



## FAIRFIELD-SUISUN SEWER DISTRICT

1010 CHADBOURNE ROAD • FAIRFIELD, CALIFORNIA 94534 • (707) 429-8930 • WWW.FSSD.COM

GREGORY G. BAATRUP, GENERAL MANAGER

September 15, 2011

Mr. Bruce Wolfe, Executive Officer  
San Francisco Bay Regional Water Quality Control Board  
1515 Clay Street, Suite 1400  
Oakland, CA 94612

Attention: Ms. Jolanta Uchman, Water Resources Control Engineer

Reference: Fairfield-Suisun Urban Runoff Management Program  
FY 2009-2010 Annual Report

Dear Mr. Wolfe:

The attached FY2010-2011 Annual Report represents the Fairfield-Suisun Urban Runoff Management Program's responses to the items requested per Provision C.16 of NPDES Permit No. CA S612008 (Permit) as adopted on October 14, 2009 via Order No. R2-2009-0074. This letter also transmits by reference the BASMAA Regional Supplements to the Annual Report for FY 2010-2011.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate 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 false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Kevin A. Cullen, P.E.  
Senior Environmental Engineer

Attachment

Cc: Dale Bowyer, RWQCB

**FY 2010-2011 Annual Report**

**Permittee Name: Fairfield-Suisun Urban Runoff Management Program**

**ATTACHMENT B**

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Permittee Name: Fairfield-Suisun Urban Runoff Management Program

Section 1 – Permittee Information

Background Information			
<b>Permittee Name:</b>	Fairfield-Suisun Urban Runoff Management Program		
<b>Population:</b>	131,000 (combined)		
<b>NPDES Permit No.:</b>	CAS612008		
<b>Order Number:</b>	R2-2009-0074		
<b>Reporting Time Period (month/year):</b>	July 1, 2010 through June 30, 2011		
<b>Name of the Responsible Authority:</b>	Fairfield-Suisun Urban Runoff Management Program	<b>Title:</b>	Program Manager
<b>Mailing Address:</b>	1010 Chadbourne Road		
<b>City:</b>	Fairfield	<b>Zip Code:</b>	94534
		<b>County:</b>	Solano
<b>Telephone Number:</b>		<b>Fax Number:</b>	
<b>E-mail Address:</b>	KCullen@fssd.com		
<b>Name of the Designated Stormwater Management Program Contact (if different from above):</b>	Kevin Cullen	<b>Title:</b>	Fairfield Suisun Urban Runoff Program Manager
<b>Department:</b>	Fairfield-Suisun Sewer District		
<b>Mailing Address:</b>	1010 Chadbourne Road		
<b>City:</b>	Fairfield	<b>Zip Code:</b>	94534
		<b>County:</b>	Solano
<b>Telephone Number:</b>	707-428-9129	<b>Fax Number:</b>	707-429-1280
<b>E-mail Address:</b>	KCullen@fssd.com		

Section 2 - Provision C.2 Reporting Municipal Operations

**Program Highlights and Evaluation**

Highlight/summarize activities for reporting year:

Summary:

Program members participated in monthly Program Management meetings. Program Manager participated regularly in BASMAA's monthly committee meetings for Trash and Municipal Maintenance.

**C.2.a. ► Street and Road Repair and Maintenance**

Place an **X** in the boxes next to implemented BMPs to indicate that these BMPs were implemented in applicable instances. If not applicable, type **NA** in the box. If one or more of these BMPs were not adequately implemented during the reporting fiscal year then indicate so and provide explanation in the comments section below:

<b>NA</b>	Control of debris and waste materials during road and parking lot installation, repaving or repair maintenance activities from polluting stormwater
<b>NA</b>	Control of concrete slurry and wastewater, asphalt, pavement cutting, and other street and road maintenance materials and wastewater from discharging to storm drains from work sites.
<b>NA</b>	Sweeping and/or vacuuming and other dry methods to remove debris, concrete, or sediment residues from work sites upon completion of work.

Comments:

Please see individual city reports as these activities are implemented at the city level.

**C.2.b. ► Sidewalk/Plaza Maintenance and Pavement Washing**

Place an **X** in the boxes next to implemented BMPs to indicate that these BMPs were implemented in applicable instances. If not applicable, type **NA** in the box. If one or more of these BMPs were not adequately implemented during the reporting fiscal year then indicate so and explain in the comments section below:

<b>NA</b>	Control of wash water from pavement washing, mobile cleaning, pressure wash operations at parking lots, garages, trash areas, gas station fueling areas, and sidewalk and plaza cleaning activities from polluting stormwater
<b>NA</b>	Implementation of the BASMAA Mobile Surface Cleaner Program BMPs

Comments:

Please see individual city reports as these activities are implemented at the city level.

**C.2.c. ► Bridge and Structure Maintenance and Graffiti Removal**

Place an **X** in the boxes next to implemented BMPs to indicate that these BMPs were implemented in applicable instances. If not applicable, type **NA** in the box. If one or more of these BMPs were not adequately implemented during the reporting fiscal year then indicate so and explain in the comments section below:

<b>NA</b>	Control of discharges from bridge and structural maintenance activities directly over water or into storm drains
<b>NA</b>	Control of discharges from graffiti removal activities
<b>NA</b>	Proper disposal for wastes generated from bridge and structure maintenance and graffiti removal activities
<b>NA</b>	Implementation of the BASMAA Mobile Surface Cleaner Program BMPs for graffiti removal
<b>NA</b>	Employee training on proper capture and disposal methods for wastes generated from bridge and structural maintenance and graffiti removal activities.
<b>NA</b>	Contract specifications requiring proper capture and disposal methods for wastes generated from bridge and structural maintenance and graffiti removal activities.

Comments:  
 Please see individual city reports as these activities are implemented at the city level.

**C.2.d. ► Stormwater Pump Stations**

Does your municipality own stormwater pump stations:  **Yes**  **No** (See explanation below)

If your answer is **No** then skip to **C.2.e.**:

Complete the following table for dry weather DO monitoring and inspection data for pump stations<sup>1</sup> (add more rows for additional pump stations):

Pump Station Name and Location	First inspection Dry Weather DO Data		Second inspection Dry Weather DO Data	
	Date	mg/L	Date	mg/L
Kellogg Street Pump Station, 1155 Kellogg St., Suisun City, CA	9/17/10	3.74	6/17/11	5.11

<sup>1</sup> Pump stations that pump stormwater into stormwater collection systems or infiltrate into a dry creek immediately downstream are exempt from DO monitoring.

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**C.2 – Municipal Operations**

**Permittee Name: Fairfield-Suisun Urban Runoff Management Program**

Mulberry Pump Station, 650 Marina Cir., Suisun City, CA	9/17/10	5.69	6/17/11	7.14
Chipman Lane Pump Station, 79 1/2 Chipman Lane, Suisun City, CA	9/17/10	5.80	6/17/11	5.39
Main Street Pump Station, 550 Sacramento St., Suisun City, CA	9/17/10	5.03	6/17/11	4.38
State Street Pump Station, 358 State Street, Fairfield CA	9/17/10	.21	6/17/11	3.12
Air Base Parkway Pump Station, 2398 N. Texas St., Fairfield, CA	NA		NA	
James Street Pump Station, 1433 James St., Fairfield, CA	NA		NA	

Summarize corrective actions as needed for DO monitoring at or below 3 mg/L. Attach inspection records of additional DO monitoring for corrective actions:

Air Base Parkway Pump Station discharges into the storm drain system; this pump station is therefore exempt from DO monitoring.

James Street Pump Station discharges into a dry channel which then flows into the storm drain system; this pump station is therefore exempt from DO monitoring.

State street was found to have low DO on August 17, of 2010, however this pump station was turned off in June of 2010 in anticipation of these findings. The water in the wet well was pumped out and deposited at the Fairfield-Suisun Sewer District Regional Wastewater Treatment Plant. The pump station was turned back on in late September of 2010.

Summary:

Stormwater pump stations are owned by the cities of Fairfield and Suisun City and are operated, maintained and monitored by the Fairfield-Suisun Sewer District.

Complete the following table for wet weather inspection data for pump stations (add more rows for additional pump stations):

<b>Pump Station Name and Location</b>	<b>Date</b> (2x/year required)	<b>Presence of Trash</b> (Cubic Yards)	<b>Presence of Odor</b> (Yes or No)	<b>Presence of Color</b> (Yes or No)	<b>Presence of Turbidity</b> (Yes or No)	<b>Presence of Floating Hydrocarbons</b> (Yes or No)
Kellogg Street Pump Station, 1155 Kellogg St., Suisun City, CA	10/25/10 & 1/31/11	0 & 0	No & No	Yes & Yes	No & Yes	No & No
Mulberry Pump Station, 650 Marina Cir., Suisun City, CA	10/25/10 & 1/31/11	0 & .01	No & No	Yes & Yes	No & Yes	Yes & No

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**C.2 – Municipal Operations**

**Permittee Name: Fairfield-Suisun Urban Runoff Management Program**

Chipman Lane Pump Station, 79 1/2 Chipman Lane, Suisun City, CA	10/25/10 & 1/31/11	.2 & .01	No & No	No & No	No & No	No & No
Main Street Pump Station, 550 Sacramento St., Suisun City, CA	10/25/10 & 1/31/11	.2 & .01	No & No	Yes & Yes	No & Yes	No & No
State Street Pump Station, 358 State Street, Fairfield CA	10/25/10 & 1/31/11	0 & 0	No & Yes	No & Yes	No & Yes	No & Yes
Air Base Parkway Pump Station, 2398 N. Texas St., Fairfield, CA	10/25/10 & 1/31/11	.04 & 0	No & No	No & No	No & No	No & No
James Street Pump Station, 1433 James St., Fairfield, CA	10/25/10 & 1/31/11	.2 & 0	No & No	No & No	No & No	No & Yes

C.2.e. ► Rural Public Works Construction and Maintenance			
Does your municipality own/maintain rural <sup>2</sup> roads:		<input type="checkbox"/>	<input checked="" type="checkbox"/> <b>No</b>
If your answer is <b>No</b> then skip to <b>C.2.f.</b>			
Place an <b>X</b> in the boxes next to implemented BMPs to indicate that these BMPs were implemented in applicable instances. If one or more of the BMPs were not adequately implemented during the reporting fiscal year then indicate so and explain in the comments section below:			
<input type="checkbox"/>	Control of road-related erosion and sediment transport from road design, construction, maintenance, and repairs in rural areas		
<input type="checkbox"/>	Identification and prioritization of rural road maintenance based on soil erosion potential, slope steepness, and stream habitat resources		
<input type="checkbox"/>	No impact to creek functions including migratory fish passage during construction of roads and culverts		
<input type="checkbox"/>	Inspection of rural roads for structural integrity and prevention of impact on water quality		
<input type="checkbox"/>	Maintenance of rural roads adjacent to streams and riparian habitat to reduce erosion, replace damaging shotgun culverts and excessive erosion		
<input type="checkbox"/>	Re-grading of unpaved rural roads to slope outward where consistent with road engineering safety standards, and installation of water bars as appropriate		
<input type="checkbox"/>	Inclusion of measures to reduce erosion, provide fish passage, and maintain natural stream geomorphology when replacing culverts or design of new culverts or bridge crossings		
Comments including listing increased maintenance in priority areas:			

<sup>2</sup> Rural means any watershed or portion thereof that is developed with large lot home-sites, such as one acre or larger, or with primarily agricultural, grazing or open space uses.

C.2.f. ► Corporation Yard BMP Implementation			
Place an <b>X</b> in the boxes below that apply to your corporations yard(s):			
<input checked="" type="checkbox"/>	We do not have a corporation yard		
<input type="checkbox"/>	Our corporation yard is a filed NOI facility and regulated by the California State Industrial Stormwater NPDES General Permit		
<input type="checkbox"/>	We have a current <b>Stormwater Pollution Prevention Plan (SWPPP)</b> for the Corporation Yard(s)		
Place an <b>X</b> in the boxes below next to implemented SWPPP BMPs to indicate that these BMPs were implemented in applicable instances. If not applicable, type <b>NA</b> in the box. If one or more of the BMPs were not adequately implemented during the reporting fiscal year then indicate so and explain in the comments section below:			
<input type="checkbox"/>	Control of pollutant discharges to storm drains such as wash waters from cleaning vehicles and equipment		
<input type="checkbox"/>	Routine inspection prior to the rainy seasons of corporation yard(s) to ensure non-stormwater discharges have not entered the storm drain system		
<input type="checkbox"/>	Containment of all vehicle and equipment wash areas through plumbing to sanitary or another collection method		
<input type="checkbox"/>	Use of dry cleanup methods when cleaning debris and spills from corporation yard(s) or collection of all wash water and disposing of wash water to sanitary or other location where it does not impact surface or groundwater when wet cleanup methods are used		
<input type="checkbox"/>	Cover and/or berm outdoor storage areas containing waste pollutants		
Comments:			
Please see individual city reports as these activities are implemented at the city level.			
If you have a corporation yard(s) that is not an NOI facility , complete the following table for inspection results for your corporation yard(s) or attach a summary including the following information:			
Corporation Yard Name	Inspection Date (1x/year required)	Inspection Findings/Results	Follow-up Actions

**Section 3 - Provision C.3 Reporting New Development and Redevelopment**

**C.3.a. ► New Development and Redevelopment Performance Standard Implementation Summary Report**

*(For FY 10-11 Annual Report only) Provide a brief summary of the methods of implementation of Provisions C.3.a.i.(1)-(8).*

Summary:

Please see individual city reports as these activities are implemented at the city level.

**C.3.b. ► Green Streets Status Report**

*(All projects to be completed by December 1, 2014)*

On an annual basis (if applicable), report on the status of any pilot green street projects within your jurisdiction. For each completed project, report the capital costs, operation and maintenance costs, legal and procedural arrangements in place to address operation and maintenance and its associated costs, and the sustainable landscape measures incorporated in the project including, if relevant, the score from the Bay-Friendly Landscape Scorecard.

Summary:

Program representatives regularly participated in BASMAA's New and Redevelopment subcommittee meetings. Green Streets projects are discussed at that monthly meeting. The opportunity for Green Streets projects is also discussed at the Program's monthly Management meetings. The cities continue to explore opportunities to incorporate Green Streets into rehabilitation projects.

**C.3.b.v.(1) ► Regulated Projects Reporting Table**

Fill in attached table **C.3.b.v.(1)** or attach your own table including the same information.

Please see individual city reports as these activities are implemented at the city level.

**C.3.c. Low Impact Development Reporting**

Program representatives regularly participated in BASMAA's New and Redevelopment subcommittee meetings. The Program is currently working on a revised New Development Guidance Document. The New Development Guidance Document will be modeled after Contra Costa Clean Water Program's C.3 Guidance Manual.

Regionally, submittals were made to the Water Board on Biotreatment Soil Specifications, Special Projects Proposal, Feasibility/Infeasibility Criteria Report, and Green Roof Specifications. Program members participated in the development and review of these submittals.

**C.3.h.iv. ► Installed Stormwater Treatment Systems Operation and Maintenance Verification Inspection Program Reporting**

**(1)** Fill in attached table **C.3.h.iv.(1)** or attach your own table including the same information.

**(2)** On an annual basis, provide a discussion of the inspection findings for the year and any common problems encountered with various types of treatment systems and/or HM controls. This discussion should include a general comparison to the inspection findings from the previous year.

Summary:

Please see individual city reports as these activities are implemented at the city level.

**(3)** On an annual basis, provide a discussion of the effectiveness of the O&M Program and any proposed changes to improve the O&M Program (e.g., changes in prioritization plan or frequency of O&M inspections, other changes to improve effectiveness program).

Summary:

Please see individual city reports as these activities are implemented at the city level.

**C.3.b.v.(1) ► Regulated Projects Reporting Table (part 1) – Projects Approved During the Fiscal Year Reporting Period**

Project Name Project No.	Project Location <sup>3</sup> , Street Address	Name of Developer	Project Phase No. <sup>4</sup>	Project Type & Description <sup>5</sup>	Project Watershed <sup>6</sup>	Total Site Area (Acres)	Total Area of Land Disturbed (Acres)	Total New Impervious Surface Area (ft <sup>2</sup> )	Total Replaced Impervious Surface Area (ft <sup>2</sup> )	Total Pre- Project Impervious Surface Area <sup>7</sup> (ft <sup>2</sup> )	Total Post- Project Impervious Surface Area <sup>8</sup> (ft <sup>2</sup> )
<b>Private Projects</b>											
<b>Public Projects</b>											
Comments:											

<sup>3</sup> Include cross streets

<sup>4</sup> If a project is being constructed in phases, indicate the phase number and use a separate row entry for each phase. If not, enter "NA".

<sup>5</sup> Project Type is the type of development (i.e., new and/or redevelopment). Example descriptions of development are: 5-story office building, residential with 160 single-family homes with five 4-story buildings to contain 200 condominiums, 100 unit 2-story shopping mall, mixed use retail and residential development (apartments), industrial warehouse.

<sup>6</sup> State the watershed(s) in which the Regulated Project is located. Optional but recommended: Also state the downstream watershed(s).

<sup>7</sup> For redevelopment projects, state the pre-project impervious surface area.

<sup>8</sup> For redevelopment projects, state the post-project impervious surface area.

**C.3.b.v.(1) ► Regulated Projects Reporting Table (part 2) – Projects Approved During the Fiscal Year Reporting Period**

Project Name Project No.	Application Deemed Complete Date <sup>9</sup>	Application Final Approval Date <sup>9</sup>	Source Control Measures <sup>10</sup>	Site Design Measures <sup>11</sup>	Treatment Systems Approved <sup>12</sup>	Operation & Maintenance Responsibility Mechanism <sup>13</sup>	Hydraulic Sizing Criteria <sup>14</sup>	Alternative Compliance Measures <sup>15/16</sup>	Alternative Certification <sup>17</sup>	HM Controls <sup>18/19</sup>
<b>Private Projects</b>										
Comments:										

<sup>9</sup> For private projects, state project application deemed complete date and final discretionary approval date.

<sup>10</sup> List source control measures approved for the project. Examples include: properly designed trash storage areas; storm drain stenciling or signage; efficient landscape irrigation systems; etc.

