8% had reduced the size of their lawn; 6% had reduced or eliminated pesticide use; 10% had installed efficient irrigation; 3% were grasscycling; 3% were composting; and 4% had reduced the amount of hardscape in their gardens.

Repeat visitors were highly motivated to make changes in their gardens. When asked what they planned to do: 38% planned to increase the density of plantings to out-compete weeds; 29% to group plants of similar water needs; 25% to install efficient irrigation; 20% to encourage wildlife; 21% to reduce the size of their lawn; 18% to incorporate native plants into their gardens; 18% to mulch; 11% to minimize hardscapes; 12% to compost; 16% to amend their soil with compost;

13% to tolerate some insect damage to plants; 8% to grasscycle; and 6% to reduce or eliminate pesticide use.

**How do you manage your garden? (This information was taken from evaluations filled out by repeat registrants.)**

| ITEM | Began after participation in a previous BBTN Tour | Plan to do this |
|---|---|---|
| 1. Reduce/eliminate insecticide/ herbicide use. | 6% | 6% |
| 2. Increase the density of plantings to out-compete weeds. | 10% | 38% |
| 3. Encourage birds, butterflies, etc. with plant choices, food, shelter, and water. | 13% | 20% |
| 4. Tolerate some insect damage to plants. | 10% | 13% |
| 5. Incorporate native plants into our garden. | 19% | 18% |
| 6. Group plants of similar water needs. | 14% | 29% |
| 7. Incorporate drought-resistant plants into our garden. | 13% | 18% |
| 8. Install efficient irrigation (such as drip, timers, soaker hoses). | 10% | 25% |
| 9. Grasscycle (leave grass clippings on the lawn). | 3% | 8% |
| 10. Reduce the size of our lawn. | 8% | 21% |
| 11. Mulch with leaves, grass, wood chips, etc. | 8% | 18% |
| 12. Amend soil with compost. | 10% | 16% |
| 13. Minimize hardscapes (patios, decks). | 4% | 11% |
| 14. Compost yard waste and kitchen scraps at home. | 3% | 12% |

**First-time registrants**
The tour was highly motivating to the first time registrants who completed the evaluation. 58% planned to incorporate native plants into their gardens; 58% of first-time registrants responded that they planned to increase the density of plants, thus helping to out-compete weeds and reduce water use; 50% of first time registrants planned to group plants by water needs; 43%planned to encourage wildlife; 42% planned to incorporate drought-resistant plants into their gardens; 32% planned to reduce the size of their lawns; 35% to install efficient irrigation; 31% planned to mulch; and 32% to amend their soils; 16% to compost kitchen scraps and yard waste; 19% planned to tolerate some insect damage; 15% planned to reduce or eliminate pesticide use; and 14% planned to reduce the amount of hardscape in their gardens.

**How do you manage your garden? (These are responses from first-time registrants.)**

| ITEM | Plan to |
|---|---|
| 1. Reduce/eliminate insecticide/herbicide use. | 15 |
| 2. Increase the density of plantings to out-compete weeds. | 58 |
| 3. Encourage birds, butterflies, etc. with plant choices, food, shelter, and water. | 43 |
| 4. Tolerate some insect damage to plants. | 19 |
| 5. Incorporate native plants into our garden. | 47 |
| 6. Group plants of similar water needs. | 50 |
| 7. Incorporate drought-resistant plants into our garden. | 42 |
| 8. Install efficient irrigation (such as drip, timers, soaker hoses). | 35 |
| 9. Grasscycle (leave grass clippings on the lawn). | 15 |
| 10. Reduce the size of our lawn. | 32 |
| 11. Mulch with leaves, grass, wood chips, etc. | 31 |
| 12. Amend soil with compost. | 32 |
| 13. Minimize hardscapes (patios, decks). | 14 |
| 14. Compost yard waste and kitchen scraps at home. | 16 |

**Number of visitors at each garden, and total number of garden visits made**

| | # AM visitors | # PM visitors | Total Visitors |
|---|---|---|---|
| **BAYSIDE CITIES** | | | |
| **Berkeley** | | | |
| California Native Bee Garden | | | 373 |
| Mary Ford and Rob Lewis | 190 | 219 | 409 |
| Mardi and Jeff Mertens | 175 | 158 | 333 |
| Christine Meuris | 175 | 204 | 379 |
| Margaret Norman and Geoff Holton | 197 | 275 | 472 |
| Glen Schneider | 189 | 198 | 387 |
| | | | |
| **El Cerrito** | | | |
| Donna Bodine | 138 | 96 | 234 |
| Irene Kiebert and Michael Fischer | 118 | 98 | 216 |
| Nancy Warfield and David Gray | 169 | 187 | 356 |
| | | | |
| **El Sobrante** | | | |
| Nita Stull | 68 | 32 | 100 |
| | | | |
| **Fremont** | | | |
| Kathleen McCabe-Martin | 43 | 37 | 80 |
| | | | |
| **Hayward** | | | |
| Natalie Forrest and Douglas Sprague | 81 | 89 | 170 |
| Brenda Senturia | 69 | 83 | 152 |
| Christine Wiseman | 54 | 108 | 162 |
| | | | |
| **Oakland** | | | |
| Kate and Harry Dobbins | 93 | 173 | 266 |
| Sue Duckles and Cherie Donahue | 138 | 168 | 306 |
| Joan Lohman and Jenn Biehn | 291 | 215 | 506 |
| Tai Moses and Michael Kerner | 182 | 270 | 461 |

| | | | |
|---|---|---|---|
| **Richmond/Point Richmond** | | | |
| Tom and Shirley Butt | 129 | 159 | 288 |
| Jocelyn and Peter Rohan | 83 | 78 | 161 |
| | | | |
| **San Lorenzo** | | | |
| San Lorenzo High School | | | 100 |
| | | | |
| **INLAND CITIES** | | | |
| **Concord** | | | |
| Debby and John Butterworth | 208 | 181 | 389 |
| Roy and Rosadelia Detwiler | 199 | 161 | 360 |
| | | | |
| **Lafayette** | | | |
| Claire and William Gilbert | 306 | 423 | 729 |
| Mary Jennings and Michael Jennings | 303 | 305 | 608 |
| | | | |
| **Livermore** | | | |
| Hannah and George Farquar | 111 | 101 | 212 |
| Darcy Horne | 125 | 51 | 176 |
| Bryan and Donna Weber | 99 | 93 | 192 |
| | | | |
| **Martinez** | | | |
| Web and Sue Beadle | | | 257 |
| Chris and Marianne Dundon | 122 | 102 | 224 |
| Nancy Salsig | 118 | 94 | 212 |
| | | | |
| **Moraga** | | | |
| Bill and Linda Dick | 163 | 242 | 405 |
| Al Kyte | 205 | 197 | 402 |
| | | | |
| **Orinda** | | | |
| Barbara Leitner | 124 | 166 | 290 |
| Susan and Willy Mautner | 164 | 182 | 346 |
| Elizabeth O'Shea and Richard Howard | | | 370 |
| Bob and Stephanie Sorenson | 279 | 304 | 583 |

| | | | |
|---|---|---|---|
| **Pleasanton** | | | |
| Beth Clark | 80 | 77 | 157 |
| | | | |
| **Walnut Creek** | | | |
| Meg McShannic and David Wallace | 248 | 227 | 475 |
| Nancy Wenninger | 244 | 289 | 533 |
| **TOTAL** | 5680 | 6042 | 12,831 |

* The number of morning and afternoon visits does not equal the number of total visits, as some gardens reported only total visits; not the breakdown.

***When planning for a year, plant corn. When planning for a decade, plant trees.***

***When planning for life, train and educate people.***
***(Chinese proverb)***

**Below are comments from garden tour attendees, either taken from registrant evaluation forms, or received via e-mail.**

- The tour was really superb, as usual.
- I love the El Cerrito yard on Everett; last year this yard inspired me to sheet mulch my lawn, and now I am offering my own garden for the 2014 Tour!!
- The Bringing Back the Natives Garden Tour was excellent in every way.
- This is the most organized garden event of the year anywhere, hands down! The book is invaluable! I refer to each years book throughout the year when reflecting on the gardens I visited and each time I look back at the description or my notes in the margins, I remember something that's new to me.
- I have a tiny front lawn (400 square feet) and the grass is not doing well, no matter what I do to it. Attending the garden show really got me thinking about replacing the grass with a tiny native garden rather than resodding. Thank you.
- The guide book is very well thought out and extremely useful.
- Volunteers were knowledgeable and friendly, the signage was helpful and the directions were clear. This was my first garden tour, so I don't have anything to compare it to. Nice job!
- The tour is wonderful. What an asset to this area to have something so worthwhile and yet be free.

- I was really impressed with how nicely this event is organized, and really appreciated that the plants all had identifying markers.
- Thanks for this wonderful event. We particularly liked having a chance to meet the landscape designer at one of the gardens!
- The Tour was well-organized and well-run. Thank you for the gift you have given us all!
- I look forward to this event every year - lots of new ideas, and plants to try.
- I think you do a wonderful job and I appreciate the enthusiasm you are generating for more sustainable landscaping.
- The Tour is super-organized, interesting, educational, and a must-do spring event for anyone who has a garden, wants one, or appreciates them, and the gardeners who create them.
- The booklet was very well done – it had all of the information I needed. Signing up was easy and efficient. Volunteers were friendly, helpful. A great job!
- Excellent job. I am always impressed with the organizational skills of the people putting this tour together, and the very detailed Tour booklet. The volunteers at the sites are always very pleasant and very knowledgeable about the plants. A+! Thank you for a great day.
- This tour is such a good service toward educating people on the variety and practical uses of native plants. Thank you so much for Bringing Back the Natives!
- Thank you very much for organizing this outstanding event.
- I always look forward to attending this yearly tour to see if I can incorporate any ideas into my garden.
- I LOVE the tour! Really, it is so amazing. The gardens are very inspirational, the owners who volunteer their time and gardens and allow so many people to traipse through them and ask questions - are kind, generous and gracious with their time and property, and the volunteers and landscapers present are very helpful and kind. My friend had never been on the Bringing Back the Natives Tour and was very inspired by what she saw. She took lots of photos of plants and their botanical names, to be able to review and consider for her garden. Thanks so much for another GREAT tour!
- Another excellent Tour. Thank you and all the volunteers for all your hard work.
- The booklet was a goldmine of information.
- Thank you very much! It's obvious that so much passion and hard work went into the whole enterprise. Kudos to the organizers and volunteers, both the gardener/hosts and the "docents". The Tour was really well organized, including the easy-to-follow online description of the gardens as well as the tour booklet.
- I look forward to this tour all year! Everyone is very friendly and

knowledgable and willing to share expertise and encouragement.

- Great job! I look forward to this again next year.
- Great hosts and volunteers, very knowledgeable and friendly.
- The book was very helpful. I really enjoyed the places I visited and will be back again next year.
- Everyone was helpful, friendly and there were lots of volunteers at each location. It was really nice to have folks throughout the garden to answer questions.
- Sue Duckles' talk was very helpful. She told it like it was but was very encouraging. She gave wonderful suggestions on how to get started (and how to not get overwhelmed) by breaking down the work that needs to be done. I have a lot of ivy to remove but I feel like I can get it done!
- Loved it. Keep up the good work.
- This tour opened up a whole new world of possibilities for my garden.
- The garden volunteers and owners were all so gracious.
- Well done! Enthusiastic volunteers at every house!
- The tour was so inspiring! Thank you to the hosts and volunteers.
- Another amazing tour!
- What a tremendous amount of work. It was phenomenal.
- Please continue all the hard work that it takes to do this event. It is so enjoyable and such a good opportunity to learn more about California natives. Thank you for all you do.
- Very organized and friendly people. Enjoyed the tour immensely.
- THANKS for all of the work to put this on. I always learn so much on the tour and find things, even if in tiny steps, to apply to our garden.
- Thank you for your efforts in pulling this together!
- Excellent; you provide a great service to the Bay Area.
- I like that you can talk with the owners of the gardens who are happy to share their knowledge.
- The owners and volunteers were extremely helpful, approachable and knowledgeable.
- I thought it was wonderful! I learned soooo much; all the gardens I visited had such knowledgeable people, who were so willing to answer questions. What you are doing by making this information available will help us move in a more conscious direction.
- I appreciate the various homeowners opening up their gardens to the public. It is a wonderful and educational tour.
- The garden owners are very generous and gracious in opening up their gardens to outsiders. The Bringing Back the Natives Tour is a wonderful way both introduce and reinforce native planting practices to the community. The volunteers involved in the Tour -- from the garden owners to those helping to collect tickets -- are helpful, knowledgeable, and definitely passionate about a

more sustainable approach to gardening.

- A great thing being done and bit by bit converting people to better practices. As water becomes more scarce, expect more folks looking at this.
- Appreciated the labeling of plants. The brochure is beautiful. All the gardens I visited were beautiful and had very friendly, helpful hosts and hostesses. First rate tour.
- We deeply appreciate the effort that goes into making the tour happen, as well as the gardeners who graciously allow us to tramp through their gardens and all the helpful volunteers. It's a wonderful event - thank you!
- What a beautiful offering Kathy Kramer, the volunteers, and the hosts make to the community. Inspiring, beautiful, and helpful! Thank you to all!
- Really love it! Helps me get ideas, see mature plants, and learn about plants I haven't seen before. A really enjoyable day!
- The tour is very well organized and a wonderful opportunity to learn, enjoy and admire. I appreciate that native plants are receiving the attention they deserve. Thank you so much.
- I look forward to the tour every year, and recommend it to people I meet during my docent duties at the U.C. Botanical Garden. The tour compliments the U.C. garden because it shows practical applications of native plants.
- Kudos on an extremely-well organized event and a very informative website!
- Wonderfully organized tour. Well staffed. Great variety of gardens and habitats.
- Thanks for continuing to produce this garden tour. It is a wonderful & educational event!
- I really enjoyed the tour. Loved being able to buy plants that I knew I wanted to incorporate.
- Well organized tour! Nice t-shirts on the volunteers! It was a pleasure to attend again.
- Volunteers very friendly, hosts very eager to answer questions. Well thought out and great planning.
- This is such a wonderful opportunity to become inspired by fellow native plant enthusiasts. I look forward to this tour every year!
- Fabulous job once again. I want to compliment the booklet organization & detail. In planning my day I spend a great deal of time checking the maps & gardens at a glance as well as the details in the write ups. Thanks again for all your hard work that I so enjoy and appreciate. I even enjoy reading the details later after the tour day is over.

| Attachment 1 | Contra Costa Community Watershed Stewardship Grant | Distribution Budget 2012-2013: |
|---|---|---|

| Applicant | Project | Requested | Percentage of project in Unincoorporated County | Awarded | Percent of Requested Amount Funded |
|---|---|---|---|---|---|
| CCRCD | Rodeo Creek Community Watershed Stewardship Program | $18,440 | 90% | **$ 16,000** | 87% |
| CCRCD | Alhambra Watershed Council watershed coordinator | $16,920 | 90% | **$ 11,000** | 65% |
| SPAWNERS | San Pablo Creek Watershed Stewardship Program | $15,000 | 85% | **$ 10,000** | 67% |
| Lunchbox International | New Leaf: A Sustainable Living Collaborative Rainwater Harvesting Systems | $20,000 | 65% | **$ 2,500** | 13% |
| Friends of Marsh Creek Watershed | Water pollution prevention, restoration of Marsh Creek Watershed, and expantion of FOMCW | $20,000 | 25% | **$ 18,000** | 90% |
| Citizens for a Greener El Sobrante | Expantion of membership base and rain garden installation | $20,000 | 100% | **$ 2,500** | 13% |
| CREEC | Friends of the Carquinez Watershed Community Stewardship Program | $14,500 | 70% | **$ 6,500** | 45% |
| CCRCD | Walnut Creek Watershed part-time coordinator | $19,840 | 15% | **$ 18,000** | 91% |
| Bring Back the Natives Garden Tour | Garden Tours | $5,500 | 100% | **$ 2,500** | 45% |
| Save Mount Diablo | Creek Restoration and habitat enhancement projects in Kirker, Marsh, and Hess Creeks | $10,000 | 100% | **$ 2,500** | 25% |
| Earth Team | Aqua Team | $10,000 | 50% | **$ 8,000** | 80% |
| Groundwork Richmond | Tree Planting Program | $12,000 | 5% | **$ 2,500** | 21% |
| The Dorothy M Sakasaki Environmnetal Endowment Fund and Mount View Sanitary District | The McNabney Marsh Toxic Algae Bloom Research Project | $11,850 | 100% | **$ -** | 0% |
| Total | | **$194,050** | | **$ 100,000** | |

Attachment 7.4

# Contra Costa Clean Water Program Youth Outreach Implementation Protocol

**May, 2013**

# Getting Started…

# Set Up the Booth

✓Sign up sheet that informs the participants that any picture taken may be shared online

✓Camera and a laptop or a tablet that runs on Windows 8

✓Props

✓Green Screen Backdrop

✓Table and two chairs

✓Poster

# Set Up the Green Screen Backdrop

- ✓ Assemble green screen
- ✓ Try to find an even light source:
  - ❑ Outdoors on a sunny day works best
  - ❑ If inside, assemble lights and reflectors to distribute light evenly
  - ❑ Make sure screen is straight and pulled tight

**There should be enough room to move in front of the backdrop.**

# Lights…Camera…Action!

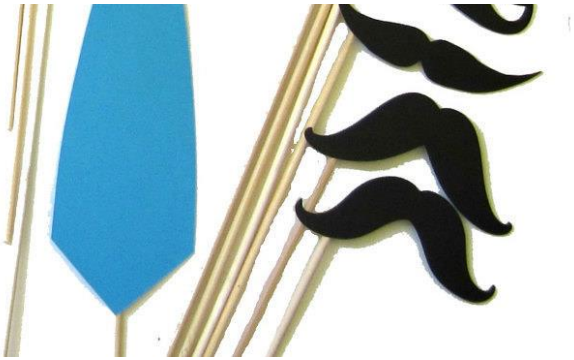
**Invite participants to pose in front of the backdrop for their picture.**

**Encourage them to be expressive and inventive!**

Encourage participants to use props in a creative way!