<sup>11</sup> List site design measures approved for the project. Examples include: minimize impervious surfaces; conserve natural areas, including existing trees or other vegetation, and soils; construct sidewalks, walkways, and/or patios with permeable surfaces, etc.

<sup>12</sup> List all approved stormwater treatment system(s) to be installed onsite or at a joint stormwater treatment facility (e.g., flow through planter, bioretention facility, infiltration basin, etc.).

<sup>13</sup> List the legal mechanism(s) (e.g., O&M agreement with private landowner; O&M agreement with homeowners' association; O&M by public entity, etc...) that have been or will be used to assign responsibility for the maintenance of the post-construction stormwater treatment systems.

<sup>14</sup> See Provision C.3.d.i. "Numeric Sizing Criteria for Stormwater Treatment Systems" for list of hydraulic sizing design criteria. Enter the corresponding provision number of the appropriate criterion (i.e., 1.a., 1.b., 2.a., 2.b., 2.c., or 3).

<sup>15</sup> For Alternative Compliance at an offsite location in accordance with Provision C.3.e.i.(1), on a separate page, give a discussion of the alternative compliance site including the information specified in Provision C.3.b.v.(1)(m)(i) for the offsite project.

<sup>16</sup> For Alternative Compliance by paying in-lieu fees in accordance with Provision C.3.e.i.(2), on a separate page, provide the information specified in Provision C.3.b.v.(1)(m)(ii) for the Regional Project.

<sup>17</sup> Note whether a third party was used to certify the project design complies with Provision C.3.d.

<sup>18</sup> If HM control is not required, state why not.

<sup>19</sup> If HM control is required, state control method used (e.g., method to design and size device(s) or method(s) used to meet the HM Standard, and description of device(s) or method(s) used, such as detention basin(s), bioretention unit(s), regional detention basin, or in-stream control).

**C.3.b.v.(1) ► Regulated Projects Reporting Table (part 2) – Projects Approved During the Fiscal Year Reporting Period**

Project Name Project No.	Is Funding Committed? <sup>20</sup>	Date Construction Scheduled to Begin <sup>20</sup>	Source Control Measures <sup>21</sup>	Site Design Measures <sup>22</sup>	Treatment Systems Approved <sup>23</sup>	Operation & Maintenance Responsibility Mechanism <sup>24</sup>	Hydraulic Sizing Criteria <sup>25</sup>	Alternative Compliance Measures <sup>26/27</sup>	Alternative Certification <sup>28</sup>	HM Controls <sup>29/30</sup>
<b>Public Projects</b>										

Comments:

<sup>20</sup> For public projects, enter “Yes” or “No” under “Is Funding Committed?” and enter a date under “Date Construction Scheduled to Begin”.

<sup>21</sup> List source control measures approved for the project. Examples include: properly designed trash storage areas; storm drain stenciling or signage; efficient landscape irrigation systems; etc.

<sup>22</sup> List site design measures approved for the project. Examples include: minimize impervious surfaces; conserve natural areas, including existing trees or other vegetation, and soils; construct sidewalks, walkways, and/or patios with permeable surfaces, etc.

<sup>23</sup> List all approved stormwater treatment system(s) to be installed onsite or at a joint stormwater treatment facility (e.g., flow through planter, bioretention facility, infiltration basin, etc.).

<sup>24</sup> List the legal mechanism(s) (e.g., O&M agreement with private landowner; O&M agreement with homeowners’ association; O&M by public entity, etc...) that have been or will be used to assign responsibility for the maintenance of the post-construction stormwater treatment systems.

<sup>25</sup> See Provision C.3.d.i. “Numeric Sizing Criteria for Stormwater Treatment Systems” for list of hydraulic sizing design criteria. Enter the corresponding provision number of the appropriate criterion (i.e., 1.a., 1.b., 2.a., 2.b., 2.c., or 3).

<sup>26</sup> For Alternative Compliance at an offsite location in accordance with Provision C.3.e.i.(1), on a separate page, give a discussion of the alternative compliance site including the information specified in Provision C.3.b.v.(1)(m)(i) for the offsite project.

<sup>27</sup> For Alternative Compliance by paying in-lieu fees in accordance with Provision C.3.e.i.(2), on a separate page, provide the information specified in Provision C.3.b.v.(1)(m)(ii) for the Regional Project.

<sup>28</sup> Note whether a third party was used to certify the project design complies with Provision C.3.d.

<sup>29</sup> If HM control is not required, state why not.

<sup>30</sup> If HM control is required, state control method used (e.g., method to design and size device(s) or method(s) used to meet the HM Standard, and description of device(s) or method(s) used, such as detention basin(s), bioretention unit(s), regional detention basin, or in-stream control).

**C.3.h.iv. ► Installed Stormwater Treatment Systems Operation and Maintenance Verification Inspection Program Reporting**

Fill in table below or attach your own table including the same information.

Name of Facility/Site Inspected	Address of Facility/Site Inspected	Newly Installed? (YES/NO) <sup>31</sup>	Party Responsible <sup>32</sup> For Maintenance	Date of Inspection	Type of Inspection <sup>33</sup>	Type of Treatment/HM Control(s) Inspected <sup>34</sup>	Inspection Findings or Results <sup>35</sup>	Enforcement Action Taken <sup>36</sup>	Comments

<sup>31</sup> Indicate “YES” if the facility was installed within the reporting period, or “NO” if installed during a previous fiscal year.

<sup>32</sup> State the responsible operator for installed stormwater treatment systems and HM controls.

<sup>33</sup> State the type of inspection (e.g., 45-day, routine or scheduled, follow-up, etc.).

<sup>34</sup> State the type(s) of treatment systems inspected (e.g., bioretention facility, flow-through planter, infiltration basin, etc...) and the type(s) of HM controls inspected, and indicate whether the treatment system is an onsite, joint, or offsite system.

<sup>35</sup> State the inspection findings or results (e.g., proper installation, improper installation, proper O&M, immediate maintenance needed, etc.).

<sup>36</sup> State the enforcement action(s) taken, if any, as appropriate and consistent with your municipality’s Enforcement Response Plan.

**Section 4 – Provision C.4 Industrial and Commercial Site Controls**

**Program Highlights**

Provide background information, highlights, trends, etc.

The Program contracts with the Solano County Department of Resource Management to conduct stormwater inspections of industrial, commercial and food handling businesses within the Program area. The Program updates the Business Inspection Plan as necessary to keep the document current. Changes are made to facilities lists upon observations of facilities closing or a change in compliance status resulting in a reduction or increase in inspection frequency. Specific information on the number of facilities inspected, types of violations incurred and resolution of violations within reasonable time periods is included in each city's 2010-2011 Annual Report as required by the Water Board.

Training of Health Inspectors was performed on February 10, 2011. The focus of the training was consistency in enforcement levels and documentation of return to compliance within a 10 day time window.

The Program Management team meets on a monthly basis to discuss important Program issues including commercial, industrial and restaurant inspections. The Program also participates in the Municipal Operations Committee meeting on a regional level.

**C.4.b.i. ► Business Inspection Plan**

Do you have a Business Inspection Plan?  Yes  No

If No, explain:

**C.4.b.iii.(1) ► Potential Facilities List**

List below or attach your list of industrial and commercial facilities in your Inspection Plan to inspect that could reasonably be considered to cause or contribute to pollution of stormwater runoff.

The Potential Facilities List was generated at the Program level and distributed to the cities for submittal in their Annual Report. See individual city reports for this list.

**C.4.b.iii.(2) ► Facilities Scheduled for Inspection**

List below or attach your list of facilities scheduled for inspection during the current fiscal year.

The Facilities Scheduled for Inspection was generated at the Program level and distributed to the cities for submittal in their Annual Report. See individual city reports for this list.

**C.4.c.iii.(1) ► Facility Inspections**

Fill out the following table or attach a summary of the following information. Indicate your violation reporting methodology below.

<input type="checkbox"/>	Permittee reports multiple discrete violations on a site as one violation.
<input checked="" type="checkbox"/>	Permittee reports the total number of discrete violations on each site.

	Number	Percent
Number of businesses inspected		
Total number of inspections conducted		
Number of violations (excluding verbal warnings)		
Sites inspected in violation		
Violations resolved within 10 working days or otherwise deemed resolved in a longer but still timely manner		
Comments:  See individual city reports for this information.		

**C.4.c.iii.(2) ► Frequency and Types/Categories of Violations Observed**

Fill out the following table or attach a summary of the following information.

Type/Category of Violations Observed	Number of Violations
Actual discharge (e.g. active non-stormwater discharge or clear evidence of a recent discharge)	
Potential discharge and other	
Comments:  See individual city reports for this information.	

**C.4.c.iii.(2) ► Frequency and Type of Enforcement Conducted**

Fill out the following table or attach a summary of the following information.

	<b>Enforcement Action</b> (as listed in ERP) <sup>37</sup>	<b>Number of Enforcement Actions Taken</b>	<b>% of Enforcement Actions Taken<sup>38</sup></b>
Level 1			
Level 2			
Level 3			
Level 4			
<b>Total</b>			

**C.4.c.iii.(3) ► Types of Violations Noted by Business Category**

Fill out the following table or attach a summary of the following information.

<b>Business Category<sup>39</sup></b>	<b>Number of Actual Discharge Violations</b>	<b>Number of Potential/Other Discharge Violations</b>

**C.4.c.iii.(4) ► Non-Filers**

List below or attach a list of the facilities required to have coverage under the Industrial General Permit but have not filed for coverage:

See individual city reports.

<sup>37</sup> Agencies to list specific enforcement actions as defined in their ERPs.

<sup>38</sup> Percentage calculated as number of each type of enforcement action divided by the total number of enforcement actions.

<sup>39</sup> List your Program's standard business categories.

<b>C.4.d.iii ► Staff Training Summary</b>				
<b>Training Name</b>	<b>Training Dates</b>	<b>Topics Covered</b>	<b>No. of Inspectors in Attendance</b>	<b>Percent of Inspectors in Attendance</b>
Fairfield Suisun Urban Runoff Program Commercial Industrial Annual Refresher Training	February 10, 2011	New stormwater ordinance adopted by the city of Fairfield; high-priority facilities needed to be inspected this fiscal year; enforcement levels associated with illegal discharges.	7	87%

Section 5 – Provision C.5 Illicit Discharge Detection and Elimination

**Program Highlights**

Provide background information, highlights, trends, etc.

This provision is handled at the city level. Please see individual city reports for this information.

**C.5.c.iii ► Complaint and Spill Response Phone Number and Spill Contact List**

List below or attach your complaint and spill response phone number and spill contact list.

Contact	Description	Phone Number
Don Burwell	Public Works Supervisor, City of Fairfield	(707) 428-7405
Mike Gray	Public Works Manager, City of Fairfield	(707) 428-7404
Dan Kasperson	Building and Public Works Director	(707) 421-7340
Jeff Penrod	Public Works Superintendent	(707) 421-7349

**C.5.d.iii ► Evaluation of Mobile Business Program**

Describe implementation of minimum standards and BMPs for mobile businesses and your enforcement strategy. This may include participation in the BASMAA Mobile Surface Cleaners regional program or local activities.

Description:

The Program participated in BASMAA's monthly Municipal Maintenance and Commercial Industrial Controls meeting. Additionally, monthly meetings are held at the Program level to discuss illicit discharge detection and elimination. Also, in FY 2010/2011, BASMAA and its Permittees scoped and budgeted for a new project to enhance the existing Surface Cleaner Training and Recognition program in several ways. See BASMAA's FY 2010/2011 MRP Regional Supplement for Training and Outreach Annual Report on mobile surface cleaners.

**C.5.e.iii ► Evaluation of Collection System Screening Program**

Provide a summary or attach a summary of your collection screening program, a summary of problems found during collection system screening and any changes to the screening program this FY.

Description:

# Annual Reporting for FY 2010-2011

## Regional Supplement for Training and Outreach

### San Francisco Bay Area Municipal Regional Stormwater Permit



September 2011

**MRP Regional Supplement for Training and Outreach  
Annual Reporting for FY 2010-2011**

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**LIST OF ATTACHMENTS:**

**C.7.b. Advertising Campaign**

Five-Year Regional Strategic Outreach Plan: Litter  
Five-Year Strategic Advertising Plan: *Our Water, Our World* Pesticides Program

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

BASMAA Media Relations Campaign Final Report

**C.9.h.i. Point of Purchase Outreach**

Photo of *Our Water, Our World* booth at Bay Friendly Landscaping  
Conference  
Photo of *Our Water, Our World* booth at NorCal Trade Show  
Photo of on-call assistance being provided to Walgreens store

# MRP Regional Supplement for Training and Outreach Annual Reporting for FY 2010-2011

## INTRODUCTION

This Regional Supplement has been prepared to report on regionally implemented activities complying with portions of the Municipal Regional Stormwater Permit (MRP), issued to 76 municipalities and special districts (Permittees) by the San Francisco Bay Regional Water Quality Control Board (Water Board). The Regional Supplement covers training and outreach activities related to the following MRP provisions:

- Provision C.5.d., Control of Mobile Sources,
- Provision C.7.b., Advertising Campaign,
- Provision C.7.c., Media Relations – Use of Free Media,
- Provision C.7.d., Stormwater Point of Contact, and
- Provision C.9.h.i., Point of Purchase Outreach.

These regionally implemented activities are conducted under the auspices of the Bay Area Stormwater Management Agencies Association (BASMAA), a 501 (c)(3) non-profit organization comprised of the municipal stormwater programs in the San Francisco Bay Area. Most of the 2011 annual reporting requirements of the specific MRP Provisions covered in this Supplement are completely met by BASMAA Regional Project activities, except where otherwise noted. Scopes, budgets and contracting or in-kind project implementation mechanisms for BASMAA Regional Projects follow BASMAA's Operational Policies and Procedures as approved by the BASMAA Board of Directors. MRP Permittees, through their program representatives on the Board of Directors and its subcommittees, collaboratively authorize and participate in BASMAA Regional Projects or Regional Tasks. Regional Project costs are shared by either all BASMAA members or among those Phase I programs that are subject to the MRP.

## Training

### C.5.d. Control of Mobile Sources

This provision requires Permittees to develop and implement a program to reduce the discharge of pollutants from mobile businesses, including development and implementation of minimum standards and BMPs, and outreach to mobile businesses. BASMAA's long-standing Surface Cleaner Training and Recognition program addresses these aspects of the provision by focusing on the most common type of outdoor cleaning – cleaning of flat surfaces like sidewalks, plazas, parking areas, and buildings. Individual Permittees address the inspection and enforcement aspects of the provision.

Previously, BASMAA, the Regional Water Board, and mobile businesses jointly developed best management practices. The BMPs were packaged and delivered in training materials (e.g., *Pollution from Surface Cleaning* folder), and via workshops and training videos. The folder and the training video have since been translated into Spanish. Cleaners that take the training and a self-quiz are designated by BASMAA as Recognized Surface Cleaners. BASMAA also created and provides marketing materials for use by Recognized Surface Cleaners. Previously, BASMAA converted the delivery mechanism to being online so that mobile businesses would have on-demand access to the materials and the training. BASMAA continues to maintain the [Surface Cleaner](#)

## **MRP Regional Supplement for Training and Outreach Annual Reporting for FY 2010-2011**

[Training and Recognition](#) program. Cleaners can use the website to get trained and recognized for the first time or renew their training and recognition, as required annually. Recognized cleaners can also download marketing materials from the website. Potential customers, including Permittees can use the site to verify the recognition status of any cleaner, as can municipal inspectors. In FY 10-11, BASMAA and the Permittees scoped and budgeted for a new project to enhance the existing Surface Cleaner Training and Recognition program in the following ways.

1. Expand the existing Surface Cleaner Training and Recognition Program to include two new mobile business categories - automotive washing and carpet cleaning;
2. Utilize existing resources that are available to complete the necessary tasks;
3. Develop marketing materials, training videos and self-test applications for the new categories;
4. Create Spanish tracks of information for each new business type; and
5. Create a web-based application to share information about mobile businesses.

A consultant team with expertise in best management practices and commercial training programs, videography, graphic design, web design, and translation was assembled and the project will be conducted in FY 11-12.

### **Public Information and Outreach**

#### **C.7.b. Advertising Campaign**

This provision requires Permittees to 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. Through the BASMAA Public Information / Participation (PI/P) Committee, Permittees previously decided to take a broader view of some of its regional tasks (e.g., Regional Advertising Campaign, Regional Media Relations, *Our Water, Our World* program) to ensure that work on individual MRP provisions was coordinated and part of an overall strategy.

In FY 10-11, working with SGA, Inc., BASMAA developed broader Regional Strategic Outreach Plans – one for litter and one for pesticides – that include audiences related to the MRP provisions and ways of reaching them regarding trash/litter and pesticides (e.g., advertising, media relations, schools outreach, events) (see attached Regional Strategic Outreach Plans for details). Although the scopes of the strategies are broad, the level of stormwater agency (regional, areawide program, city) implementing each part will vary (i.e., each part will not be implemented via BASMAA). The strategies are multi-year and also include recommendations for creative, media placement, media relations, partnerships, and evaluation. Also starting in FY 10-11, BASMAA, again working with SGA, Inc., began developing an Implementation Plan for the litter strategic plan, which will provide more detailed tasks and budgets for the multi-year project. Implementation will begin in FY 11-12.

## **MRP Regional Supplement for Training and Outreach Annual Reporting for FY 2010-2011**

### **C.7.c. Media Relations – Use of Free Media**

This provision requires Permittees to 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. The Annual Reporting requirement includes providing the details of each media pitch, such as the medium, date, and content of the pitch. BASMAA has conducted a Regional Media Relations project since FY 96-97 that assists Permittees in complying with this type of provision. The FY 10-11 BASMAA Regional Media Relations project made six pitches – rainy season, wrapping paper, reusables, IPM – pest control operators, ants, and litter (see attached Media Relations Program report for details).

### **C.7.d. Stormwater Point of Contact**

This provision requires Permittees to 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. The Annual Reporting requirement states that any change in the contact be reported in annual reports subsequent to FY 09-10 annual report. There was no change in FY 10-11 to the point of contact provided by BASMAA. BASMAA assists with this provision by using the regional website: [BayWise.org](http://BayWise.org) to list or link to member programs' lists of points of contact and contact information for the stormwater agencies in the Bay Area.

## **Pesticides Toxicity Control**

### **C.9.h.i. Point of Purchase Outreach**

This provision requires Permittees to:

- Conduct outreach to consumers at the point of purchase;
- 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
- Participate in and provide resources for the "Our Water, Our World" program or a functionally equivalent pesticide use reduction outreach program.

The Annual Reporting requirement allows Permittees who participate in a regional effort to comply with C.9.h.i. to reference a report that summarizes these actions. Below is a report of activities and accomplishments of the *Our Water, Our World* program for FY 10-11.

- Coordinated program implementation with major chains Home Depot, Orchard Supply Hardware, and Ace Hardware National. OSH reported "natural insecticides" sales down 13.7% compared to the previous year, but sales of all pesticides was also down compared to the previous year.
- Coordinated master print run of the following: fact sheets, shelf talkers, literature rack signage, beneficial bug brochure, magnet, Pest or Pal activity guide for kids, pocket guide, and Pests Bugging You? booklet.

## MRP Regional Supplement for Training and Outreach Annual Reporting for FY 2010-2011

- Updated less-toxic Product Lists: Master – by brand name version; by pest version, and OSH and Home Depot-specific lists/labels.
- Maintained [Our Water, Our World website](#).
- Provided [Ask-the-Expert](#) service.
- Provided and staffed exhibitor booths.
  - Excel Gardens Dealer Show, Las Vegas (August 2010)
  - Bay Friendly Landscaping Conference (September 2010) (see photo attached)
  - L&L Dealer Show, Reno (October 2010)
  - NorCal trade show (February 2011) (see photo attached)
- Provided on-call assistance (e.g., display set-up, training, IPM materials review) to specific stores (e.g., OSH, Walgreens) (see photo attached).
- Provided print advertising and articles – [Green Zebra guide](#) and [Chinook Book](#).
- Provided print advertising – [Bay Nature magazine](#); [Bringing Back the Natives Garden Tour's garden guide](#).
- Mentioned in articles by others: San Jose Mercury News (March 6, 2011).

Additionally, BASMAA, in partnership with the UC IPM Program, competed for and won award of a Pest Management Alliance grant from the Department of Pesticide Regulation for the *IPM Advocates for Retail Stores* project. The project's purpose is to develop and implement a program that will recruit, train, and mentor individuals to help retail stores implement the *Our Water, Our World* program. The project kicked off in December 2010. The project team developed an IPM Advocate profile, recruited for and selected 10 IPM Advocate candidates who started their classroom training in early June 2011 learning from a curriculum developed by the project team.



# Bay Area Stormwater Management Agencies Association

## Five-Year Regional Strategic Outreach Plan: Litter

Plan Submitted: March 9, 2011



Prepared by S. Groner Associates, Inc. (SGA)  
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Dear BASMAA Committee & City Reps,

The following document is SGA's proposal for how to approach litter outreach and education in the Bay Area. While I would love for you to read the entire thing cover to cover, I understand that time constraints may leave you skimming some sections. With that in mind, I wanted to give you a short cheat sheet of what the following forty pages are really all about.

*The Background.*

As part of BASMAA's duty to comply with the Municipal Regional Stormwater Permit, they are required to conduct an advertising campaign specifically focused on one of the Bay Area's most troublesome pollutants - litter. The strategy in this plan is rooted in Community-Based Social Marketing (CBSM), and the tactics woven throughout use principles in social psychology that have been tested and proven to be effective in changing behavior. Most facets of this plan, from having the audience take a specific action, to commitments, to peer-to-peer messaging, to step-by-step changes, are taken from principles of persuasion and have been tailored by SGA specifically for litter and a youth audience.

*The Issue.*

Research has shown that litter is not a black and white issue. It is rare to find people who litter all the time or, conversely, those who never throw anything on the ground. So much of a person's propensity to litter is based on a mix of internal factors (e.g. age, concern for the environment, smoker vs. non-smoker) and external factors (e.g. if peers litter, the cleanliness of an area, proximity of the closest trash can). Because litter is such a multi-faceted issue, the plan does not assume that a traditional knowledge-based approach (i.e. "Littering is bad for the Bay") is going to do the trick with this audience. Most everyone knows that littering is bad, yet so many people are still doing it. The key to reaching the audience is going to be using an approach and message that resonates with them.

*The Audience.*

Because youth have displayed higher rates of littering behaviors, they have been singled out as the primary audience for this strategic plan. The key to reaching this audience is to leverage the power of social norms (i.e. "I want to do what my friends are doing"). The goal is to influence members of the youth audience to influence their peers so that messages are traveling top down (from BASMAA to the youth) as well as laterally (from the youth to their peers). In order to ensure that the outreach remains fresh and relevant, SGA recommends involving the youth themselves, as much as possible, in giving input about messaging and proposed outreach tactics so that the program is received as talking "with them," not "at them." Although this plan was written with youth in mind, the strategy is such that people of any age are welcome, and will likely be interested, in also joining the effort.

### *The Approach.*

One of the central tenets of this plan is the importance of having the audience take an action. Action and involvement are the keys to changing behavior. Every facet of the plan, from the advertisements, to the Facebook page, to the viral sharing, is included with the goal of inciting action among the target population. Essentially, how can we make every opportunity a chance for the youth to get involved and invested in the program?

The goal is to have involvement build over time into more difficult and invested actions (i.e. from the relatively easy act of signing up for the program's Facebook page to the much more involved act of actually taking part in a clean-up). The strategic plan therefore does not assume that a person is simply going to see an ad and, just like that, stop littering forever! Studies have proven that people are more likely to take small steps at a time, rather than one big leap (wikipedia "foot-in-the-door technique" for some neat references), so BASMAA's goal should be to encourage the youth to start walking down a road toward ending their littering behaviors (*see Page 28*). This incremental approach will lead to long-lasting behavior change.

### *The Long, Long Term Vision.*

How can we transform what started as an advertising campaign into a movement? Sure, we want youth to stop littering, but ultimately what we want is to keep stormwater clean in order to protect bay area waterways. That's what this plan does - it thinks of the pollutant at hand, litter, but doesn't lose sight of the larger goal. One of the suggestions in the plan is to create a database of the youth who get involved in the program (*see Page 27*). The purpose of the database is to build on their commitments, but also to provide a value-added opportunity to BASMAA. Let's say Susie Teenager gets involved in the program and she has since joined the Facebook page, participated in a local clean-up, recruited friends and is now looking to go and speak to elementary school kids about the importance of protecting waterways. Perhaps Susie Teenager will then grow up into Susie Home Owner, who thinks that installing rain barrels and permeable pavement is the way to go. Susie Teenager is now not just someone who abated her littering, but she also has added value to the overall BASMAA program by encouraging others to do the same and by protecting water quality in a more holistic sense. In the words of the great Confucius, "A journey of a thousand miles begins with a single step."

Thank you so much for the opportunity to work on this plan - we had a blast!

Sincerely,



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# I. LITERATURE REVIEW

## 1. INTRODUCTION

This literature review is meant to inform the development of BASMAA’s five-year strategic marketing campaign, addressing the littering behaviors of Bay Area youths aged 16-24. The following review will outline the barriers and motivators acting on the littering behavior of the target population through an examination of pertinent case studies. By uncovering these barriers and motivators, targeted outreach tactics and key messages can be developed, which overcome the barriers and elevate the motivators associated with appropriate waste-disposal behaviors in youths. The program will also gain valuable insight into the preferred methods of communication of litter-prevention message dissemination to this notoriously inaccessible population.

The importance of identifying an audience’s barriers and motivators in encouraging certain types of behaviors is a central tenet of Community-Based Social Marketing (CBSM). This approach focuses on analyzing the perceived barriers and benefits associated with the target behavior that the assessor aims to promote. By developing a complete understanding of what would limit the target population in engaging in the desired behavior, the assessor can create mechanisms in the intervention that overcome or remove these perceived barriers (Alcalay and Bell 2001; Neiger, Thackery, Merrill, Miner, Larsen and Chalkey 2001; Walsh, Rudd, Moeykens and Moloney 1993).

The following literature review will discuss an array of barriers and motivators that have been identified in previous studies. Many of the studies cited in this review analyzed littering prevention practices, tools and awareness programs. Others examined youth-marketing best practices, innovations and case studies. The results of these similar programs will provide an actionable context in developing a targeted, long-term marketing strategy across BASMAA’s eight counties.

### PART 1: LITTERING ACROSS ALL POPULATIONS | BARRIERS & MOTIVATORS

#### ACTIVATING SOCIAL NORMS: THE MASSES MAKE MESSES MESSIER

Across all age groups, the most powerful factor influencing littering behaviors is the influence of perceived social norms—what is perceived as the “right” thing to do, or conversely at times, “what everyone else is doing.”

#### *The Writing on the Walls: The Effects of Context on Behavior*

Social norms may be identified by the individual through a variety of perceptive and cognitive mechanisms. One such mechanism is the perception of a social norm through the impact of human behavior on the environment in which individuals find themselves. To this end, Dutch researcher Kees Keizer and his team concluded that the very presence of disorderly environmental items, whether or not they are examples of outright littering, implies that others are engaging in disorderly behavior, thus augmenting the likelihood of others littering (Keizer 2008).

The Dutch research team conducted a series of experiments on which their hypothesis was tested: first, flyers were attached to bike handlebars in an alley with bike parking and a prominent “No Littering” sign. Thirty-three percent of bikers littered the alley

with the flyers under these control conditions. However, when the alley was defaced with graffiti, 69% of bikers littered. In a similar experiment, flyers were placed under windshield wipers of cars in a parking lot. Thirty percent of owners proceeded to remove the flyers from their windshields and discard them on the ground, thereby littering. As in the case of the defaced alley, a full 58% of car owners littered the lot with flyers once a few disorderly carts were noticeably present in the lot. This work exemplifies the inter-connectivity between seemingly disparate behaviors, in this case, littering in the presence of graffiti or rogue carts. It seems that whether or not people see outright littering, if they perceive themselves to be in a place where disorderly environmental behavior is the norm, they are more likely to participate in this now normative littering behavior.

Mirroring the same underlying principles as the Keizer study, which found that people are more likely to litter in areas that are perceived to be in a more disorderly state, Beck's 2007 Keep America Beautiful Study found that in communities where recycling was readily available and integrated into the community as a whole, littering was decreased. From these findings, a potential causal synopsis of littering emerges: that littering is not an isolated activity; rather it is the by-product of individuals' perceptions of the general orderliness of their environment and social community. Thus, when an individual perceives their environment to be orderly, regularly participating in recycling, devoid of graffiti and other similar defacements, they are unlikely to litter. Alternatively, when an individual perceives their community to be disorderly, dirty and chaotic, they are much more likely to litter.

These findings suggest that anti-littering messaging should therefore feed into the perception of an orderly social norm. Depictions of disorderly norms, as true to reality as they may seem, could serve to be counter-productive because they reinforce a negative social norm. In other words, *telling people that they should not litter because littering is so 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.

The concept of aligning social norms with the desired behavior has been aggressively pursued through multiple youth-centered marketing campaigns in the recent past. Nowhere is this more apparent than in the popular energy drink Redbull's campaigns (Turner, 2008). Redbull identified its target audience as young adults seeking to gain an extra energy boost, presumably for late-night activities or any activity that required strenuous physical exertion: you're young, you've got something you have to do; you drink a Redbull. To accomplish this, Redbull set out first to find the communities that were already participating in this social norm. These areas were college campuses, bars, night clubs and spring-break locations. Strategically targeting these areas, Redbull sent out crews of 18-30-year-old spokespeople, who provided youths with complimentary Redbulls. By connecting their product through no cost with people already engaged in the appropriate social norm, Redbull effectively included the consumption of their energy drinks into the culture.

Redbull was able to continue the momentum created by these efforts through online outlets, where Redbull consumers were encouraged to "tell their stories." As a whole, this strategy of both reaching their target audience through face-to-face outreach and

maintaining the momentum created through online user participation proved to be an impactful means of aligning behavior with a social norm.

***The Smoking Gun: Self-Reported Effects of Social Norms***

The 2009 Keep Los Angeles Beautiful (KLAB) study by S. Groner Associates featured a survey of approximately 700 Los Angeles-area youth (16-24 years old) and aimed to identify the waste-disposal behaviors of this target population. Overall, the item that was found to be most likely to be littered was a cigarette butt. Upon further investigation into the issue of cigarette-butt litter, Lelde McCoy’s “Case in Point” (2008) reviewed the demographics and greater analytics surrounding an Australian effort, entitled *No Butts About It*.

*No Butts About It* was jointly staged by several associations and municipalities, including the City of Melbourne, the Australian Hotels Association and the Department of Human Services to curb youth littering of cigarette butts specifically. Two major barriers to the appropriate disposal of cigarette butts were identified: (1) Smokers were already sensitive to being vilified, potentially because of an existing perceived social marginalization of smokers; thus any messaging which involved an active or passive negative connotation of smokers became counter-productive; and (2) Night clubs, bars, coffee clubs and their immediate surroundings did not provide adequate ashtrays for smokers.

As a potentially complicating qualifier to the former assertion that smokers are particularly sensitive to vilification, Renee J. Bator (2007) found that social disapproval is a strong motivator of individuals’ decisions not to litter, particularly so when a visual cue in the environment is repeated in a public messaging campaign.

Bator’s findings are echoed in the 2007 BASMAA Public Opinion Survey, where 92% of those surveyed who do not litter cite the belief that littering is morally and socially wrong as their primary reason not to litter (BASMAA 2007). Once again these findings are echoed in SGA’s KLAB study which found that an individual’s propensity to feel guilty about littering was the single most impactful variable working against littering. Between these studies, a picture emerges of a delicate audience, one which is at once sensitive to vilification and yet responsive to social disapproval and guilt.

It will be important for any program seeking to affect this group to be balanced in its interest to bring light to the social disapproval surrounding littering and yet refrain from outright blaming and vilification.

**BEYOND SOCIAL NORMS: STRUCTURAL FACTORS AFFECTING LITTERING BEHAVIORS**

***The Problem of Forgetting: Passive v. Active Litter***

Beyond social norms, there are a myriad of other factors affecting littering behaviors overall, and youth littering behaviors specifically. Even the most well-intentioned, environmentally conscious, negative norm-immune individual is victim to the occasional slipup. Oftentimes, these slipups can be characterized as “passive” littering, which is distinct from the “active” variety. Understanding this particular behavior is important in developing a communications campaign as the mechanisms to target each behavior are fundamentally different.

First, active littering is defined as the willful dispersal of waste into non-trash repositories; active littering tends to comprise what is thought of as “littering.” Conversely, passive littering is characterized as unintended littering, resulting principally from situations where someone sets an item down nearby and simply forgets to dispose of it. In the study, *Differentiating Active and Passive Litter*, the authors found that passive littering was more difficult to curtail than active littering (Sibley & Liu 2003). Their subsequent explanations for this observation were three-pronged:

1. Passive littering may be less overt than active littering and thus less likely to entail negative social consequences;
2. Passive littering is a strategic form of covert littering that occurs through the omission of behavior; and
3. People are more likely to genuinely forget their litter at longer time delays.

So, although the individual may have internalized the anti-littering norm, he or she may simply forget to follow that behavior in the absence of a cue or a prompt to serve as a reminder. As a result, in addressing the problem of passive littering, a communications campaign would be best served by utilizing visual cues or prompts to help people remember to dispose of their trash. For example, utilizing a multi-sensory approach by adding signs or alarms near trash cans could provide the cues needed to involve passive litterers into more socially beneficial waste-disposal behaviors (Kort, McCalley & Midden 2008.)

Kort found that trashcans that included a verbal or sound cue to passers-by were 50% more effective in reducing littering than non-sounding trash cans. Through the multi-sensory outreach provided by a physical repository that sounds off towards passers-bys, littering is greatly reduced. Kort concludes that individuals who may have internalized an antilittering norm previously are welcomed into participation of the norm through this multi-sensory, attention-grabbing design.

### ***Prevalence of Proper Repositories***

Across a number of studies, an insufficient quantity of waste receptacles has been cited as a prominent barrier to antilittering behaviors. For instance, 65% of respondents in BASMAA’s 2007 survey reported that the existence of additional trash cans or proper waste repositories would prevent littering. This finding is supported by a similar result in the 2008 Contra Costa Public Opinion Poll, which found that for a number of populations, including teens, an increased number of trash cans would result in littering reductions. SGA’s Keep Los Angeles Beautiful study (2009) reached similar results, finding that the single highest situational barrier to proper waste disposal was the unavailability of waste receptacles.

The previously mentioned *No Butts About It* campaign, implemented in the city of Melbourne, actively incorporated the introduction of additional repositories near the target audience into their program. Central to the program was the use of so-called “Butt Champs” or young adults dressed in casual clothes, equipped with public transportation vouchers and ashtrays. Butt Champs would travel to locations where large groups of smokers in the under-30 age demographic were gathered, such as bars, night clubs and cafes. Once at the location, Butt Champs would offer smokers complimentary ashtrays and proceed to incentivize the use of said ashtrays through a further gift of public transportation vouchers.

## PART II: REACHING THE YOUTH | BARRIERS, MOTIVATORS & MARKETING TACTICS

### TARGET GENERATION PROFILE

#### *Meet Generation Y*

Ask many people to describe a teenager and they will speak of short-sighted, rebellious, disengaged and altogether self-destructive adrenaline junkies. Nothing could be further from the truth when it comes to today's teenagers and young adults: Generation Y.

**Goals Are Good:** Comprising nearly 80 million people, Generation Y is second in gross size only to the Baby Boomers. As there are no precise dates for when the Millennial generation starts and ends, commentators have used birth dates ranging between 1977 and 1996. Also called the Millennial Generation, this group is the most educated generation in the history of the United States with more than 60% having attended at least some college (Papp 2007). This educational pedigree underlies a more pervasive factor in this generation: worldly ambition.