Props suggestions:

- Wigs
- Feathers
- Hats
- Moustache
- Glasses
- Jewelry



Explain how the photos will look once they're edited, use the poster to show it.

# Take a Picture

## Good

Green screen covers entire photo and objects

## Bad

The object extends outside the green screen

# Things to avoid in the pictures

**No obscene poses**

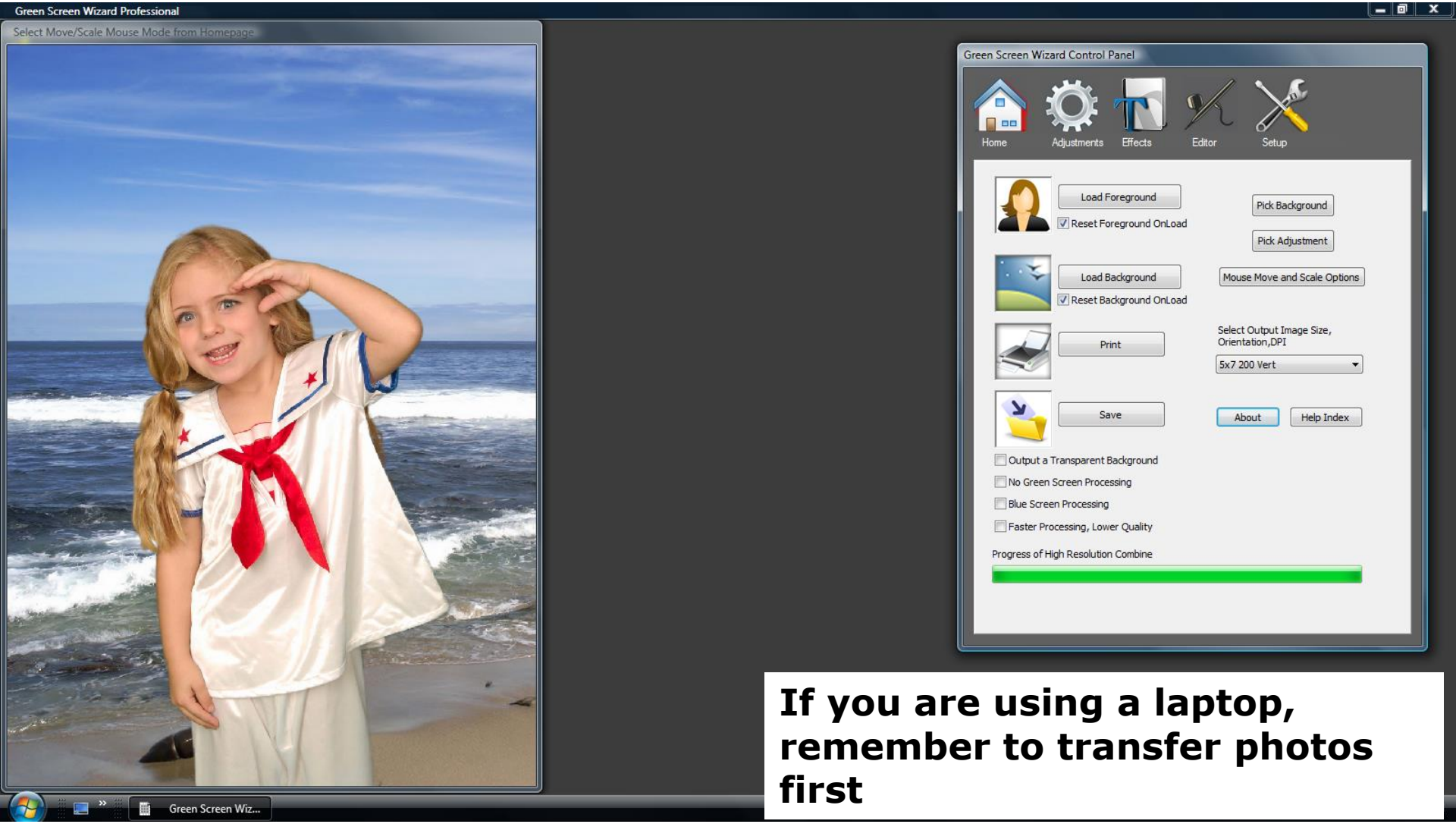
**No nudity**

**No inappropriate gestures**

**No gang signs**

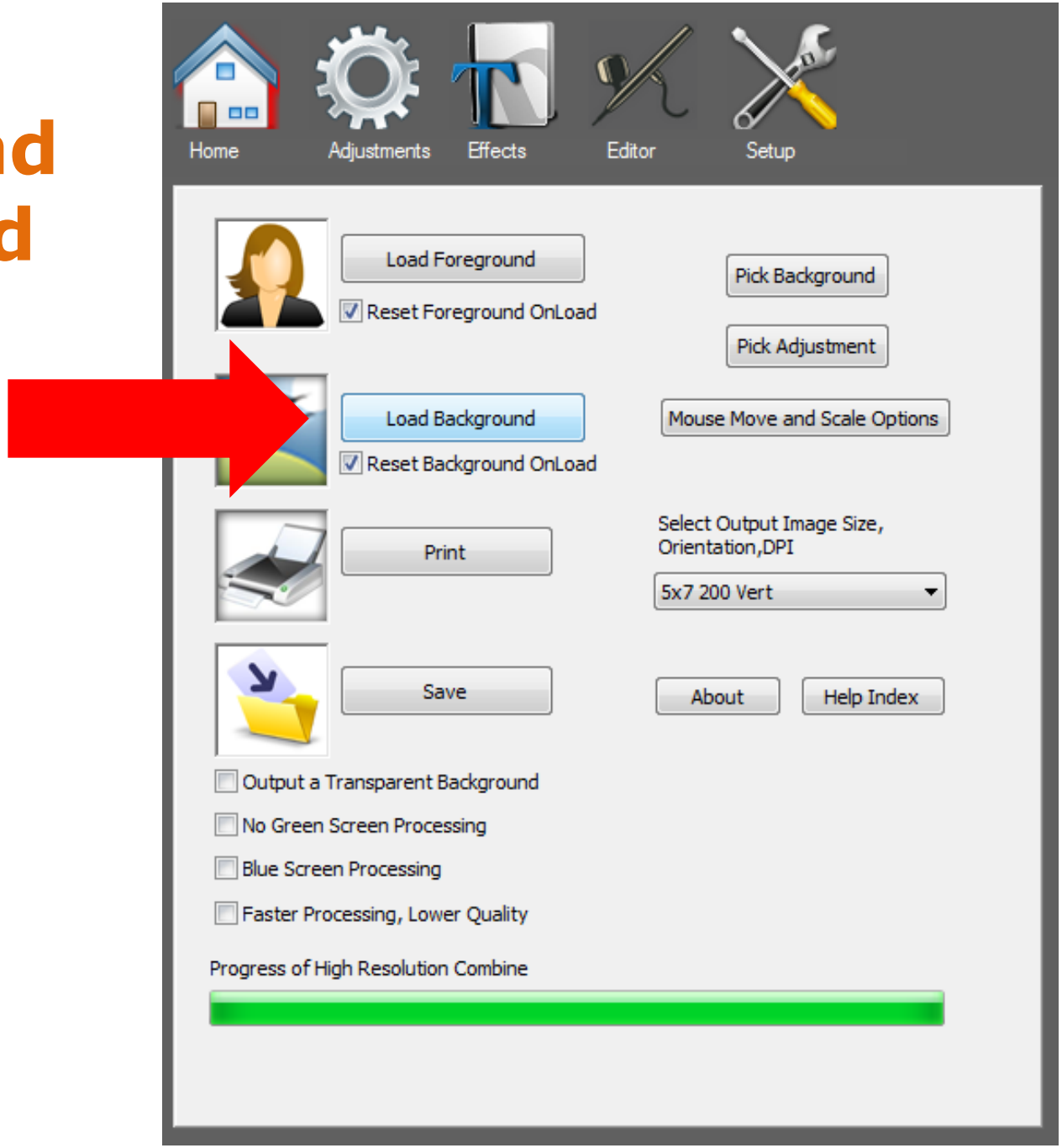
# Editing Photos

# Step 1: Load Green Screen Wizard

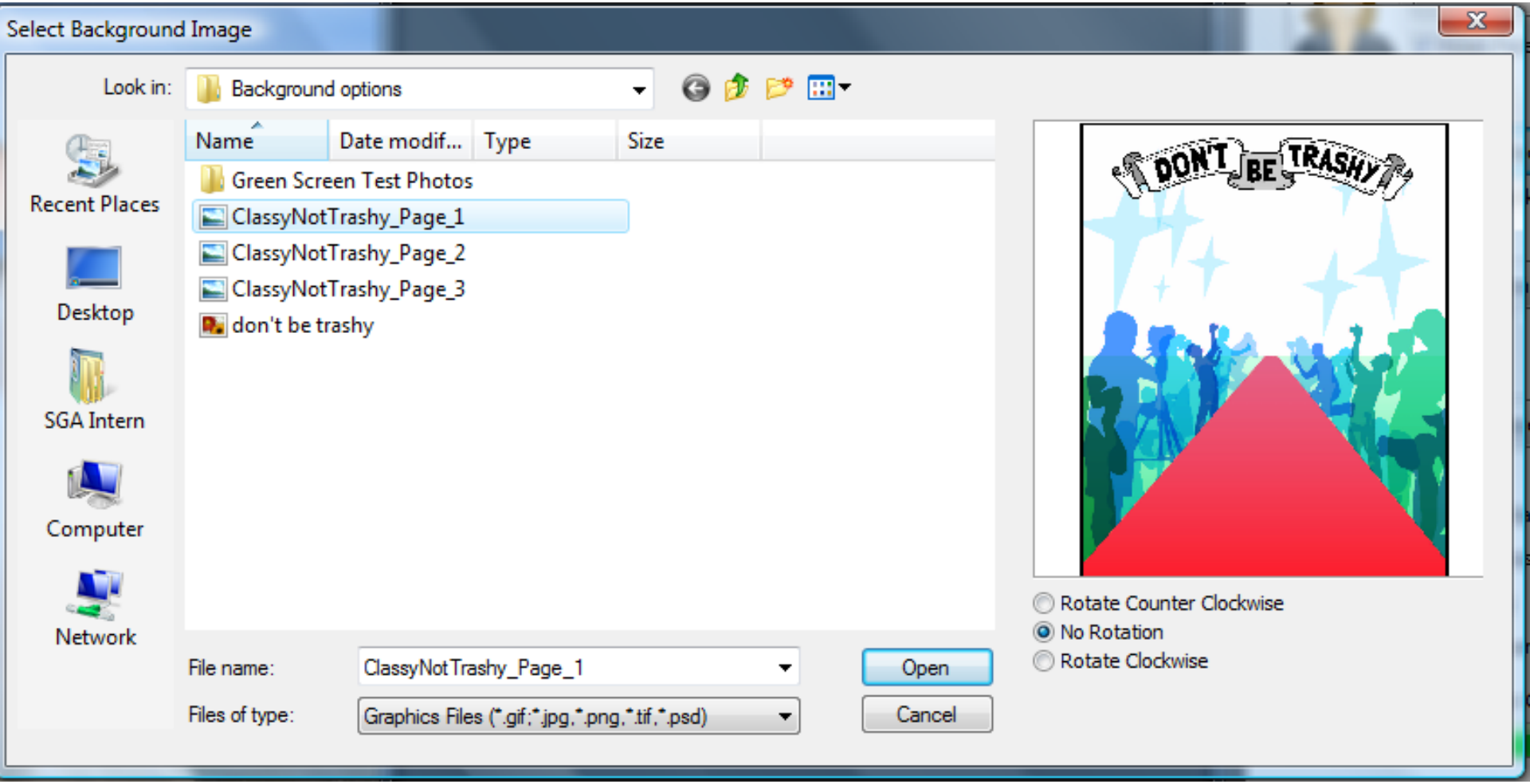



**If you are using a laptop, remember to transfer photos first**

# Step 2: Load Background



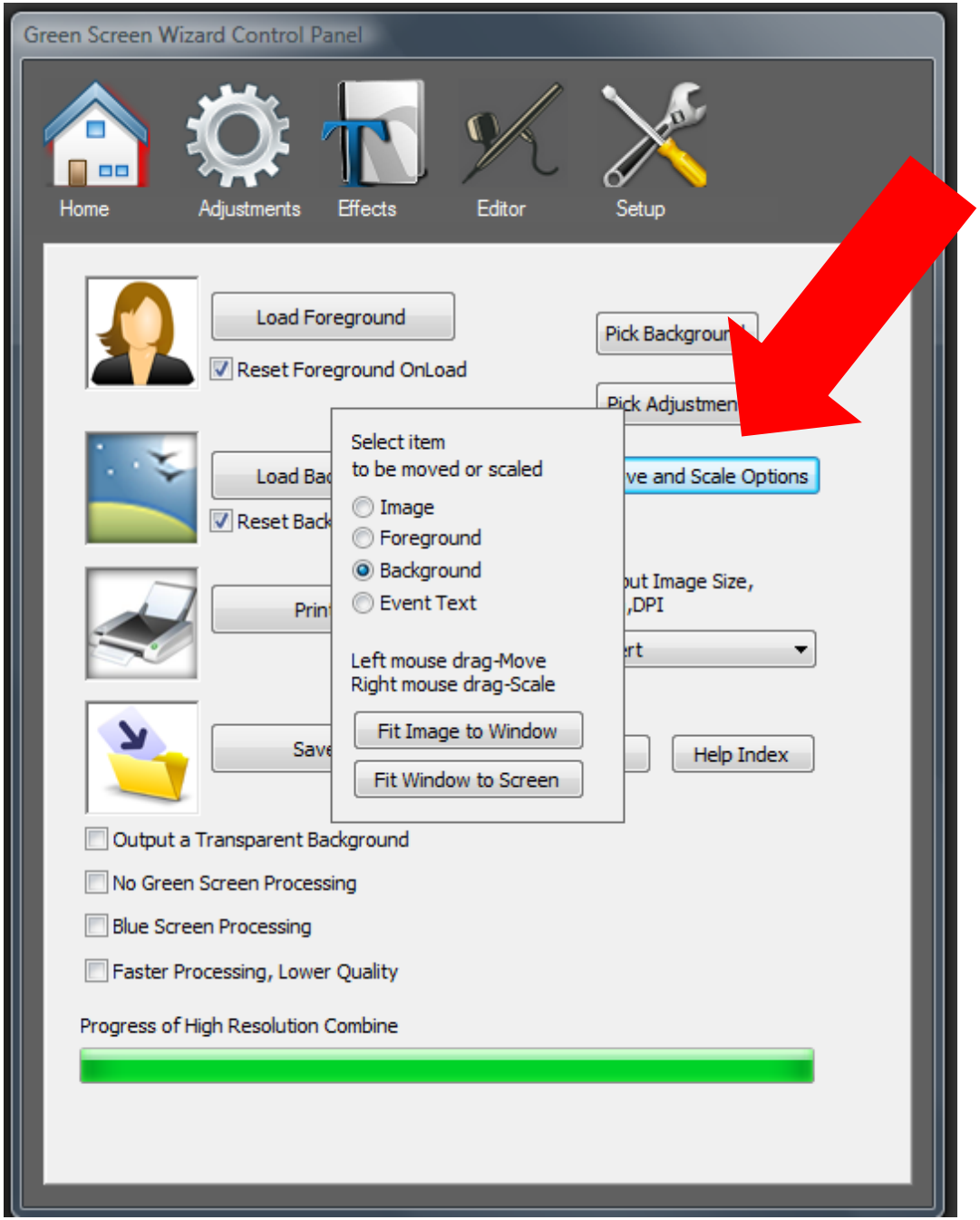
# Select background from the files



# Background Selected

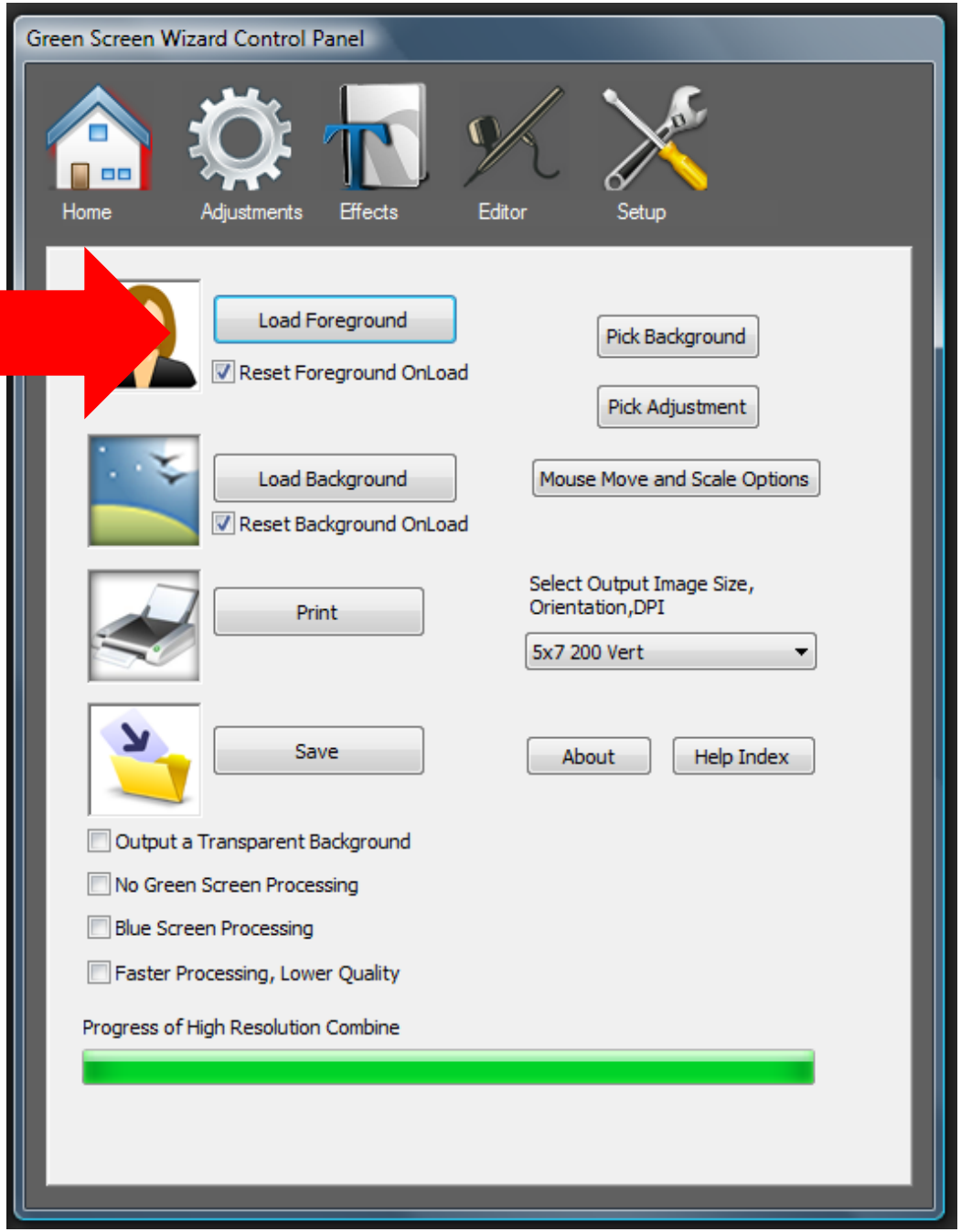
# Step 3: Center Background Image

- Select : *Move and Scale Options*
- Then select: *Background*
- Use mouse and move image until background image/text is centered