Unlike many past generations that sought to reject the material and cultural status quo, Generation Y generally grew up with respect for their parents, their parents' culture and the working world. They tended to have multiple childhood activities cultivated through organizations such as sports, arts, specialized academic interests and a slew of other activities, ranging from space camp to youth leader groups. This focus on teams and collaborative activities in childhood have produced teens who are collaborative team players, who think in groups and are optimistic about their place in the world (Frank N. Magid Associates 2009). As a whole, this busy childhood has created busy young adults—a group more eager to participate in much of the status quo than destroy it (Papp 2007).

**No Alone Time:** Generation Y is the first generation to grow up in a world of hyper-communication. Cell phones, Facebook, email...this is a generation that has never seen life without instantaneous communication available in multiple platforms. These factors have produced several traits in Gen Y: first and foremost, social communities have become larger, more inclusive and more impactful on their individual decisions (McCrinkle 2003). While the Builder generation relied on authority and Baby Boomers on facts, Gen Y is most driven by the experience of their peers in making decisions. In some respects, this can be viewed as a defense mechanism against the glut of information facing this generation. In fact, by the age of 18, the average young person has viewed more than 500,000 ads; it follows then that they may not trust anything they see because they have already seen too much of it.

Understandably, Gen Y is uniquely focused on improving the social good. Oftentimes, they have already been active volunteers and are generally concerned with the scope of consequences to their actions as they relate to global phenomenon (Papp 2007). As a whole, this is a group characterized by activity, social consciousness, education, material comfort and constant communication.

#### ***This Is Your Brain. This Is Your Brain on Teenage Hormones***

As savvy and sophisticated as the youth of the Y Generation tend to be, they are still teenagers, subject to the same hormonal highs and lows of the stereotypical teenage brain across the decades. It turns out that two of these classically "teenage"

characteristics—fearlessness and naïve idealism—are largely tied to the “under construction” status of the teenage brain.

Scientists have identified a specific region of the brain called the amygdala, which is responsible for instinctual, animal-like reactions including fear and aggressive behavior. This region develops early in life, while the area that controls reasoning and logic for our actions develops over time. The more “reasonable” part of the brain, the frontal cortex, is still changing and maturing as we enter full adulthood.

In fact, according to studies, the adolescent brain goes through a biological remodeling as critical to human development as that which takes place during the first two years of life (National Institute of Mental Health 2005). Because of this, teens have difficulty controlling their impulses, lack foresight and judgment, and are especially vulnerable to peer pressure. This helps to explain the extreme highs and lows of teenage behavior: idealistic and enthusiastic at one moment, cynical and aggressive the next.

It has also been shown that serotonin levels, which are low in teens, and fear are directly correlated (Psychiatric News 2002). As the parent of any teenager can tell you, scare tactics and “doom and gloom” appeals tend to be as effective with teens as sugar-coated brussel sprouts are in luring them into eating their vegetables. This may also explain why teens are more prone than adults to engage in risk-taking behaviors—with little fear of consequence.

Of course, these brain differences don’t mean that young people can’t make good decisions or tell the difference between right and wrong! It also doesn’t mean that they shouldn’t be held responsible for their actions. Yet an awareness of these differences can help to inform the development of campaign messages targeting a youth audience.

A teen’s “nothing bad will ever happen to me” attitude can definitely be considered reckless, but it also speaks to a sort of optimism that adults—who have become more jaded by years of life—may not necessarily possess. Furthermore, if leveraged properly, this biological teen characteristic can be a powerful tool in activating widespread social change from an idealistic audience.

## **MECHANISMS, MEDIUMS & TACTICS FOR MESSAGE DISSEMINATION**

### ***Reaching Gen Y in the Age of “Instant”***

Every generation has its own unique channels of communication. Likewise, Generation Y migrates towards certain communication mechanisms that are particularly prevalent within this subgroup. The common thread linking this group together is the elevated proclivity to engage in “instant,” ultra-convenient, efficient forms of communication. This is a generation that grew up online, with a cell phone in hand. Traditional marketing techniques like television and newspapers are not going to resonate as strongly with this audience. With services like TiVo, internet video and file sharing, being constrained to watch a program at a scheduled time does not make sense to them (MobiADNews 2009).

These principles have become the covenant of modern youth marketing, instructing practitioners where their target audience is located and how to get there, as outlined below:

- *Get Digital:* A longitudinal study conducted by Edison Research compared the media platform behavior of youths aged 12-24 in the year 2000 with youths aged 12-24 in the year 2010 (Edison Research 2010). Across the board, the study found that internet use has nearly tripled within this population over the 10-year period, with the average youth spending approximately three hours online every day.
- *Social Networking:* The social community is firmly at the center of the teen internet experience (MobiADNews 2009). Nearly 75% of 12-24-year-olds actively use Facebook: 55% of 12-24 year olds have a Facebook account, which they log into on a daily basis, with an additional 19% reporting to have a Facebook account, which they log into on a frequent, but non-daily, basis. When it comes to receiving information, teens are more likely to trust the credibility of that message when it comes from their peers—even unknown peers—more than an expert (MobiADNews 2009).
- *Text Messaging:* According to a Harris Interactive study, second to clothing, teens say a mobile phone tells the most about a person's social status or popularity, outranking jewelry, watches and shoes. The study also found that mobile phones are fast becoming a social necessity among teens. In fact, 57% view their cell phones as the key to their social life (Tsirulnik 2009). From texting to talking and logging on to social networking sites, teens carry cell phones to have access to friends, family and current events. Even with these figures in mind, some may still find it surprising to learn that 81% of youths aged 12-24 own their own cell phone (Lenhart, Ling, Campbell, Purcell, 2010.) Of those teen cell phone users, 88% report text-messaging on a daily basis, with more than half of that percentage sending in excess of 50 text messages per day. Additionally, over 69% report texting an average of 55 minutes a day (Frank N. Magid Associates 2009).
- *Cell Phone Advertising:* With the astonishing number of youths who both own and actively use their own cell phones, many practitioners are turning to mobile marketing as their new campaign power house. This movement towards mobile marketing is further supported by the fact that 80% of teens have reported spending at least one hour each day surfing the Net via mobile devices (Knight 2008). Perhaps the primary factor contributing to mobile advertising's greater effectiveness when compared to online advertising comes down to the engagement people have with the device and the environment the ads are being served in. Additionally, the recent explosion in technical capabilities, low levels of clutter and the novelty of mobile advertising will likely contribute to increased message impact (Butcher 2010)

The common thread tying all of these mediums together is also the most fundamental trait of Generation Y: the importance of interaction. Today's teens are highly connected to their social networks, seek engagement, and actively build and contribute to their growing on- and off-line communities. This connection to and valuation of social networks can be leveraged into effective "viral vehicles" of communication through peer-to-peer messaging across a variety of the platforms described above. Not only are youths more likely to respond positively to outreach provided by other youths than to that which is provided by other parties, but the capacity for a "viral" campaign exists within a program which actively seeks out peer-to-peer tactics. Any viral campaign, or campaign which works primarily through internet and word-of-mouth distribution, is to

be considered especially desirable as it represents a tremendous return on investment regarding the scope of its reach (MobiADNews 2009).

### ***The Paradox of Cool***

Miles Davis, skateboarding, iPhones: these are the sorts of people, products and activities that conjure up the illusive concept of “cool.” While it is a word whose meaning can be difficult to pin down, one thing is certain: cool is always changing. A major push in contemporary Generation Y marketing has been to abandon the notion of conventional “cool” product branding and move towards self-replicating, viral, “brand-hijacked” campaigns (Wipperfurth 2005).

***Well-Laid Roots Yield Well-Grown Fruits:*** The concept of brand-hijacking presents the model for a long-term marketing campaign that is both cost-effective and self-perpetuating. Alex Wipperfurth broadly describes the hijacked brand in Brand Hijack: Marketing Without Marketing as a brand which has embraced the true nature of the consumer-provider relationship; namely, the hijacked brand is the one that recognizes that any brand truly belongs to its consumers (2005). After all, it is the consumers who ultimately find use and pump revenue into the products which the brand represents.

Brand-hijacking takes more time to get going than conventional brand marketing, which seeks to inundate a market with a brand image and concept (Wipperfurth 2005). Brand-hijacking seeks to provide various outlets directly to consumers to provide them with the forum to become the major messaging vehicles. In many cases, these outlets are online in the form of social media outlets, websites, user forums and cell phone applications. Inversely to conventional brand marketing, which seeks to develop an initial spike in consumer interest, brand-hijacking seeks to steadily develop communities of passionate supporters who will ultimately drive the brand forward.

Leading sports apparel producer, Nike has successfully transitioned from a conventional brand to a hijacked brand over the past decade (Pankraz 2009). The crux of this transition has been in shifting the focus of the campaigns from awareness-raising tactics, such as television commercials, to internet and grassroots micro-campaigns aimed at engaging consumers. Nike provides online outlets for consumers to “tell their stories”, and in the case of the “Why do you play” campaign, a user-generated effort combining sports with activism and incentivized through small cash prizes (Dilworth 2009).

The “Why do you play” campaign is part of Nike’s push to build an online community in the youth demographic, in which youths can share their personal stories about how they have used sports to create some sort of social good. The campaign encourages these youths to be creative about telling their stories visually, by submitting videos or photos. For example, one user submitted a photo from a soccer clinic that she helped organized for impoverished, inner-city kids. Other users then view and rate the submission, increasing the viral, community-based framework of this engagement campaign (Dilworth 2009).

These shared stories have become the lifeblood of the hijacked Nike brand—a brand that is cultivated from the consumer rather than something meaningless that is thrust upon them. The Nike campaign effectively demonstrates the new face of Generation Y hijacked marketing, the new, ever-changing face of “cool”. For this generation, cool marketing is derived organically from the consumer, resonates with them in a

meaningful way, and is constantly in flux. While it is slower moving in its infancy, once fully developed, a hijacked-brand is fueled by cost-effective online outlets such as social media and websites rather than more traditional, costly outlets like television ads.

### ***The Fun Factor***

Something that is fun to do immediately answers a profound question: the question of “why did you do it?”

*“Because it was fun.”*

In many capacities, an activity which is considered to be fun becomes intrinsically valuable. As in the discussion of “cool,” the definition of what exactly constitutes “fun” amounts to a moving target—what is fun to one person can be an exercise in the most excruciating pain to the next. However, one aspect of fun seems to be in play no matter what the subject seems to enjoy doing: interaction.

***Whistle While You Work:*** Since 2009, the Volkswagen-funded “Fun Theory” campaign has been working under the following premise: “We believe that the easiest way to change people’s behavior for the better is by making it fun to do” (The Fun Theory 2009). The Fun Theory has produced several case-studies, including the “World’s Deepest Trash Bin.” This case study involved equipping a trash can in a metropolitan park area with a motion-activated sensor which when activated, created a sound mimicking an item falling down a cavernous hole. Unwitting passers-by who proceeded to throw away their garbage as they would in any other trash can were of course surprised, and in many cases, delighted by this “World’s Deepest Trash Bin.” Not only were they delighted to have stumbled across this playful public repository, they were activated by it. Over the course of one day of use, the “World’s Deepest Trash Bin” collected 72 kilograms of trash, compared with 31 kilograms of trash collected by an identical nearby bin that was not equipped with the motion sensors.

Comparatively, the public sector has been relatively slow to utilize the powerful, cost-efficient possibilities afforded by “fun” interactive campaigns. However a number of these groups have recently harnessed the power of fun to develop several highly successful, peer-to-peer marketing campaigns. For example, All Terrain. Net launched the user-generated “Dude we can fix it” campaign, supporting Al Gore’s “We can solve it” climate organization, whose goal is to have America’s electricity generated from non-fossil fuel sources within 10 years. The campaign runs on a series of sketch-comedy video spoofs of people trying to be green, but whose tactics are far from effective.

As observed by the “Fun Theory” and “Dude we can fix it” campaigns, re-framing a conventionally un-fun activity or idea in a fun way can produce measurable alterations in human behavior. By adding an element of play, lightness and interaction, a boring task can become something enjoyable, activating the adoption of the desired behavior within the target audience.

This fundamental element of interaction appeals to nearly every generation, but is perhaps most applicable to Generation Y. As mentioned earlier, Generation Y is comprised of a cadre of youths defined by their valuation of social connectivity and interaction. From participating in team sports, to engaging with their friends online—instantly and in real time—this generation has brought new meaning to the word

“interaction.” With this observation in mind, it is no wonder why hijacked campaigns like Nike’s “Why do you play” are so popular among youth: not only is it cool, but it’s fun too.

### ***Power to the People***

It has been argued that behavior-change communication strategies that focus on “target” audiences and externally determined behavioral outcomes can violate the very principles that underlie work in the community: dignity, participation and choice. Rather, campaigns should seek to directly involve the target community in both the design and implementation of a program to not only increase their ownership over the campaign’s outcome, but their commitment to the cause.

Given the focus that today’s youth place on their involvement in brand development in addition to their interest in social causes, it would make sense to utilize these complementary characteristics in the design and implementation of campaigns promoting the public good. Numerous public-sector departments and organizations have utilized youth activism in rolling out youth-focused campaigns. For example, the County Health Department in Pinellas County, Florida, worked directly with youths in designing and rolling out a youth violence prevention program in Pinellas County. The high school-aged youth group was trained in basic social-marketing principles and worked with a subcontracted advertising agency and a university researcher to create and test the campaign slogan, logo and tagline. The youth group also developed a six-session curriculum for three middle schools, designed for a team of youth group leaders to instruct in each middle school. As a result of this youth group partnership, middle school students throughout the county now recognize the slogan, and most middle schools have at least one campaign poster (Loomas 2004).

## **PART III: YOUTH LITTERING | BARRIERS, MOTIVATORS & MARKETING TACTICS**

As outlined in Part I, context, or one’s physical environment, plays a significant role in both driving and curtailing littering behaviors. Statistical analyses have shown that among youths, 22% of a person’s willingness to litter is a result of physical context, while the remaining 78% results from individual preferences (SGA 2009). While context is still a strong factor, more nuanced, less visible factors such as individual preferences play a much larger role in youth littering behaviors. The following section will outline some of the more prominent barriers and motivators associated with individual preferences as they relate to youth littering.

### ***Friend of a Friend: When the Social Norm Is Set by a Peer***

Precedents set by a friend or known peer’s behavior may be indicative of an especially salient social norm (SGA 2009). In SGA’s youth littering study for Keep Los Angeles Beautiful (KLAB), survey results discovered that the most impactful, non-situational factor in determining an individual’s likelihood of littering was the littering habits of their friends. Moreover, friends’ behaviors with regard to littering were found to be twice as impactful as the littering habits of their parents.

In considering this point, it should also be noted that a social norm is not the same thing as “peer pressure.” In the 2007 BASMAA Public Opinion Survey, the least cited cause for appropriate trash disposal behavior was “peer pressure” at 26% of respondents who reported appropriate trash disposal habits (i.e., not littering). The principal difference

between peer pressure and perceived social norms is the concerted participation of separate parties in the attempt to influence certain behaviors—that is, an individual or group of individuals that is actively trying to influence their peer’s behavior defines peer pressure. As opposed to a social norm’s effects, which are defined as those effects stemming from the perceived behavior of others by the individual. It is important to make this distinction when identifying the social norms acting on the target population, and how to utilize those norms to activate the desired behavior change.

***Meaning Well and Doing Bad: The Knowledge-Gap Barrier***

Although knowledge does not directly relate to behavior change, a lack of knowledge can certainly be a barrier to adopting the desired behavior. Studies have found that a lack of knowledge or understanding as to how litter is defined acts as a significant barrier to sustainable behavior.

For instance, unsurprisingly, the KLAB study found that the individuals reporting the highest levels of concern for the environment were amongst those found to be least likely to litter (SGA 2009.) As a whole, this group was characterized as essentially being “good kids”: less likely to smoke cigarettes, watch less TV and spend more time volunteering. However one area of overlap that these so-called “Green Crusaders” shared with the other litter bug groups was the elevated potential to improperly dispose of bio-degradable items. A potential explanation for this phenomenon is a misunderstanding as to what litter is, and what happens to that particular item once it is improperly disposed of. Plainly, people think that throwing away an apple core into a bush is different than throwing a Styrofoam cup into the bush because an apple will more quickly be broken down and integrated into the natural environment.

Upon further investigation, in fact, less than half of the “Green Crusaders” and less than 40% of other groups could correctly identify what actually happens to litter. Thus, an area of strategic redress in any litter prevention program focusing on youths should educate the target audience on the true fate and environmental impact of litter, especially those “Green Crusaders” who have already exhibited a willingness to curtail the brunt of their littering ways (McKenzie-Mohr 1999).

***I’ve Got Bigger Problems: Mood, Class, Personality, Life, You Name It...***

With 97% of respondents reporting that littering was a problem in the BASMAA study, one must conclude that littering is already perceived to be a problem by the vast majority of the general public. This information provides a slight but meaningful course to potential messaging. The goal then should not be to convince the target audience that littering is a problem; rather, that it is a *more important and soluble* problem than they currently perceive.

In establishing a framework that positions sustainable behaviors as “easy” and “convenient”, compared to the other responsibilities and woes in their life, it is important to first understand what those factors are for the target population. Thus, the emotional and socio-economic barriers to litter-prevention among teens include:

- *Mood*: Teens who are in a bad mood exhibit an elevated propensity to litter.
- *Employment*: Youths with jobs are less likely to litter than the unemployed.
- *Hurried*: Those in a hurry have an elevated propensity to litter.



- *Video Games:* Teens who regularly use video games exhibit an elevated propensity to litter.
- *Laziness:* Youths who are “feeling lazy” are more likely to litter (SGA 2009).

Obviously, the practical answer to the questions raised by these findings is not: “Get teens jobs, make them happy, energetic, healthfully busy and off of video games to stop littering.” Nor is the answer to resign to a set of data that is to be considered too pervasive, too endemic and altogether true, but useless, information (Heath and Heath, 2010.)

But the answer could be to utilize messaging and outreach to elevate the importance and perceived ease of proper waste-disposal behavior amongst the target audience into a position where it can effectively compete with these barriers.