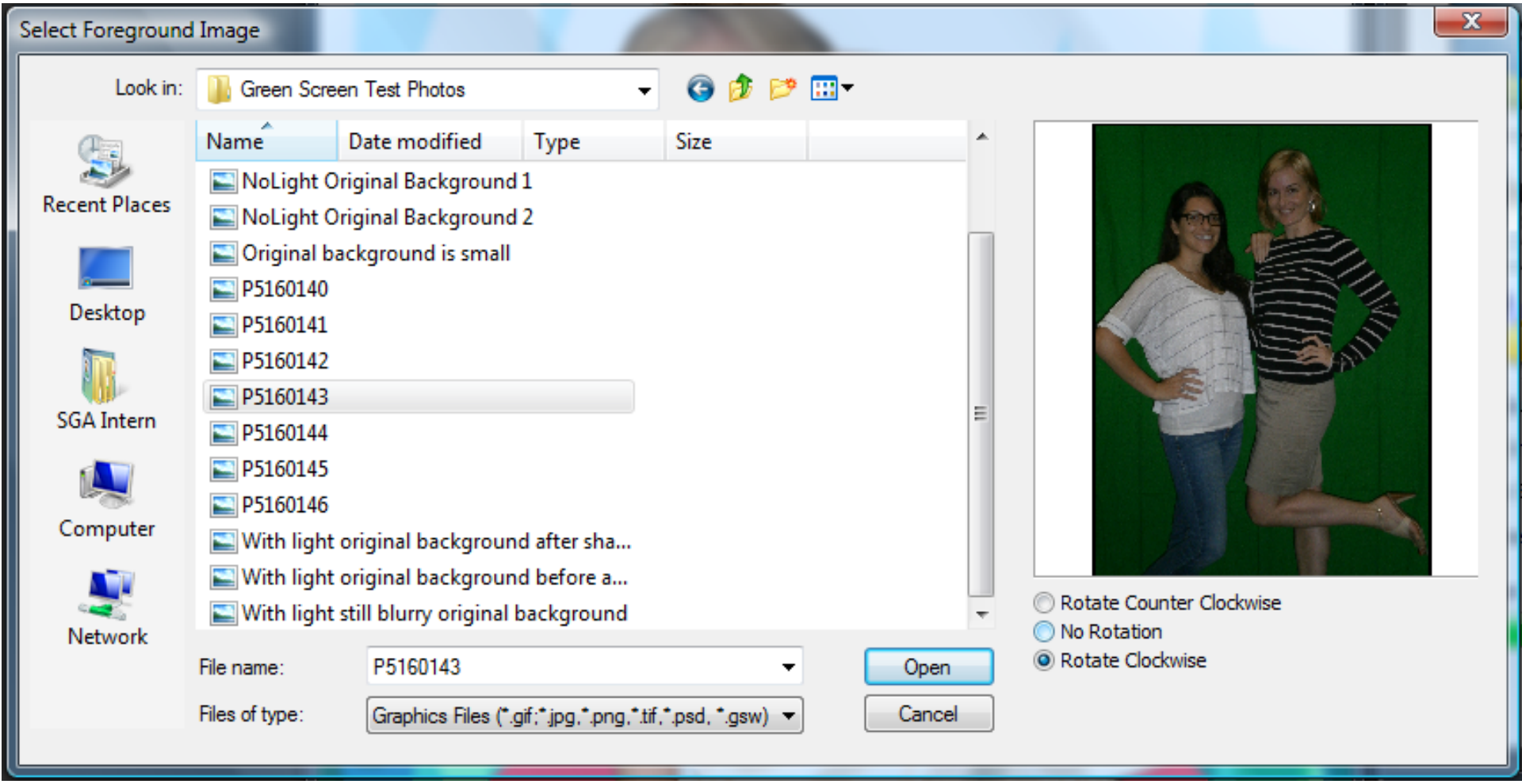


# Background Centered

# Step 4: Load Foreground



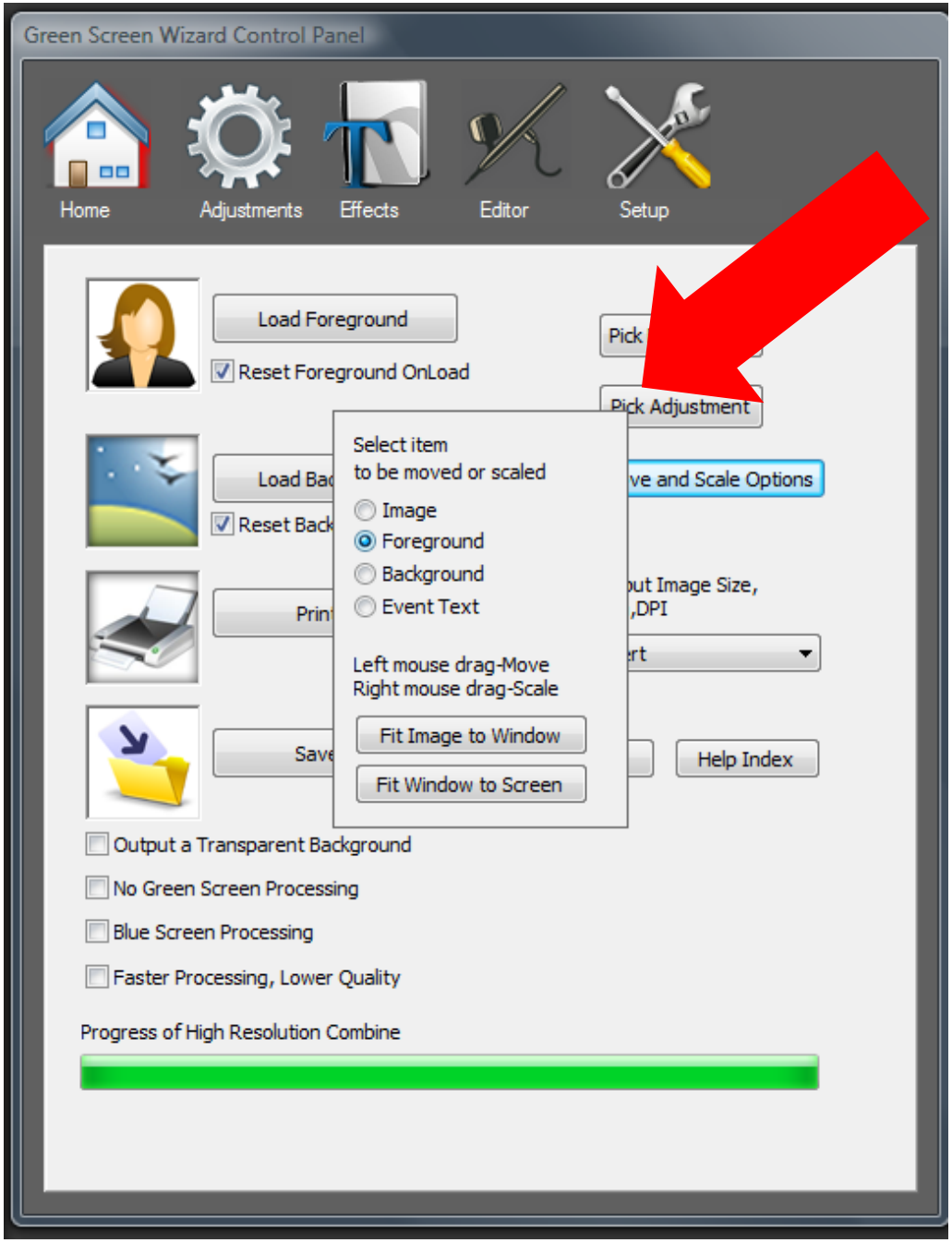
# Select a picture from the files



# Foreground Image Selected

# Step 5: Center Foreground Image

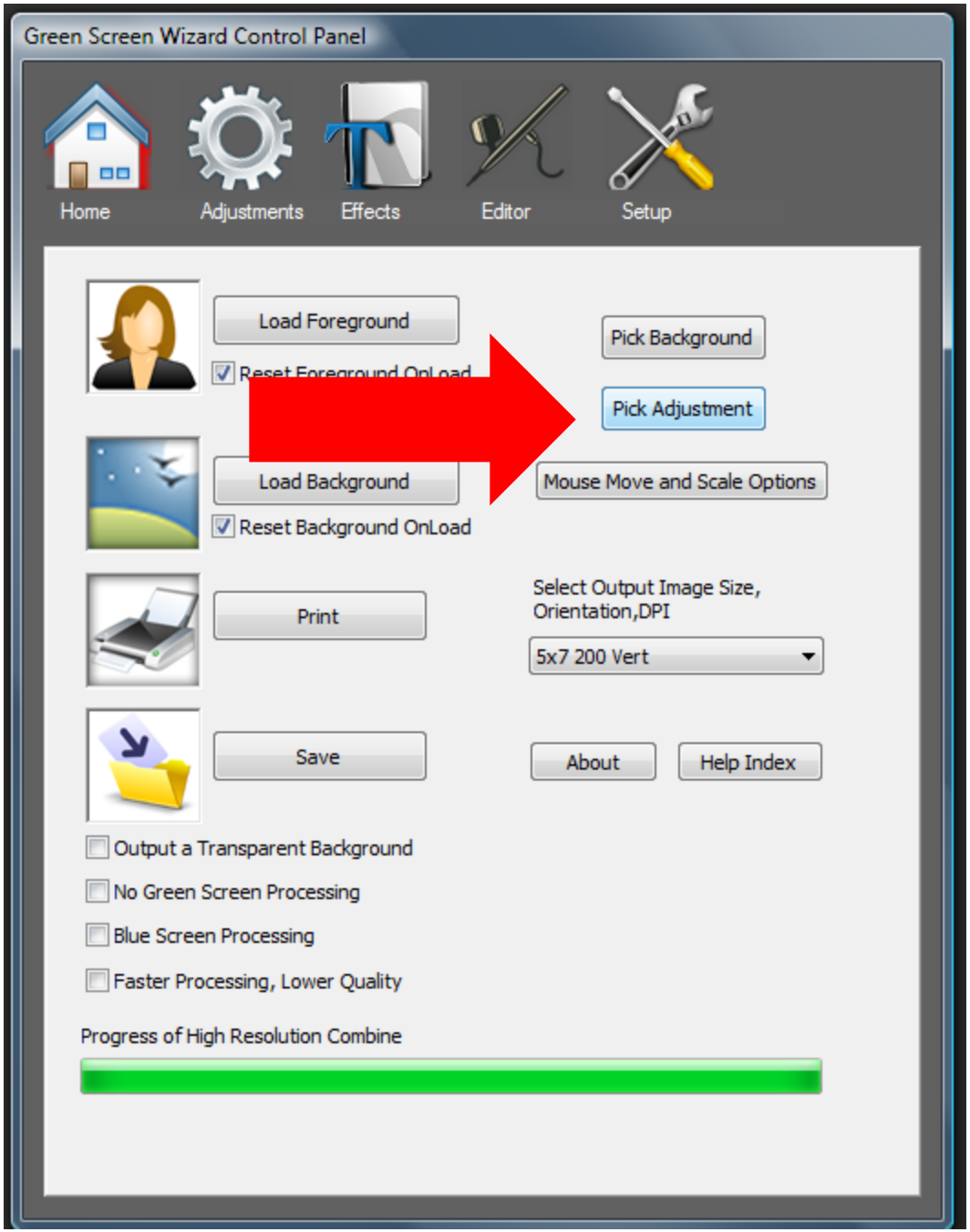
- Select : *Move and Scale Options*
- Then select: *Foreground*
- Use mouse and move image until foreground image is centered on background



# Centered Foreground Image

# Step 6: Eliminate Shadows

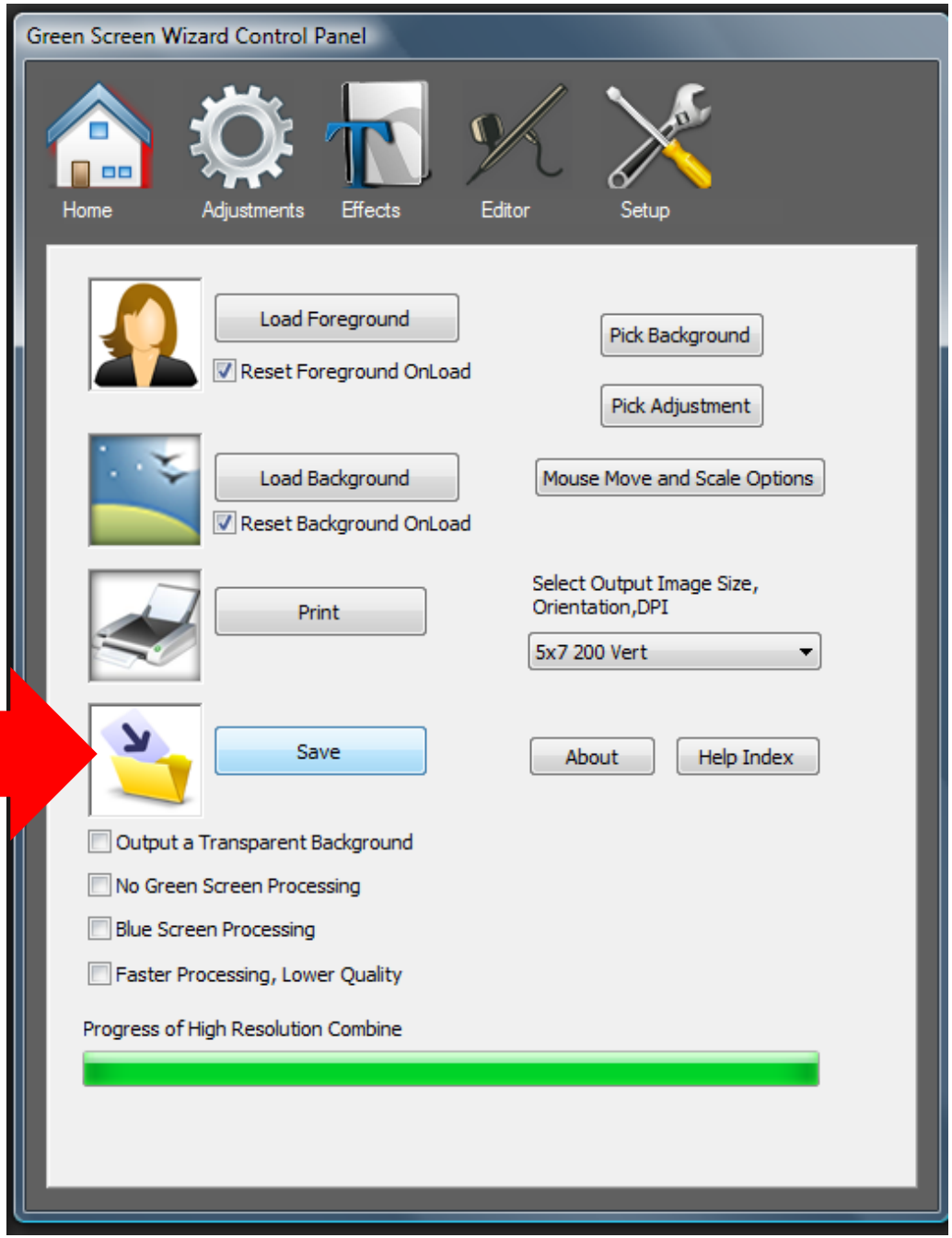
Click **"Pick Adjustments"**



# Select the most clean and crisp image

# Adjusted Image

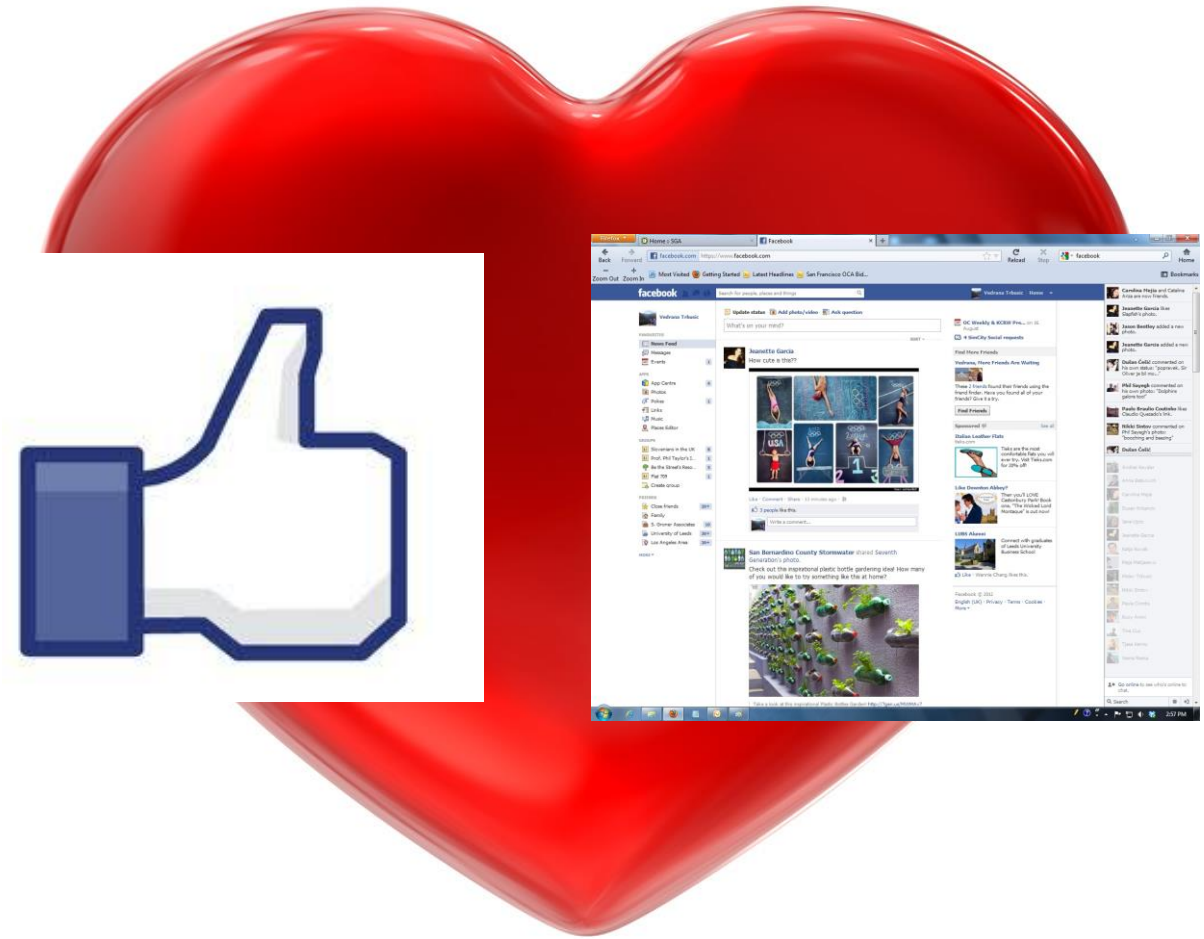
# SAVE!


Green Screen Wizard Control Panel
Home
Adjustments
Effects
Editor
Setup
Load Foreground
Reset Foreground OnLoad
Pick Background
Pick Adjustment
Load Background
Reset Background OnLoad
Mouse Move and Scale Options
Print
Select Output Image Size, Orientation,DPI
5x7 200 Vert
Save
About
Help Index
Output a Transparent Background
No Green Screen Processing
Blue Screen Processing
Faster Processing, Lower Quality
Progress of High Resolution Combine

Share the photos on your website or post them on Facebook
LOGOrunner.com

**Last but not least – ask them to show us some love! Invite the participants to like their photo on Facebook and share it on their wall!**

Download more graphics at www.psdgraphics.com



Our Water - Our World

Our Water Our World

Contra Costa County Integrated Pest Management Store Partnership Program

**Final Report 2012 - 2013**

PROGRAM OVERVIEW

Eighteen stores participated in again in this year's partnership program. This program was overseen by Debi Tidd, and sub-contractors, Steve Griffin and Annie Joseph, worked at some stores and events.

A few changes were made to the roster of store partners this year. Three new stores were added to this year's contract: Home Depot in Concord, Ace Hardware in Brentwood, and Orchard Supply Hardware in Pinole. Ace Hardware in Walnut Creek was dropped from the list of active stores. In addition, the Urban Farmer Store and Annie's Annuals (both in Richmond) were dropped from the contract, but not the Program. The City of Richmond took over managing the fact sheets/shelf talkers and outreach events for the Richmond stores.

This year, the Our Water Our World Program was part of an EPA grant called "Greener Pesticides for Cleaner Waterways." This grant paid for IPM advocates to offer OWOW program services to a small number of stores. Two of these stores are part of the Contra Costa OWOW program: Orchard Supply Hardware in San Ramon and Ace Hardware in Concord. As a result, the bulk of the hours spent at these stores were not charged to this contract. This allowed us to spend more time mentoring stores with repeat visits and additional outreach events.

Here is an overview of the basic components of the program:

- Program Administration: Tasks here include ordering and picking up training materials, making copies for training packets and handouts and creating training packets, preparing materials and powerpoints for store trainings, making labels, researching pests & products and following up on questions and concerns from store staff, and writing up reports.

- Store set-ups: Once the bulk of the pesticide products are received by stores, all less-toxic products are labeled with OWOW shelf talkers and fact sheet racks are set up.

- Store trainings: Staff at partner stores are encouraged to attend store trainings with detailed information about pesticides and water pollution, identification of beneficials and pests, and understanding how to use less-toxic products.

- Store mentoring: On continued visits to stores we add or replace shelf talkers, refill fact sheet racks, set-up end caps and displays, talk with store staff about new products and pests, make recommendations about new products, research and answer any staff questions, and work with customers in-aisle.

- Outreach Events: Public events include both tablings and classes for the public to answer questions and help with product selection.