In the case of video games, precedent has been set by the Dublin City Council ‘Anti-Litter’ campaign to shift the programmatic perception of video-game play as a barrier to a channel of communication. When viewed as a channel of communication, the Dublin Campaign created a simple video game that was disseminated to its target audience (Brosseau). This tactic underscores a greater strategy: the barriers cited by the target audience can be used to inform messaging and more directly reach that very same audience.

#### ***Age Is Just a Number...Or Is It?***

In addition to social norms, knowledge, mood and interests, KLAB also found that demographic variables such as age were highly influential in determining youth littering behaviors. Statistical analysis found that those most likely to litter were between 16 and 17 years old. Results also found that littering progressively decreased as age increased, with young adults between the ages of 21 and 24 being the least likely to litter (SGA 2009). Therefore, certain behaviors and attitudes seem to cluster around very specific points along the age continuum. These behaviors then change, quickly and simultaneously, once the teen reaches young adulthood. Framing messages that speak to this pattern (i.e., that littering is “not cool” because it’s something that “kids” do) could positively impact littering behaviors.

The only exception to this pattern was that the “Green Crusaders” group was found to be evenly distributed across all age groups. Potentially then, environmental activism should be viewed as unrelated to age.

#### ***Keep It Culturally Relevant***

Research on consumer behavior has revealed that an individual’s personal values, which are defined by their culture, underlie their buying motives. As a result, identifying consumers’ personal values contributes to explaining and understanding consumer preferences. Personal values are part of a culture and differ depending on one’s cultural background. Therefore, culture-specific values result in specific consumer behavior. It would then follow that if there are differences between the personal values of consumers who are from different cultural backgrounds, this has to be taken into account by differentiating the strategic direction of marketing strategies, which should incorporate culture-specific messaging (Rewerts & Hanf 2006).

These compelling results from the world of consumer marketing can be directly applied to the world of public interest marketing. Thus, if personal values underlie buying behaviors, then they probably motivate other behaviors as well. The importance of aligning the target audience's cultural preferences to the direction of strategic marketing strategies is not a foreign concept to most communications practitioners. Although not a new idea, it is certainly not an easy undertaking.

Perhaps one of the most successful culturally focused marketing campaigns, especially in the field of litter prevention, is the famous "Don't Mess with Texas" campaign. Originally an effort focused on litter prevention, "Don't Mess with Texas" has evolved into a cultural icon, encapsulating the essence of "what it means to be a Texan" (Don't Mess with Texas 2010).

The campaign was first developed in 1985 by the Texas Highway Commission. From the program's survey research, the Commission identified the state's worst offenders and how best to reach them. Unlike other litter-prevention programs, this campaign opted to focus on the audience as opposed to the pollutant. In doing so, messages were crafted so that they spoke to the unique underlying values of Texan society, parceling out exactly what it meant to be a Texan and then touting those qualities through the legendary slogan.

The slogan was paired with iconic Texas celebrities to help spread the message, like Willie Nelson, Lee Ann Womack, Stevie Ray Vaughan, Matthew McConaughey and even Chuck Norris. As a result, the campaign has become more than a public program, and the slogan has become more than a tag line. "Don't Mess With Texas" expresses a way of life. It incites action by activating cultural values; in this case, state pride. As the Texas campaign demonstrates, behavior change is more likely to occur when culture-specific messaging has been incorporated in the strategic direction of a campaign.

#### PART IV: BARRIERS, MOTIVATORS & MARKETING TACTICS: REVIEW

IDENTIFYING & OVERCOMING BARRIERS	
Barrier	How to Overcome
<b>SOCIAL NORMS</b> that encourage littering such as: <i>Context:</i> A littered/disorderly environment prompts others to litter <i>Peers:</i> Littering friends increase likelihood of littering	<b>REFRAME THE NORM</b> so that it is more aligned with the desired behavior Utilize the norm of <b>SOCIAL DISAPPROVAL</b> , but <b>DO NOT VILIFY</b> the offenders
<b>FORGETFULNESS:</b> Individuals may engage in passive littering as opposed to active littering; i.e., littering is not the intention; rather the individual forgets to dispose of an item	<b>PROMPTS:</b> Utilize visual cues near the trash receptacle to encourage individuals to remember to dispose of waste
<b>LACK</b> of proper <b>REPOSITORIES</b>	Place <b>ADDITIONAL</b> repositories <b>OR</b> utilize <b>SIGNS</b> to clearly indicate repository locations
Lack of <b>KNOWLEDGE</b> about litter: <i>Definition</i> (i.e., plastics are perceived as litter, but organics may not be) <i>Fate</i> (environmental/social consequences)	Identify the most prevalent misconceptions with regard to litter's definition or fate and <b>TARGET MESSAGES</b> to address these specific information gaps

<b>EMOTIONAL STATES:</b> Bad mood Laziness Hurried	These emotional states can make people more <b>PRONE</b> to littering	<b>ELEVATE MOTIVATORS</b> to demonstrate that litter prevention is more important than fleeting emotional states
<b>The TEENAGE BRAIN is still UNDER CONSTRUCTION</b>		<b>CAPITALIZE ON THE EXTREMES OF TEENAGE BEHAVIOR (I.E., IDEALISM) TO CREATE SOCIAL CHANGE</b>
<b>AGE greatly influences littering behaviors, even within the small bracket of the target age group</b>		MAKE LITTERING UNAPPEALING BY DEMONSTRATING THAT LITTERING IS SOMETHING THAT “KIDS” DO
<b>IDENTIFYING &amp; UTILIZING MOTIVATORS</b>		
<b>Motivator</b>		<b>How to Utilize</b>
<b>SOCIAL NORMS</b> that encourage litter prevention		<b>ALIGN SOCIAL NORMS</b> with litter prevention behaviors (i.e., show responsible behavior as the norm and encourage others to follow suit)
Concern for the <b>ENVIRONMENT</b> among certain groups within the target audience		Demonstrate through messaging that litter prevention <b>PROTECTS</b> environmental integrity
<b>OWNERSHIP:</b> desire to be <i>involved &amp; engaged</i> among certain groups		<b>INVOLVE TARGET AUDIENCE</b> into program design and/or implementation
<b>The desired behavior resonates with the underlying CULTURAL VALUES of the audience</b>		<b>Incorporate CULTURE-SPECIFIC MESSAGING in the strategic direction of the campaign</b>
<b>The desired behavior is perceived as being “COOL”</b>		ALLOW THE CAMPAIGN TO BE “OWNED” BY THE TARGET AUDIENCE AND ENCOURAGE THE CONSTANT <b>CHANGE &amp; EVOLUTION</b> OF THE MESSAGE AND/OR BRAND
<b>The desired behavior is perceived as being “FUN”</b>		INCLUDE <b>PLAYFUL, INTERACTIVE</b> ELEMENTS
<b>HOW TO GET MESSAGES ACROSS</b>		
Use <b>ONLINE PLATFORMS</b> as a central mechanism to message distribution		
<b>SOCIAL NETWORKING, ON- AND OFF-LINE:</b> Empower the audience to become a vehicle of communication through peer-to-peer messaging via social networking sites & word of mouth		
<b>GET MOVING, GO MOBILE:</b> Utilize text messaging & mobile advertising to reach the target audience		

## References

- AREHART-TREICHEL, J. Serotonin Receptors Offer Clue To Teen Suicide Risk. 2002. *Psychiatric News*. 37(9): 30. Accessed Oct. 14. <http://www.pn.psychiatryonline.org/content/37/9/30.full>
- ASTONE. 2007. *BASMAA Public Opinion Survey*.
- ASTONE. 2008. *Public Opinion Survey*. Contra Costa Clean Water Program.
- BATOR, R. J. 1997. *Effective Public Service Announcements: Linking Social Norms To Visual Memory Cues*. UMI.
- BRAYBOY, E., W. LOOMAS, PINELLAS COUNTY HEALTH DEPARTMENT & VIOLENCE PREVENTION OFFICE. 2003. Youth Violence Prevention Social Marketing Campaign: Raise Your Standards, Not Your Fists. Accessed Oct. 14. <http://cc.bingj.com/cache.aspx?q=youth+marketing+campaigns&d=4505218970812701&mkt=en-US&setlang=en-US&w=bcb388d9,1a93c4a0>
- BROSSEAU, G. <Geoff@brosseau.us> "Info On City Of Dublin, Ireland Anti-Litter Campaign." 12 February 2009. Personal email. (14 October, 2010).
- BUTCHER, D. 2010. Mobile Ad Campaigns 5 Times More Effective Than Online: InsightExpress Study. *Mobile Marketer*. Accessed Oct. 14. <http://www.mobilemarketer.com/cms/news/research/5308.html>
- DE KORT, Y. A. W, MCCALLEY, T, & MIDDEN, C. J. H. 2008. Persuasive Trash Cans; Activation Of Littering Norms By Design. *Environment and Behavior*. 40: 870 - 891.
- DILWORTH, D. 2009. Nike Targets Youth With Social Campaign. *Direct Marketing News*. <http://www.dmnews.com/nike-targets-youth-with-social-campaign/article/130294/>
- DON'T MESS WITH TEXAS. 2010. "Homepage." Texas Department of Transportation." Accessed Feb. 15, 2011. <http://dontmesswithtexas.org/>
- EDISON RESEARCH. 2010. *Radio's Future II: The American Youth Study*. Accessed Oct. 14. [http://www.edisonresearch.com/Edison\\_Research\\_American\\_Youth\\_Study\\_Raios\\_Future.pdf](http://www.edisonresearch.com/Edison_Research_American_Youth_Study_Raios_Future.pdf)
- FRANK N. MAGID ASSOCIATES. *What Makes Teens Tick - What Marketers Need To Know About The Cell-Phone-Obsessed Generation*. MobiThinking. Accessed Oct. 14. [http://www.mobithinking.com/\\_white-papers/what-makes-teens-tick-what-marketers-need-know-about-cell-phone-obsessed-generation](http://www.mobithinking.com/_white-papers/what-makes-teens-tick-what-marketers-need-know-about-cell-phone-obsessed-generation)
- HARTMAN, J.K. 2003. Solving Some Mysteries About The Habits Of The Young: The Keys To Turning Young Adults Into Newsreaders Are Out There. *Young Readers*. Nieman Reports. 14-16.

- HEATH, C. & D. HEATH. 2010. *Switch: How To Change Things When Change Is Hard*. Heath Brothers, Inc.
- KEEP AMERICA BEAUTIFUL STUDY. Literature Review-Litter A Review Of Litter Studies, Attitude Surveys And Other Litter-Related Literature. R.W. Beck. Accessed Oct. 14. [http://www.kab.org/site/DocServer/Litter\\_Literature\\_Review.pdf?docID=481](http://www.kab.org/site/DocServer/Litter_Literature_Review.pdf?docID=481)
- KEIZER, K. 2008. The Spreading Of Disorder. *Science Issue* 322.
- KNIGHT, K. 2008. Report: Mobile Teens, Tweens React Differently. *Biz Report*. Accessed Oct. 14. [http://www.bizreport.com/2008/01/report\\_mobile\\_teens\\_tweens\\_react\\_differently.html](http://www.bizreport.com/2008/01/report_mobile_teens_tweens_react_differently.html)
- LENHART, A., R. LING, S. CAMPBELL & K. PURCELL. 2010. Teens and mobile phones. *Pew Internet Research*. Accessed Oct. 14. <http://pewinternet.org/Reports/2010/Teens-and-Mobile-Phones/Summary-of-findings.aspx>
- MCCOY, L. 2008. No Butts About It: A Sustainability Victoria Campaign Helps Stamp Out Cigarette Butt Litter Following A Smoking Ban. *Communication World*. 40-41.
- MCCRINDLE, M. 2003. *Understanding Generation Y*. The Australian Leadership Foundation. Accessed Oct. 14. <http://www.learningtolearn.sa.edu.au/Colleagues/files/links/UnderstandingGenY.pdf>
- PANKRAZ D. 2009. Nike: We Don't Do Advertising, We Do Cool Stuff. Dan Pankraz Vs Youth: perspectives from a youth marketing planner. Accessed Oct. 14. <http://danpankraz.wordpress.com/2009/08/20/nike-we-dont-do-advertising-we-do-cool-stuff/>
- PAPP, E. 2007. *Managin Gen Y*. Voice of Generation Y. Brandon, Florida. Accessed Oct. 14. <http://www.ericpapp.com/downloads/article-managing-gen-y.pdf>
- REWERTS, A. & J. Hanf. 2006. Culture And Values - Their Relevance For Marketing Strategies. *European Association of Agricultural Economist. 98<sup>th</sup> Seminar, June 29- July 2, 2006, Chania, Crete, Greece* with number 10113. Accessed Oct. 14. <http://ideas.repec.org/p/ags/eaee98/10113.html>
- S. GRONER ASSOCIATES (SGA). 2009. *Littering and the iGeneration*. Keep Los Angeles Beautiful.
- SIBLEY, C.G. & J. H. LIU. 2003. Differentiating Active And Passive Littering: A Two-Stage Process Model Of Littering Behavior In Public Spaces. *Environment and Behavior* 35: 415.
- TEENAGE BRAIN: A WORK IN PROGRESS. 2005. National Institute of Mental Health. Accessed Oct. 14. <http://www.nimh.nih.gov/health/publications/teenage-brain-a-work-in-progress-fact-sheet/index.shtml>

- THE FUN THEORY. 2009. "Home Page." Volkswagen. Accessed Oct. 14.  
<http://www.thefuntheory.com/>
- TSIRULNIK, G. 2009. *Jcpenny Back-To-School Campaign Targets Teens On Mobile*. Mobile Marketer. Accessed Oct. 14. <http://webcache.googleusercontent.com/search?q=cache:JyygihcpaTOJ:www.mobilemarketer.com/cms/news/messaging/3693.html+mobile+marketing+%2B+teens&cd=2&hl=en&ct=clnk&gl=us> (accessed on October 14, 2010).
- TURNER, C. 2008. How Red Bull Invented The 'Cool' Factor. *UTalkMarketing.com*. Accessed Oct. 14. [http://www.utalkmarketing.com/Pages/Article.aspx?ArticleID=4274&Title=How\\_Red\\_Bull\\_invented\\_the\\_%E2%80%98cool%E2%80%99\\_factor](http://www.utalkmarketing.com/Pages/Article.aspx?ArticleID=4274&Title=How_Red_Bull_invented_the_%E2%80%98cool%E2%80%99_factor)
- W. DE KORT, Y. A., T.L. MCCALLEY & C. J. H. MIDDEN. 2008. Persuasive trashcans: activation of littering norms by design. *Environment and Behavior*. 40(6): 870-891.
- WILSON, N., S. DASHO, A. MARTIN, N. WALLERSTEIN, C.C. WANG & M. MINKLER. 2007. Engaging Young Adolescents In Social Action Through Photovoice: The Youth Empowerment Strategies (YES!) Project. *The Journal of Early Adolescence*.
- WIPPERFURTH A. 2005. *Brand Hijack: Marketing Without Marketing*. Portfolio Hardcover.

## II. LITTER: ANATOMY OF A MESSAGE

### THE SOURCE---*WHO IS THE MESSAGE FROM?*

The source of the campaign should have a nonprofit, as opposed to a government-based, look, tone and overall feel. BASMAA should just be seen as the funding arm of the overall campaign, with the actual source being a fast-moving, young and hip nonprofit. That said, even the source itself will essentially “take a back seat” to the brand—where the campaign is the element that is front and center.

### THE ISSUE---*WHAT IS THE ISSUE WE ARE PROMOTING?*

For the program, litter<sup>1</sup> is the issue. But for the youth, the environment—and more specifically, marine water quality—is the issue. This audience is not necessarily moved by the thought of litter. However, oceans and the Bay are tangible, and evoke an emotion, which makes this group more apt to care about this issue over abandoned water bottles littering their streets.

### THE ACTION---*WHAT IS IT WE ARE ASKING THEM TO DO?*

The entire “feel” of the campaign should be action-oriented. For this reason, the message needs to be able to just transcend a littered paper cup. Initially, the campaign will ask the target audience to simply not litter. However, this initial commitment will evolve into several other commitments and actions as the campaign progresses. With each singular, targeted action the participant undertakes, the campaign will ask them to take on one more singular targeted action—and then again and again. This singular step-wise approach is so important because, as the literature review demonstrated, people are more apt to adopt one behavior at a time, as opposed to undergoing an entire lifestyle change. For example, the primary action would be “don’t litter.” Once they are involved, we would follow up with the participant via email/social media, asking them to attend a clean-up event, then to “tell a friend”, etc.

### THE BRAND---*WHAT IS THE OVERALL, OVERARCHING IDENTITY OF THE CAMPAIGN?*

The brand should appeal to the target audience: it should be cool, fun and kitschy in name, program language/materials, design and aesthetic. The brand slogan should encompass an idea beyond litter, norms and the environment to include the cultural identity of the Bay Area, such as “Keep the Bay Golden”, for example. These elements will create a link between the campaign’s identity and how it relates to the target audience.

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<sup>1</sup> It is important to note that certain key terms in addition to overall campaign language should be field-tested during the message development phase (while creative designs are being assembled for the advertisements). For example, “litter” vs. “trash” as well as “bay” vs. “ocean” should be field-tested to ascertain the target population’s understanding of these terms, in addition to identifying the most easily and commonly comprehensible terminology to express these ideas.

The brand should ultimately convey a call to action and appeal to the youth's concern with fitting in and being part of a norm, while also playing off of their drive to feel empowered—as though their actions are making a real impact on the world around them.

**THE FACE---***WHO/WHAT WILL BE THE "FACE" OR THE AMBASSADOR OF THE CAMPAIGN?*

The outward faces of the campaign, or the message ambassador, are the youths themselves. The face should show the public that this campaign is created for youth, by youth.

The "face" is distinguished from the "brand" such that the face comprises only one facet of the larger campaign identity.

**THE ANGLE---***HOW WILL THE CAMPAIGN BE PRESENTED?*

The angle, or how the campaign is presented to the target audience, will be differentiated by each sub-group of the larger target population. This campaign is comprised of two basic audiences: the Green Crusaders, and then everyone else between the ages of 16 and 24. For the Green Crusaders, the angle will center on ocean water quality. However, ocean water quality is a monumental topic, so focusing on a specific aspect of water quality would probably be more effective. To that end, when targeting Green Crusaders, the campaign could focus on the health of a singular, iconic Bay Area marine animal, such as the sea lion. By focusing on the sea lion, the issue now has a face—it is a living, breathing thing as opposed to an ugly intangible, such as discarded trash.