NUMBERS AT A GLANCE

- 18 stores participating in the partnership
- 18 store set-ups with shelf talkers and fact sheet racks
- 11 store trainings provided to 10 key stores.
- 85 staff trained at formal staff trainings; 20+ additional staff trained in-aisle during informal, mentoring visits.
- 5 outreach/tabling events (approximately 250+ people)
- 8 additional outreach/publicity events (see locations and numbers in additional programs and publicity below).

PARTICIPATING STORES

Here is the complete roster of participating stores:

- Ace Hardware, 1530 Contra Costa Blvd., Pleasant Hill
- Ace Hardware, 3610 Pacheco Blvd., Martinez
- Ace Hardware, 4451 Clayton Rd., Concord
- Ace Hardware, 3211 Danville Blvd., Alamo
- Ace, 8900 Brentwood Blvd., Brentwood
- OSH, 1041 Market Place, San Ramon
- OSH, 2050 Monument Blvd., Concord
- OSH, 5400 Ygnacio Valley Rd., Concord
- OSH, 1440 Fitzgerald Dr., Pinole
- Navlet's Garden Center, 1555 Kirker Pass Rd., Concord
- Navlet's Garden Center, 2895 Contra Costa Blvd., Pleasant Hill
- Navlet's Garden Center, 800 Camino Ramon, Danville
- Navlet's Garden Center, 6740 Alhambra Valley Rd., Martinez
- Orchard Nursery and Florist, 4010 Mt. Diablo Blvd., Lafayette
- Moraga Garden Center, 1400 Moraga Rd., Moraga
- McDonnell Nursery, 196 Moraga Way, Orinda
- Sloat Gardens, 828 Diablo Rd., Danville

- Home Depot, 2090 Meridian Park Blvd., Concord

PROGRAM ASSESSMENT

There are several assessment tools built into the program to help us determine how to revise the program, which products/pests we need to promote, and how effective the program is at reaching the public.

- Evaluations

  Each employee attending a training program is asked to fill out an evaluation. These evaluations help us to determine their current knowledge of water quality issues and less-toxic products, how helpful the training and materials are, and what they would like more information on. The results of these evaluations can be seen at the end of this report, and were overwhelmingly positive.

- Numbers of customers reached by tablings and special events

  We keep track of the customers we reach at tablings, classes and events, which products/pests they ask about the most, and which products we are steering them toward as we work with them in-aisle. More information on tablings and events is included at the end of this report.

- Sales of less-toxic products

  A few of the stores in our program will allow us access to their sales numbers so that we can see if there has been an increase in the sale of less-toxic products that we promote. Here are some numbers for this year's sales:

  - OSH: a 29% increase in less-toxic product sales
  - Home Depot: a 22%-25% increase in less-toxic product sales
  - Sloat: increased sales in less-toxic products include weed block, neem oil, traps, natural lawn food, and biological pest management products (bacillus).

Less-toxic products end cap display at Orchard Nursery in Lafayette.

## PROGRAM COMPONENTS

### STORE SET-UPS:

Once stores receive the bulk of their pesticide products for the Spring season, we are able to label the less-toxic products with OWOW shelf talkers. Each talker has a printed label with the name of the specific product. Including the name of the product is essential so that as products are moved around on shelves, the label does not end up under a product not considered less-toxic. Products are labeled using the "Less-Toxic Product List" developed by OWOW, which will be revised again this year. In addition to pesticides and fertilizers, other sustainable products are labeled, including weed block, caulk, mouse/rat traps, mulch, etc.