For everyone else in this age group (including the general advertising campaign), they are more likely to respond to social norms as opposed to environmental concerns, as demonstrated in the literature review. So for this target audience, the angle will be focused around two norms: (1) that littering is "something that kids do", and (2) that everyone else is picking up after themselves. As demonstrated by the literature review, this group above all others is most persuaded by the actions and social norms set by their peers. Moreover, as young adults, this group is also eager to rid themselves of stereotypes and behaviors that are seen as "childish".

**KEEPING IT RELEVANT---***HOW WILL THE CAMPAIGN MAINTAIN A CONNECTION WITH THE TARGET AUDIENCE?*

To maintain a connection with the target audience, the campaign should develop a "youth panel" that provides feedback on the campaigns, while also taking ownership over its direction. Relevance could also be maintained by partnering with highly youth-trafficked and credible establishments, such as local boutiques and nonprofits.

### III. FIVE-YEAR LITTER MARKETING STRATEGY

#### 1. COMMUNICATIONS STRATEGY GOALS & OBJECTIVES: AN AERIAL VIEW

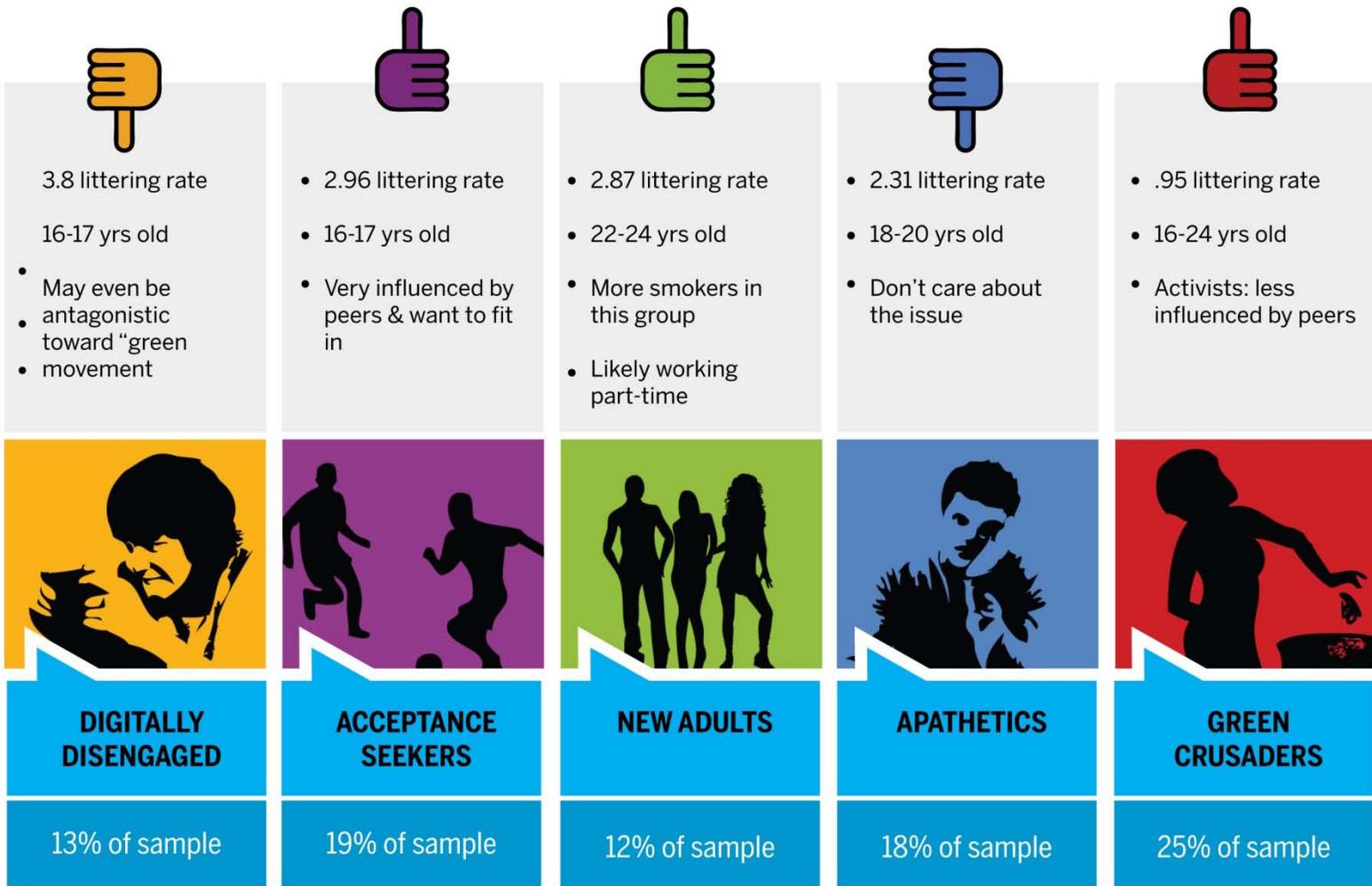
The overarching goal of the following advertising campaign strategy is to encourage the target population to curb and eventually eliminate their littering behaviors. In promoting this behavior change, the campaign will apply a series of strategies to encourage the viral spread of anti-littering messages through peer-to-peer networks of communication. This grassroots approach will seek to incite action among the target youth audience, allowing for engagement and empowerment in the peer-to-peer distribution of campaign messages. By promoting these specific, action-oriented messages, the campaign will be better equipped to successfully mold the behaviors of the target population by attempting to influence the social norm.



#### 2. Hi, My Name Is...Identifying & Tracking Your Audience

Targeting messages to specific audience groups helps conserve finite program resources by focusing efforts on those groups who engage in the target behavior most frequently (i.e., youth littering behaviors). By refining marketing efforts and messages to a well-defined subset of the larger population, the program will be able to target resources more efficiently, while also strengthening the impact of the message through this tailored approach.

The target audience for this campaign is comprised of youths aged 16-24, residing in the eight Bay Area Counties participating in BASMAA. Utilizing SGA's 2009 Keep Los Angeles Beautiful Youth Litter Study, we have further refined this general audience into five unique sub-populations, each distinct in their respective attitudes, beliefs, general characteristics and propensity to littering. These sub-groups comprising the larger youth population include: Apathetics, Digitally Disengaged, Acceptance Seekers New Adults and Green Crusaders.



## 2009 KEEP LA BEAUTIFUL YOUTH LITTER STUDY

**Figure 1:**

Note that the "thumbs up" symbol represents audience sub-groups that the campaign will focus on reaching directly, while the "thumbs down" symbol represents audience groups that the program will not specifically reach out to, but will be affected through indirect interactions with the target audience groups.

As illustrated by the image above, each group differs in terms of their propensity to litter, as well as their propensity to adopt more sustainable behaviors. For example, the Digitally Disengaged and Apathetics are not only most likely to litter, but they are also least likely to care about the negative effects associated with littering and to engage in positive changes. As a result of this finding, this campaign will not seek to engage these extremely hard-to-reach groups directly, and will instead focus energies on the other three subpopulations most likely to change and also use them as a catalyst for reaching the other two. Therefore, the target populations for this campaign include the Green Crusaders, New Adults and Acceptance Seekers. Collectively, these three groups account

for 56% of the youth population. As defined by the 2009 Youth Litter Study, these audience groups are defined according to the following characteristics.

**Target Sub-Population 1**



**Green Crusaders:** These youths, which are found across all age groups between the ages of 16 and 24, are the least likely to litter. They are high in environmental concern, they are likely to feel guilty for littering, and they report that their friends do not litter. They are less likely to smoke cigarettes, watch less TV, spend more time volunteering, less time in organized sports, less time playing video games, and are less likely to attend church. They are also generally knowledgeable about what happens to litter

on the ground. *Green Crusaders* widely perceive fewer reasons for not properly disposing, and they are willing to overcome greater barriers to avoid littering. In general, they are less influenced by perceptions of peers and more motivated to act on their personal convictions. They are already invested in the environmental issue and are likely to be invested in other types of activities as shown by their propensity for volunteering. It is important to note that this group is not completely void of any littering behavior; however their propensity to litter is far less than that of other groups.

**Target Sub-Population 2**



**New Adults:** These young adults are working and not currently attending school. They are typically over 18, have a higher probability of smoking (55%), spend fewer hours in sports, fewer hours watching TV, fewer hours playing video games, and are less likely to attend church. They are less knowledgeable about what happens to litter on the ground. Since this group is older than the average college age and more likely to work, it is assumed that they are becoming part of the adult

workforce, having a different role in society than they did when younger. Because of their working status, they may perceive themselves as increasingly more a part of this society that the *Digitally Disengaged* find themselves rebelling against.

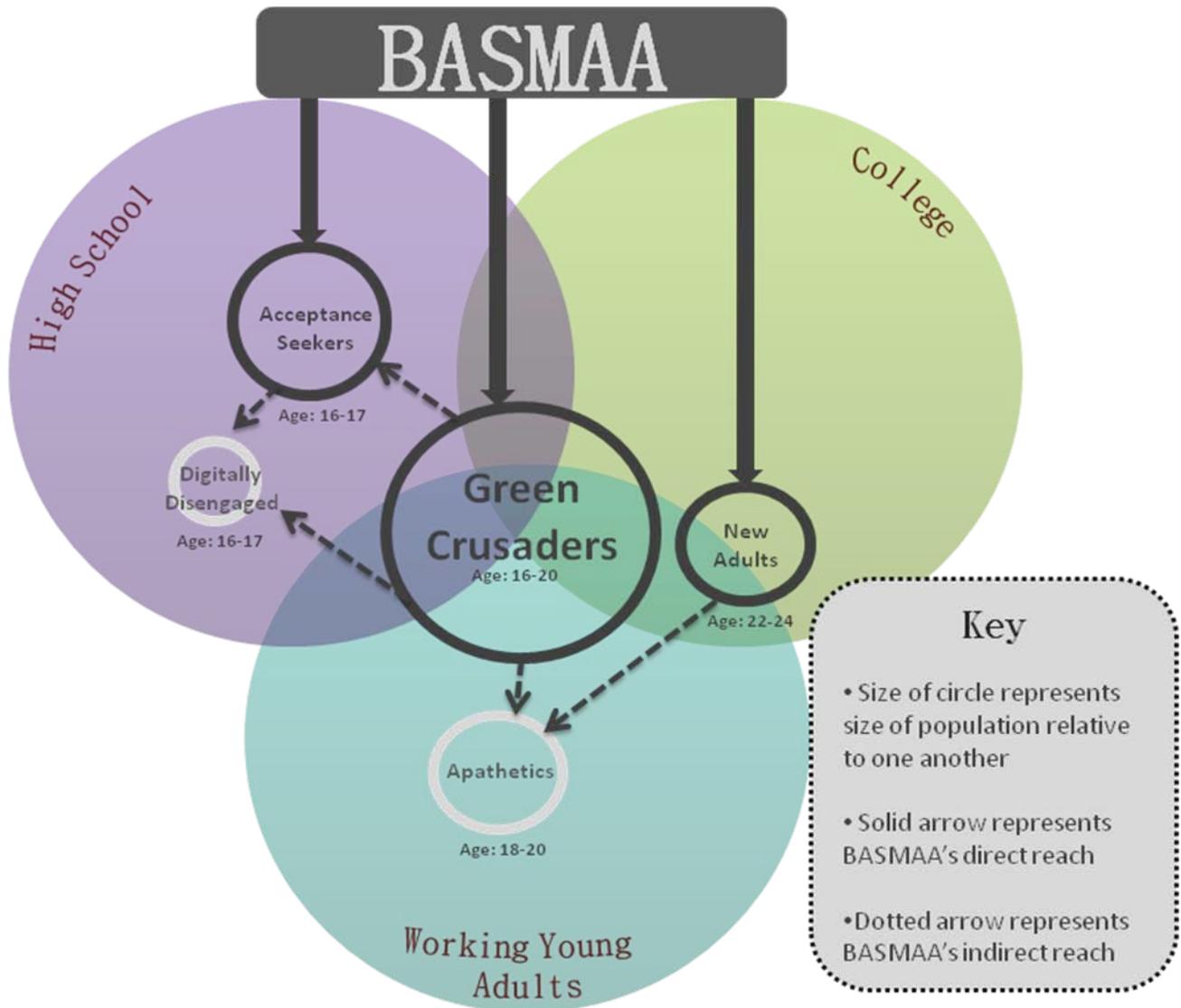
**Target Sub-Population 3**



**Acceptance Seekers:** These youth are still typically in high school and may be termed the 'over-achievers' who care about their academic performance, and are involved in sports and other organized activities. They are less likely to smoke, more likely to volunteer, less likely to work, and more likely to attend church. They are less knowledgeable about what happens to litter on the ground. They are strongly influenced by their

parents and their peers, and are likely to be swayed by their actions. Since they are highly influenced by their social networks, we can assume that they want to fit in, and they seek acceptance among these groups. Environmental concern is not high on their scale of things that they care about.

**Figure 2**  
The strategies described above and below will not only directly reach the three target populations, but messages will also affect the harder-to-reach groups through cross-pollination and viral-sharing between groups.



As the plan below will describe, the campaign will demand a tremendous amount of interaction between the program and these three youth populations. Offering this opportunity for engagement provides a cost-effective means for increased participation on the part of the audience members, in addition to an increased opportunity for directly tracking campaign progress on the part of the program.

To track this participation and maintain engagement, the program is advised to build a database that would include the participant’s name, mailing address, email address and the way the participant first came into contact with the program (e.g., an outreach event, program website, through a friend, etc.). In addition to general contact information, each database should also describe to what extent each participant has been involved in the project (e.g., signed up for Facebook page, entered viral video contest, etc.). The database should then record a follow-up action that should be taken for each participant (e.g., send email invitation to participate in a clean-up, respond to a Facebook wall post, etc.) to automate and streamline interactions and as a way of asking for an increased number of commitments.

**LEVERAGING EXISTING RESOURCES**

Start the database by collecting emails and names from all of the contacts that have been made through the existing County efforts such as the annual Coastal Clean Up events that the Counties host.

### 3. TO THE POINT: KEY CAMPAIGN MESSAGES

#### 3.1 Overall Messaging Strategy

As mentioned earlier, the overall goal is to deliver a set of targeted messages that not only increase the audience’s awareness of the issue, but that actively reduce their littering frequency. This approach is characterized by Community-Based Social Marketing’s (CBSM) stepwise process for behavior change, as described in the literature review:

- Phase 1. **Raising Awareness (General Advertising Campaign):** The campaign will begin with raising awareness of the newly launched youth-focused campaign. Targeted advertising will encourage viewers to visit a website or enter a contest.
- Phase 2. **Produce Engagement:** The ultimate goal of the advertising campaign will be to involve the youth into the program, either by joining a Facebook page, entering our contest, playing our quiz, etc. This is where the program will have the opportunity to get the youth involved in the program (e.g., by obtaining their email address, Facebook sign-up, etc) in order to continue sending the participant information throughout the life of the campaign.
- Phase 3. **Change Behaviors:** To move the audience along the behavior change continuum, the campaign will develop a feedback mechanism facilitated by electronic platforms such as email marketing and social networking sites to continue to encourage participants to engage in increasingly more difficult behavior changes.
- Phase 4. **Maintain Engagement:** To maintain the engagement and behavior change that has been achieved, the campaign will continue to utilize the feedback and engagement tracking mechanisms to automate interactions with the target audience.

**Figure 3:**  
A visual representation of the “road to behavior change,” demonstrating how the various program activities will move participants to increased awareness, engagement, and eventually, behavior change.



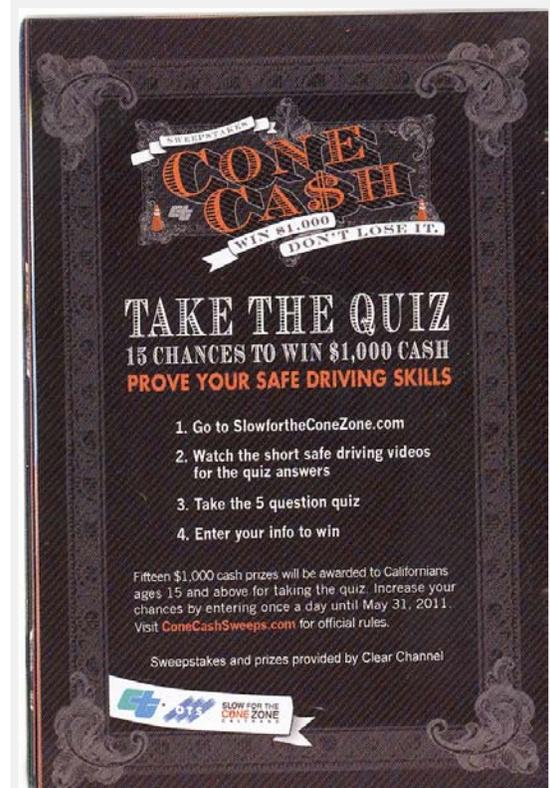
### 3.2 Specific Messaging Strategy

Throughout each phase of the campaign, messages will be action-oriented and will mirror the behavior-change continuum of awareness to engagement to behavior change. As mentioned above, the general advertising campaign messages will only focus on the first two steps of the continuum—raising awareness and producing engagement. For example, to increase awareness, the campaign would convey that negatively impacting the Bay by littering is frowned upon by your peers (i.e., not the norm). The second engagement phase of the campaign would then ask teens to join the movement. In moving along this behavior-change continuum, the campaign’s messages and specific steps may include those described below.

**Phase 1. Getting Their Attention:** As mentioned above, the campaign will begin with raising awareness regarding how to get involved in the campaign.