Shelf talker under product

Sample of shelf talker

Store set-up at OSH, San Ramon store including fact sheet rack and shelf talkers.

STORE TRAININGS:

We provided trainings to 10 key stores this year. Trainings include information on:

- the tie between pesticides, run-off and water quality
- identification of beneficials in the landscape as well as common and new pests/diseases and invasive plants
- techniques for managing specific pest problems
- tips and techniques for using/selling the less-toxic products
- correct disposal of toxic materials

Each training participant receives a packet of information and resources including background on the OWOW program and IPM techniques, information on how products work and how to read a pesticide label, laminated bug guides, a chart for identifying pest damage, pest fact sheets, *The 10 Most Wanted Bugs in Your Garden* brochure, and a list of resources and helpful websites.

Stores that participated in trainings were also given a laminated poster on identifying good bugs to post in the store, laminated suggestions for rat/mouse management to post, and a copy of *Landscape Pest Identification Cards*, a laminated set of cards to help work with customers on identifying pests, diseases and beneficials.

At the end of the training, each participant is asked to fill out an evaluation form. Please see the summary of evaluations included at the end of this report.

Training at Orchard Nursery, Lafayette

Training at Ace Hardware, Martinez – 3 stores participated in this training

Training at Sloat Nursery, Danville

STORE MENTORING AND RETURN VISITS

Continued visits to each of the stores is an important part of keeping the partnership active, replacing shelf talkers, and keeping resource materials stocked and looking neat. Shelf talkers need to be added or moved as new products come in and shelves are re-arranged, and fact sheets need to be kept stocked. Some stores completely redesign their shelves during the year, and this means that we sometimes have to re-label all of the products.

During store visits, we usually work with staff to address any questions that have come up, and to introduce them to new products. We bring in resources on seasonal pests to be aware of, and any new pests that have been sighted. This also allows us time to informally train any new staff in-aisle. We also work with customers on pest management solutions and pesticide choices. For some staff questions, we need to do some research and get back to them to with answers and resources.

Another important aspect of store mentoring is helping stores identify seasonal pest problems and to help design/set up end caps of less-toxic products. This year the OWOW program worked with vendors from Kellogg and Bayer to label their less-toxic product lines on end caps in Home Depot stores.

Working with staff in-aisle at the Ace, Brentwood store

Snail/Slug product end cap at Navlet's, Concord

Yellowjacket and fly product
end cap at OSH, Pinole

OUTREACH EVENTS

This year we participated in 5 outreach events at stores working with about 250 store customers. In addition, we participated in 8 outreach events in the community (see additional programs and publicity below). These events allow us to work with the public at the point of purchase, to help them identify and solve pest/disease problems, to advise them on less-toxic products and how to use them, and to give out samples of products.

Outreach/tabling event at OSH, San Ramon

Outreach/tabling event at OSH, Concord

ADDITIONAL PROGRAMS AND PUBLICITY

A number of special events come up each year that allow us to publicize the OWOW Store Partnership program. Most of these events are not charged to the contract. These events help us to promote and strengthen the OWOW program in several ways. They allow us to:

- Promote the stores that are part of the partnership in the community for more visibility.
- Work with the public to disseminate fact sheets and information on less-toxic products
- Influence the choices store managers and buyers make in placing orders for less-toxic products for their shelves
- Provide additional information and training to store managers and staff that have not gone through a formal training
- Network with stores that would like to become a part of the store partnership program

Here are some of the events that we were able to be part of this year:

- Home Depot "Road Show" (300 participants)
  Each year Home Depot sponsors a regional event for store managers and staff, rotating groups through stations to learn about new products. We were the only non-vendor allowed to attend this event, and were able to speak with over 300 Home Depot staff members, including staff from the Concord store already in the program, and staff from all of the other Contra Costa stores.

- L & L Trade Show (3,000 participants)
  This huge trade show held each year is where stores order their pesticide products for the year. We were able to set up a booth with OWOW information, photos of partner stores, samples of less-toxic products. During the 3 days of this show, we were able to work with owners and managers of several of our partner store in Contra Costa to make recommendations for products that would meet the less-toxic criteria.

- Sloat Garden Center Vendor Night (60 participants)
  Sloat offers staff from all of its stores the opportunity to meet and learn about new products. Again, OWOW was the only non-vendor at the event, and we were able to recommend specific less-toxic products that were ordered for the Danville store that is part of our program. We were also able to make recommendations about which products should be discontinued because of toxicity.

- Bay-Friendly Landscape Maintenance Training (45 participants)
  As part of this series of classes on sustainable landscaping techniques offered to professional landscapers, we brought in an OWOW speaker to talk about less-toxic products and pest solutions.

- Contra Costa Water District Lose Your Lawn Workshop (60 participants)
  OWOW set up a table to publicize the program, answer questions on less-toxic lawn and pest management.

- El Cerrito Less Toxic Event (40 participants)
  We were able to have a table at this event co-sponsored by Contra Costa Mosquito and Vector Control with speakers on a variety of pest management topics.

- Annie's Annuals Event (40 participants)
  As part of a large, special event at Annie's Annuals in Richmond OWOW was able to set up an information table and work with both home gardeners and the staff on less-toxic solutions.

- <u>Gardens at Heather Farm Classes series on “A Sense of Place (25 participants)</u>
  Representing OWOW, I taught a Saturday class for home gardeners on less-toxic pest management strategies, the pesticide – water pollution connection, and how to identify and find less-toxic products.

L&L Trade Show

El Cerrito Less-Toxic Event

Home Depot Road Show

<u>GOALS FOR NEXT YEAR’S PROGRAM</u>

Here are some recommendations for next year’s programs:

- This year we worked with UC Statewide IPM program to develop a seasonal calendar of pests and resource materials for staff and customers. The goal this year is to help stores set up end caps and provide pest management solutions to educate customers before pests become a problem.
- We hope to have additional OWOW banners printed up and get these displayed in stores.
- We hope to work on additional ways to promote the OWOW program, promote the stores in the program, and get more visibility for the OWOW in-store materials.

Debi Tidd

dragonfly2010@hotmail.com
925-360-5425

# Summary of 2013 IPM Store Employee Training Evaluation Forms

- The training workshop was well organized and interesting.
  77% strongly agree, 23% agree

- My training manual will be a useful resource in the future.
  80% strongly agree, 18% agree, 2% neutral

- The information will help me recommend and sell less-toxic products.
  85% strongly agree, 15% agree

- The instructor was responsive to questions.
  89% strongly agree, 11% agree

- The level of detail was appropriate.
  80% strongly agree, 18% agree, 2% neutral

- Visual aids were effective.
  77% strongly agree, 23% agree

- Written materials were effective.
  71% strongly agree, 27% agree, 2% neutral

- I would recommend the training to my co-workers.
  77% strongly agree, 23% agree

- I would like to learn more about IPM methods and IPM certification.
  59% strongly agree, 28% agree, 13% neutral

What part of the training was most useful?

- Insect identification beneficials and pests (20)
- Visual aids/powerpoint (17)
- Written materials/resources (7)
- Pesticide product info (5)
- Solutions for common pests (2)
- Sheet mulching
- New pests
- Info on website trainings (2)
- All (12)

What part of the training was least useful?

- Info on on-line trainings
- Some terms I did not know.
- Passing things around during the discussion was distracting.

Did the information change your views about pesticides? How?

- Yes (48)
- No (0)
- Already recommend less-toxic (17)

When this training is held again, what changes do you suggest?

- More time/details (8)
- Condense information
- More info on products (2)
- More on new pests (2)
- More on website trainings available (2)
- Other ways staff can help promote less-toxic

Some additional comments written on evaluations:

Made me think more about environmentally friendly products.

I didn't realize how widespread the effects were.

It taught me to use more natural products in order to save our water.

It gave me a better understanding on what to recommend.

Knowing the measures that I and the community can take to reduce the pollution of our environment was wonderful.

I didn't realize how much less-toxic products we sold in the store. Will recommend it more now.

It made me more aware of the safer choices.

Focus on non-toxic products to control contamination of water.

Made me more aware of pesticides, less chemicals.

Now more cautious of what I use and what goes into the water.

Some chemicals will kill all bugs, even the good bugs.

It will help me on helping customers with less toxic pesticides for a better environment.

I really enjoyed how easy to understand the information was taught.

It reaffirmed my feeling on pesticide use – scary stuff.

It showed me different options for our customer base.

Maybe encourage/educate people to tolerate a certain amount of insect damage since most plants can survive some insect infestation – like humans with colds.

Be more careful of timing (of pesticide application).

Learned more about good bugs and bad.

Now I know there are beneficials too.

I want to be more eco-friendly and this is a start.

Made me think twice about what pesticides are the most effective.

The importance of knowing the effects of toxic pesticides and encourage natural ones.

It taught me to be more responsible in it's use.

Wanting to do well for the environment.

Learning about less-toxic products was very helpful also.  Thank you for all the helpful tips.