- For the general advertisements, we suggest using social norms as the primary motivator in encouraging behavior change. For these groups, the angle will be focused around two norms: (1) that littering is “something that kids do”, and (2) that everyone else is picking up after themselves.
- For the more targeted one-on-one outreach (e.g., BASMAA youth panel), the angle will center on a specific aspect of water quality, given the size and scope of water quality in general. To that end, campaign messages will focus on the health of a singular, iconic Bay Area marine animal, such as the sea lion. By focusing on the sea lion, the issue now has a face—it is a living, breathing thing, as opposed to an ugly intangible, such as discarded trash.

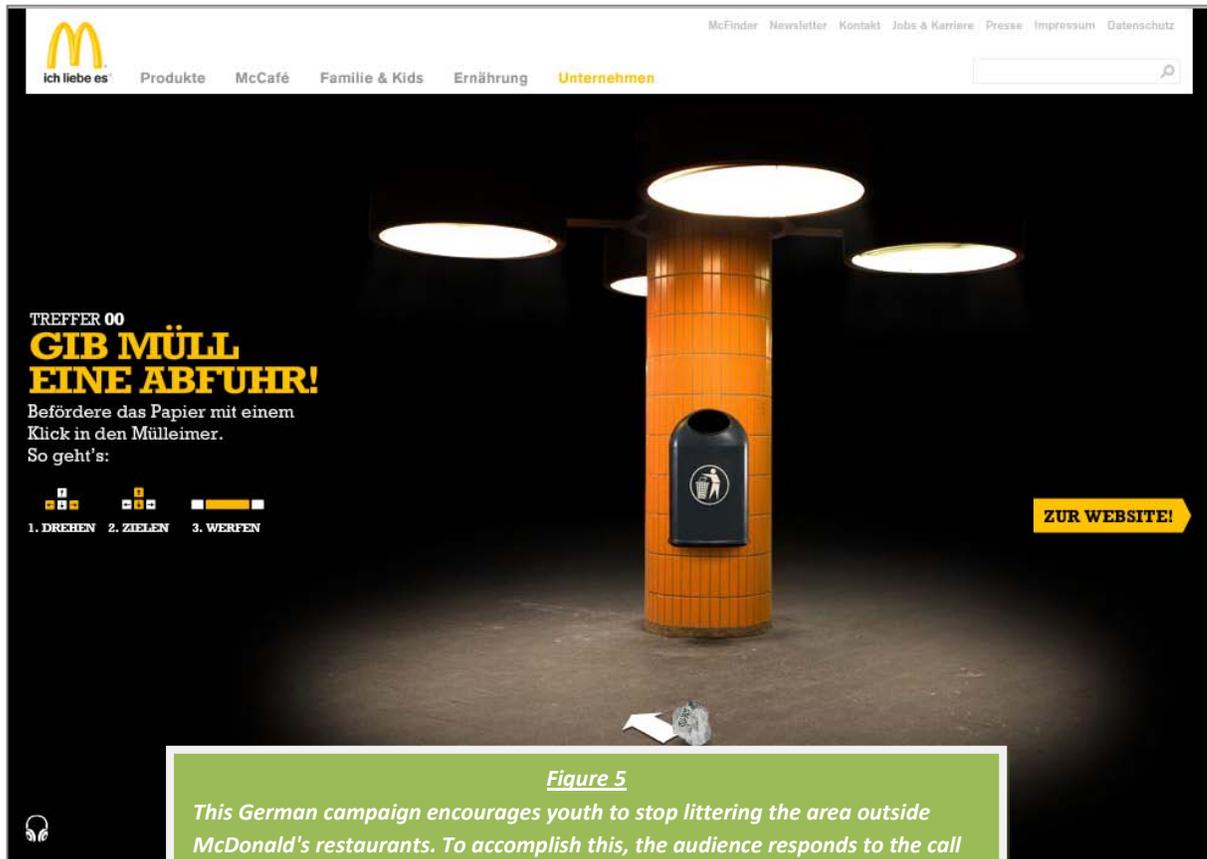
**Phase 2. A Call to Action Is Issued:** In addition to the overarching campaign message, a call to action would also be issued to encourage teens to “join the movement” by, for example: signing up for the program’s Facebook page, email list, text-messaging campaign, enter a raffle, play an online game, etc. In order to generate the most interest, this initial call to action should ideally be associated with a “cool” prize or giveaway. It would be in BASMAA’s best interest to secure a private partner (see 4.3.4) in order to allow for a prize that would be of interest to the youth. See Figure 4 and 5 as an example of campaigns that either secured or are led by the private sector, Clear Channel and Mc Donald’s, respectively. For BASMAA, promotions could resemble a year’s worth of tickets to the Giants’ games.



**Figure 4**

*This Caltrans advertisement issues their call to action by encouraging youth to take a quiz for a chance to win a prize, while raising awareness about safe driving in the process. Strategically placed in a concert booklet with an edgy design, this call to action piques the interest of their target audience.*

Phase 3. **Recipients Respond to the Call:** Viewers of the campaign would then respond to the call to action by taking a pledge to reduce their littering behaviors (for example, “I take the pledge against littering” or “I take the pledge to pick up one piece of litter a day”). In taking the pledge, participants would be required to submit a form that includes their basic contact information (e.g., email address). The program would then use this information to increase, maintain and track their engagement throughout the life of the campaign.



**Figure 5**  
*This German campaign encourages youth to stop littering the area outside McDonald's restaurants. To accomplish this, the audience responds to the call by slipping into the role of tricky street kickers. They could map their own face into the video and kick the trash in the bin to win tickets for the Fifa World Cup*

Phase 4. **Feedback Is Provided:** After taking the pledge, the program would follow up with the participant with the information collected in Phase 3 to reinforce their positive behavior. For example, the program could send an electronic “I Took the Pledge” certificate that participants could plug in to their Facebook pages by copying and pasting a strip of HTML code onto their walls.

Phase 5. **Recipients Are Asked to Do More:** At this phase, the program would gradually expand the participant’s level of commitment by continually requesting that they take on increasingly more involved litter reduction habits. In increasing order of commitment, these requests could include:

- Pick up one piece of litter a day
- Participate in contests (e.g., found art contest)



- Participate in a clean-up or organize your own clean-up
- Participate in the BASMAA youth advisory board
- Participate in the program's Speaker's Bureau

## 4. BUILDING A MOVEMENT FROM THE GRASSROOTS: DISTRIBUTION MECHANISMS

### 4.1 *The 800-Pound Guerilla: Harnessing the Power of Guerilla Marketing*

The centerpiece of BASMAA's youth anti-littering campaign will be the application of a number of nontraditional word-of-mouth guerilla marketing techniques. As a result of the approach's viral, word-of-mouth promotional basis and creative as opposed to expensive advertising strategies, guerilla marketing is an extremely cost-effective mechanism to reach specific target audiences. Depending on project budget, the campaign could develop and engage in a number of guerilla marketing strategies, such as:



1. **Branded Promotional Products:** To act as an incentive to engagement as well as an effective marketing mechanism, the program could develop branded promotional products by simply repurposing paid advertisement messaging and graphics. For example, the program could develop posters for college dorm rooms, tote bags for schoolbooks or beach bags.



*Figure 6*

*Panadol wants to be your drudge of choice when you have a headache, so they developed a series of excruciating ad bags to bring that fact to your attention. The full effect is realized when you either grab the bag by the grips or swing it by its strings. These kinds of branded promotional items get the message across, while increasing interest in what's being promoted.*

2. **'Fun Factor' Public Happenings:** The program could also garner attention and disseminate campaign messages through the development and staging of fun and creative installations or happenings in unexpected public locations. For example, an "endless" trash bin could be installed in high-traffic youth zones such as malls, movie theaters and college campuses (see page 12 of Literature Review for further description of the "endless" bin). Likewise, the program could also develop unusual installations to bring increased awareness to the issue. For example, the campaign could work with local artists to create a "trash sculpture", representing the number of tons of trash released into the bay every week, month or year. These "happenings" also offer interesting material to shoot and edit into videos for the program's "viral video" efforts.
3. **Interactive Online Platforms:** To produce direct engagement with the target audience, the program could utilize interactive online social-marketing platforms that allow teens to not only be the content consumers, but the content producers. This type of content-producing engagement could be facilitated by a series of contests targeting youths. For example, the program could create a "clean street contest" where the community would be tasked to take a picture of a clean street and submit it electronically. Then on a regular basis, every week or every month, the best photo would be selected and featured on the website homepage and Facebook page. In addition to this public recognition, each winner would also receive one of the program's promotional products. As a result of this type of contest, not only are youths engaging in the program, but they are also producing content to feed online platforms.

#### ***4.2 The Social Network: Staying Connected with Electronic Media***

Today's teens are highly connected to their social networks, seek engagement and actively build and contribute to their growing on- and off-line communities. The campaign will therefore seek to leverage this connection to and valuation of social networks to create "viral vehicles" of communication through peer-to-peer messaging across a variety of the platforms. Not only are youths more likely to respond positively to outreach provided by other youths (than to that which is provided by other parties), but the capacity for a "viral" campaign exists within a program that actively seeks out peer-to-peer tactics. Additionally, this type of viral online campaign will also produce a tremendous return on investment regarding the scope of its reach.

The use of electronic communication and social media will also allow the program to regularly spread program messages on a continuous basis. Frequent message saturation and easy online access to participants will allow the program to ask for increasingly more involved levels of commitment and engagement. As a result of the interactive nature of online outreach, all other program components (paid advertising, in-person outreach, guerilla marketing, etc.) will be coupled with an opportunity for the audience member, if they are interested, to become further involved with the program online. In developing this e-engagement program, SGA recommends taking the following step-wise approach. The goal of the strategy described below is to first build off simple actions to grow into more complex efforts as the online movement gains momentum.

1. **Building a Program Hub (Website):** A campaign website should be developed to act as the "program hub", housing all relevant information, messages and ways to get further involved in the program. The site should remain consistent with the messages and branding of all advertisements and

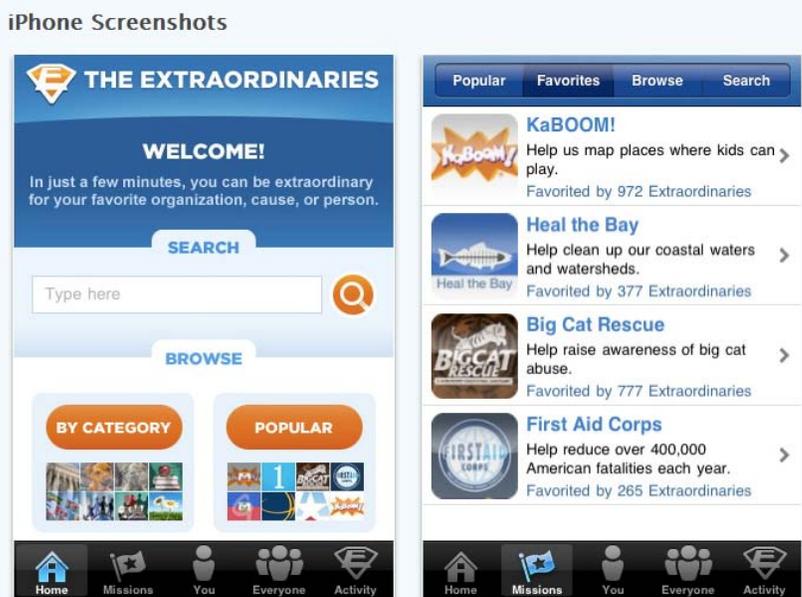
**LEVERAGING EXISTING RESOURCES**

**By linking up with the Facebook pages of Contra Costa Clean Water Program, Sonoma County Water Agency and Santa Clara’s Watershed Watch, the program could instantly leverage over 600 fans!**

collateral material produced. As the program hub, it should connect users to other online campaign components such as the Facebook page, YouTube Channel and blog. To increase exposure, the page should also cross-link with relevant organizations to attract additional user traffic.

2. **All a Buzz with New Media (Social Networking):** While developing a website presence, the program should also start a Twitter and/or Facebook page to allow for a more continuous dispersal of program information and increased opportunity for audience engagement.
3. **Virtual Soap Box (Blog):** After developing the website and social networking tools, the program should start a blog where messages can be coupled with more extensive write-ups and user-generated content. Blogs also allow for the opportunity to reach out to audience members beyond those currently connected with the program, as their infrastructure includes the built-in capacity to push forward campaign messages through their viral network of readers and content-producers.

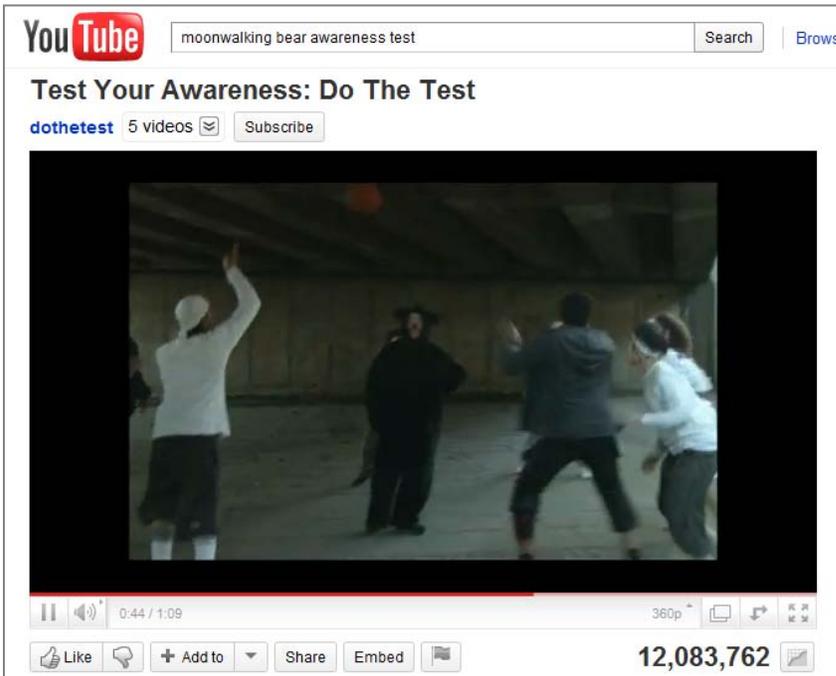
4. **In the Loop (e-Newsletters):** To quickly and efficiently foster youth involvement, BASMAA should develop an e-Newsletter that would be sent to individuals who provided their email address at community events or signed up for the Facebook page, for example. Email tends to be a less-popular medium among youth, compared to social networks like Facebook or Twitter. For that reason, we recommend using the email list as the secondary mode of communication with this audience for information that is most conducive to this medium (e.g., clean-up tool kit, BASMAA youth panel application form).



**Figure 7**

*The Extraordinaries are a San Francisco-based group whose mission is to get people to volunteer whenever it’s convenient. Mixing social media technology with cell phone accessibility, All the volunteer needs is The Extraordinaries’ free iPhone app to get involved.*

5. **Not Your Average Text (Text Messaging):** Given the amazing prevalence of cell phone usage among teens, text messaging has become a vital vehicle of communication. The program should capitalize on this opportunity by creating a simple SMS text-message campaign, where participants on the distribution list would receive periodic texts notifying them of important program happenings



**Figure 8**

*Transport for London's "Awareness Test" viral video strikingly demonstrates how easy it is to overlook huge details – like the moonwalking bear that glides across the background, somehow below the radar of the average video before the pause and replay. This government-funded public awareness video has garnered an astounding 12 million + views. Check it out: <http://bit.ly/cvKIQk>*

and time-sensitive events, or we recommend that the program plug into or create systems that allow youth to easily volunteer in their community.

**6. The Inner Spielberg in All of Us (YouTube/Viral Videos):**

After building out a basic social networking framework, the program should then move to the development of a program YouTube Channel. BASMAA will need to create an online video strategy that positions its YouTube channel as its primary vehicle for video advertisements, thereby replacing costly television ads. The "YouTube ads" will be made up of videos that are edgy and engaging in the hopes of making them go viral, thereby activating the peer-to-peer information sharing and giving the program added credibility. The YouTube channel will also allow the program to quickly and easily post videos captured at outreach events and beach clean-ups.

**7. You've Gotta Give a Little, to Get a Little (Strategic Online Partnerships):**

In building the campaign's credibility among the youth audience and growing its e-community to disseminate messages, the program should seek to develop a broad coalition of online support. To accomplish this, the program should identify related blogs, Facebook and Twitter pages, websites and YouTube channels, and regularly provide comments, respond to posts, provide expertise and/or share relevant articles. Collectively, these efforts will feed the larger effort by providing a mechanism for program messages to reach the wider audience and grow credibility through this cost-efficient "word of mouth" capacity.

**4.3 Strategic Partnerships**

Developing strong relationships with local community groups, businesses and organizations will be important in the successful execution of the campaign. To effectively reach and influence youth populations, the program should seek stakeholder input and assistance across a number of key objectives, including: (1) refining program messages, (2) identifying message distribution channels, and (3) leveraging their own networks to distribute messages. In addition to providing insights, partnering with trusted local organizations and businesses also offers a number of built-in channels to engage the target audience, build off partner networks and develop trust and legitimacy in the youth community. In seeking out potential partners, the program should develop a central list identifying these key organizations, which would be added to the

aforementioned contact database of program participants. Potential partners that will likely appeal to the relevant interests of the youth audience include:

1. **Established Youth Groups:** Reaching out to existing, well-established groups, comprised of and targeted to youth populations, would be the first set of organizations that the program should reach out to. As the low-hanging fruit, these groups would offer unparalleled exposure to the target audience, providing comprehensive networks through which messages could be distributed. In addition to being youth-centric to provide access to younger populations, each organization should also focus on interests relevant to the campaign, occupying the spaces where Acceptance Seekers, Young Adults and Green Crusaders may inhabit. These spaces might be organizations with a community or service focus, environmental groups and youth empowerment centers. More specifically:
  - High-school community service clubs
  - Local surfing teams
  - Youth-oriented outdoor adventure clubs
  - Youth empowerment centers and organizations, such as:
    - Oakland Youth Empowerment Center (<http://www.youthec.org>)
    - Santa Clara Valley Water District Youth Commission ([www.valleywater.org/Newsletter/October2010/YouthProgram.aspx](http://www.valleywater.org/Newsletter/October2010/YouthProgram.aspx))
    - Alameda County & Berkeley's Mobilize project ([www.mobilize.org](http://www.mobilize.org))
    - Santa Clara County and Mountain View's Global Youth Connect ([www.globalyouthconnect.org](http://www.globalyouthconnect.org))
    - Bay Area's Alliance for Climate Education ([www.acespace.org](http://www.acespace.org))
2. **BASMAA "Youth Panel":** The program is also advised to develop a Youth Advisory Panel to engage the target audience, build off panel member networks, foster trust and legitimacy in the youth community, and provide insight on BASMAA with regard to program messaging and distribution tactics. Participation in the panel would be positioned as a volunteer opportunity when presenting the idea to youths and school districts. To get the panel off the ground, the program may need to conduct several school presentations to recruit candidates, accompanied by an application. Ultimately, the panel would consist of a diverse group of representatives from high schools across the various Counties. Long-term plans for the panel includes projects that are initiated by BASMAA and then disseminated through the various areas by panel members (e.g., start a conservation group at your school, adopt a sea lion program, install a rain garden on your campus, etc).
3. **Schools, Universities and Educators:** Figurative "youth beehives," places of education are natural partners for the program to engage in reaching the target population. Reaching out to area high schools will be a necessary step in recruiting potential "Youth Panel" members, in addition to reaching established college and high school clubs and organizations. Beyond reaching individual students or key organizations, local high schools and universities should be viewed as strategic partners in spreading BASMAA's anti-litter message. In developing these strategic partnerships, the program should establish relationships with educators at high schools and institutions of higher learning. Through these partnerships, teachers and professors would act as conduits in reaching the target youth population.

#### **LEVERAGING EXISTING RESOURCES**

**Working off Santa Clara's Zero Litter Initiative could be a great way for the program to build exposure, while also factoring into wider policy issues.**

4. **Conservation Groups:** In seeking out partnerships with environmental organizations, it is also important to ensure that these groups are involved or are at least seen as credible within the target youth audience. A sample list of potential organizations include:
  - Sierra Club
  - Save the Bay
  - Surfrider Foundation
  - San Francisco Estuary Partnership ([www.sfestuary.org](http://www.sfestuary.org))
  - North Bay Watershed Association ([www.nbwatershed.org](http://www.nbwatershed.org))
5. **Commercial Business Partners:** Partnering with highly youth-trafficked local businesses would build exposure, credibility and leveraged resources. For example, developing partnerships with businesses may allow the program to request donations from them to be used as incentive prizes during contests. Some of the businesses (e.g., small music venues, coffee shops) may also post program posters and materials where their patrons could see them. Potential business types include:
  - Independently owned clothing boutiques and vintage stores located in areas with a high volume of foot traffic within the 16-24 age bracket
  - Fast-casual restaurants and juice bars, particularly eco-conscious institutions
  - Coffee shops and tea houses
  - Small music venues
  - Professional sports teams

**LEVERAGING EXISTING RESOURCES**

**The program could leverage existing strategic partnerships with businesses already participating in the Watershed Watch Discount Card.**

**4.4 Community Events**

Community events offer a unique opportunity for the program to directly engage with the target audience and qualitatively assess how campaign messages are being received. Community events also offer a significant opportunity to collect critical contact information to feed the larger social-media effort. Mirroring the strategy used to identify potential partners when selecting community events, the program should target those catering to the interests of the target population, which include:

**LEVERAGING EXISTING RESOURCES**

**Litter campaign messages and materials could also find their way into environmental events and fairs that various counties are already staffing as per the NPDES permit.**

1. **Conservation, Water Quality and Environmental Events:**

Potential events might include the Berkeley Earth Day Celebration, which has been widely popular for over 40 years ([www.bayareaeearthday.org/berkeleyearthday/index.html](http://www.bayareaeearthday.org/berkeleyearthday/index.html)) or the Bay Area

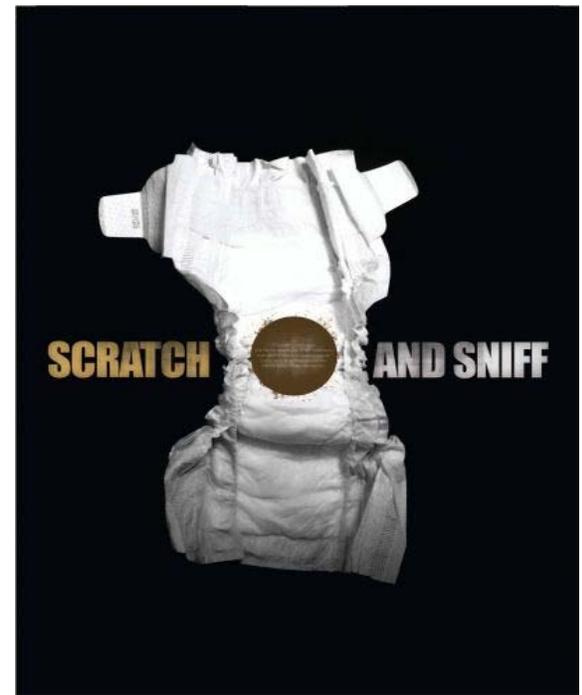
Environmental Education Resource Fair ([www.baeerfair.org/](http://www.baeerfair.org/)).

2. **Youth-Focused Events:** Like environmental fairs, there are a number of youth-focused events to choose from in the Bay Area. A few examples include the iconic, 100-year running Bay to Breakers (<http://baytobreakers.com/>), as well as San Francisco's famous Lovefest Parade ([www.sflovevolution.org/home.php](http://www.sflovevolution.org/home.php)).

#### 4.5 Paid Advertising

The use of traditional paid advertising should be limited to highly targeted outlets that ensure the eyes and ears of our target population. These venues include:

1. **Niche Outlets:** Print advertisements should be limited to targeted, niche publications that boast high rates in youth readership and inexpensive ad placements, such as San Francisco Weekly and high school and college newspapers, yearbooks, concert programs/booklets.
2. **Online Ads:** Since the majority of teens consume the majority of their information online, a large percentage of ads should be placed in highly youth-trafficked sites such as Facebook and sparknotes.com. Online advertisements should also be placed in spaces that are near in both location and frame of mind to the desired behavior. For example, the program could create online placements that appear during Google searches,



*Figure 9*

*This bus shelter ad from United Way speaks to youth to really get the point across: "This doesn't really stink but the consequences of teen pregnancy do. And this is just part of the ugly mess you'd be getting yourself into. Get the facts at [babycanwait.org](http://babycanwait.org)"*

using specific search terms like: "beach clean-ups" and "Bay Area".

3. **Outdoor Ads:** Ads could also be placed in targeted youth-populated outdoor locations, such as pro-bono bus shelters placements, beach and city trash bins, and park benches. Outdoor ads should be used sparingly to supplement the rest of the advertising campaign. Layouts should be direct and edgy in order to capture the audience's attention.
4. **Guerilla Ads:** To increase program exposure and engagement, the campaign could develop a series of innovative ads placed in unexpected locations. For example, the program could place advertisements in bathroom stalls at relevant locations such as music venues, coffee shops, parks and bars. To make the connection between littering and its effect on marine water quality, the program could commission a local artist to create a series of water stencils with appropriate messaging around storm drains throughout the region.



*Figure 10:*

*Water stencils don't only provide free ad space in high-traffic areas, but they offer a powerful mechanism to tie the message directly to the location of the target behavior. Producing images related to the effects of littering at the exact locations where littering occurs, such as by storm drains or on the street, acts as a prompt for the individual to think twice before discarding their trash.*



#### 4.6 Earned Media

Earned, unpaid media offers a number of opportunities to supplement the larger campaign, and in the case of the electronic media, to drive engagement. Reaching out to targeted media outlets also allows for increased program exposure at little cost. In building the media outreach campaign, the program should engage in the following three-pronged approach:

1. **Reach Out to Youth Journalists:** Ideally, the campaign should reach a point where the majority of messaging is coming from the youth themselves. Staying aligned with this principle, the program should seek out youth correspondents from major newspapers as well as student journalists in high schools and colleges so that campaign coverage is driven by the audience's peers.
2. **Connect with Online Bloggers:** Numerous online bloggers have developed enormous credibility and popularity—and occasionally cult status—within their respective communities. To generate program buzz and build legitimacy, the program should connect with prominent bloggers active within the Bay Area youth generation and environmental blogospheres.
3. **Organize Press Conferences:** To promote areas of note, such as youths creating artistic stenciling of catch basins or significant achievements such as awards, the program should organize press conferences to attain broader media coverage and attention.

#### LEVERAGING EXISTING RESOURCES

Media outreach should be in sync with BASMAA's already-existing media relations push.

## 5. MAKING THE GRADE: EVALUATION APPROACHES

### A Note About Our Approach

At SGA, we've come to rely on the term Outreach:ology to convey the unique way we approach public education. Outreach:ology (i.e., the science behind behavior change) uses a blend of Community-Based Social Marketing (CBSM) and proven tactics from social psychology and persuasion in order to influence the behavior of the target audience. CBSM focuses first on identifying the barriers and motivators of the target audience (see Literature Review, page 4), and then on finding ways to lower the barriers and increase the motivators. Social psychology allows us to use research from prominent leaders in the academic field who have tested and found tactics that work in influencing a person's behavior. By using both social psychology and CBSM as the backbone of the approach, SGA has proposed strategies throughout the plan (e.g., power of commitments, peer-to-peer communication, action-oriented messages, etc) that are all included as a result of their proven success in persuading people to change their behavior. Because these types of strategies have proven success, SGA recommends

monitoring the audience's participation (instead of their awareness) as one of the campaign's primary metrics for success. For example, getting a youth to take an online pledge would be more valuable than finding out that said youth is aware of the difference between storm drains and sewers.

### What Numbers Should Be Tracked for Success: Recommended Measures

In order to reflect the strategies proposed in the plan, the table below reflects which outreach tactics should be measured quantitatively. Specifics regarding what goals should be reached (e.g., 50 Facebook followers) will be more clearly articulated in the implementation plan.

CAMPAIGN COMPONENT	EVALUATION METRIC
PAID ADVERTISEMENTS	<ul style="list-style-type: none"> <li>• Number of impressions per advertisement</li> <li>• Number of interactions as a result of advertisement (e.g., if the ad encouraged the viewer to play a game, take a quiz, etc)</li> </ul>
	BRANDED PROMOTIONAL PRODUCTS <ul style="list-style-type: none"> <li>▪ Number distributed</li> <li>▪ Number requested</li> </ul>
NONTRADITIONAL WORD-OF-MOUTH MARKETING	"FUN-FACTOR" PUBLIC HAPPENINGS
	<ul style="list-style-type: none"> <li>▪ Number of impressions (media coverage, tweets, etc)</li> </ul>
ELECTRONIC MEDIA	SOCIAL NETWORKING (FACEBOOK AND/OR TWITTER)
	<ul style="list-style-type: none"> <li>▪ Number of "friends" or "fans"</li> <li>▪ Number of interactions (e.g., posts/comments) from target audience</li> </ul>
	WEBSITE
	<ul style="list-style-type: none"> <li>▪ Number of unique visitors</li> <li>▪ Number of page views</li> </ul>
	BLOGS
	<ul style="list-style-type: none"> <li>▪ Number of posts by program on external blog sites</li> <li>▪ Number of comments to posts by program on external blog sites</li> </ul>
	E-NEWSLETTER
	<ul style="list-style-type: none"> <li>▪ Distribution number</li> <li>▪ Open rate</li> <li>▪ Number of article click-throughs</li> </ul>
	VIRAL VIDEOS
	<ul style="list-style-type: none"> <li>▪ Number of video submissions</li> <li>▪ Number of total views across all videos posted</li> <li>▪ Number of channel subscribers &amp; comments</li> </ul>
TEXTING CAMPAIGN	
<ul style="list-style-type: none"> <li>▪ Distribution list</li> </ul>	
EARNED MEDIA	<ul style="list-style-type: none"> <li>• Online news placements</li> <li>• Print news placements</li> </ul>
STRATEGIC PARTNERSHIPS	BASMAA YOUTH PANEL <ul style="list-style-type: none"> <li>▪ Number of members</li> <li>▪ Number of interactions (meetings, events attended, etc)</li> </ul> <ul style="list-style-type: none"> <li>• Number of partnerships with related organizations/schools/businesses, etc</li> <li>• Dollar amount of total annual donations from local business partners</li> </ul>
COMMUNITY EVENT	<ul style="list-style-type: none"> <li>• Number of eNewsletter sign-ups received at events</li> </ul>

## Learning from Mishaps and Successes: Monitoring and Adjusting

The most effective outreach plans are those that are able to be malleable and adjust tactics as needed. In terms of the overall strategy, periodic evaluations should be done at least once a year to allow the program to take a step back and assess what's working (and do more of that) and what's not working (and figure out how it can be improved). On a more tactical level, adjustments should be occurring on an ongoing basis. Because a good chunk of the plan focuses on online outreach, this comes with the added benefit of an ongoing evaluation component. Programs like Facebook, eNewsletters, etc., all produce statistics to see which posts are popular and which emails people are opening and not opening. This encourages a continuous stream of automated monitoring that would allow the program to optimize it's rates of online engagement and success by simply giving their users more of what they want.

Pilot testing programs are also a means of assessing effectiveness before they are implemented on a large scale. Pilot testing is best used when conducting "on the ground" outreach programs. That is, programs that involve face-to-face contact like the store outreach being done for the Our Water, Our World program. Because of the geographic area of BASMAA, face-to-face outreach was not included as an integral part of this plan due in part to the budget and the fact that the strategic plan was written to comply with the MRP's advertising requirement. However, for some components of the plan (e.g., Youth Panel), pilot testing is feasible and recommended as a way of seeing what works and what doesn't—before rolling it out on a larger scale.

## To Ask or Not to Ask: Self-Reported Surveys

SGA is aware that one of the MRP's requirements is to do a pre- and post- campaign survey before and after the advertising buy. Because we are recommending that BASMAA veer away from traditional paid advertising buys, we are also recommending that this evaluation approach be adjusted accordingly. SGA's concern with self-reported surveys are as follows: (1) They tend to place an emphasis on knowledge and awareness. As we know from CBSM, the idea that knowledge equals behavior change is an erroneous one. Case in point: every smoker knows that smoking cigarettes is bad for their health, but does this stop them from smoking? For this reason, it is amiss to assume that simply because a teen knows that storm water is untreated, that they are going to stop littering; (2) They are self-reported and therefore are limiting in their ability to get candid answers from the participants; and (3) They can be quite expensive for little return. Administering these types of surveys is often costly, and the data that is received is not always actionable or of value to the program.

SGA instead recommends taking the following approach to self-reported surveys: (1) Stay away from focusing on questions related to awareness; (2) Rely primarily on the people collected in the program's outreach database (see page 27) as the means for getting survey data. The people who become part of the program can therefore be tracked and their progress monitored in terms of how successfully they are moving along the road to behavior change. This also minimizes program costs if the surveys are sent out and collected online; and (3) Only collect face-to-face surveys in conjunction with other programs and outreach initiatives the individual cities/counties are already doing as part of MRP compliance. For example, taking surveys to a community event and doing them there. In this way, no added budget is spent in trying to collect survey data.

## 6. DOWN TO BRASS TACKS: PROJECTED BUDGET

The next step with this strategic plan would be to make it come to life—implementation! Ideally, the implementation phase would include critical decisions such as which specific tactics and level of effort should be expended in the first year, second year, etc. The focus of the first year would be to collect as many program supporters as possible (i.e., Step 1 and Step 2 from *Figure 3*) with the goal of continuing to engage them in subsequent years of the program. For this reason, Year 1 of the campaign would operate more like a traditional advertising campaign in that there will be a good amount of paid ads. As the campaign progresses and goes viral (i.e., peers sharing with peers), paid advertising will cease to be the focal point of the campaign, and the monies being dedicated to it below will instead be used for other tactics highlighted in the plan (e.g., fun factor happenings, viral videos, social media, etc). Specific about the program budget will be outlined in the implementation plan.



# Bay Area Stormwater Management Agencies Association

## Five-Year Strategic Advertising Plan "Our Water, Our World" Pesticides Program

Plan Submitted: March 28, 2011



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To BASMAA Committee & City Folks,

BASMAA has a long history of successfully administering the Our Water, Our World program. The campaign is primarily focused on building relationships with home improvement stores and garden centers in order to arm consumers with information about how to choose less toxic pest alternatives.

This strategic plan is therefore intended to supplement much of the on-the-ground outreach that is already taking place with the Our Water, Our World program and introduce a strategy that covers both a sustained way of engaging and tracking the target audience as well as a proposed approach for implementing an advertising & online outreach campaign.

Because of the somewhat complex nature of Integrated Pest Management (IPM), change is not going to happen overnight. A person is likely not going to go from buying a can of Raid to embracing the four-step IPM continuum in a snap. Because of this, SGA recommends taking the foot-in-the-door approach. Study after study has proven that people are more likely to embrace a desired behavior if you ask them to do a little at a time (“Foot in the Door Technique”, Wikipedia: [http://en.wikipedia.org/wiki/Foot-in-the-door\\_technique](http://en.wikipedia.org/wiki/Foot-in-the-door_technique)). Susie Gardener may start with buying a less toxic product and then she might learn how to identify harmful and beneficial pests and then maybe start integrating plants that attract more beneficial bugs, etc, etc. Each person’s journey may look different, but the end goal is the same – get people on the road to IPM by starting with small requests and slowly making them bigger.

### **Meeting, Knowing and Listening to the Audience**

In order to get people on the road to IPM, BASMAA needs to start tracking the program audience. This would allow BASMAA to do some gentle prodding by encouraging people down the road, but it would also provide the program with the invaluable opportunity to collect stories. The stories of the audience themselves should be the face of the campaign in anything from advertisements, to media pitches, to program handouts. The art of storytelling adds credibility to any message and allows the audience to hear tips from people they identify with - their peers and neighbors.

#### *A Tale of Two Audiences*

The Our Water, Our World program has traditionally focused on do-it-yourselfers (DIYers) who are dealing with pesticide issues on their own. The strategic plan includes the DIYer audience, but it also suggests that BASMAA consider the domestic outsourcers (DO) group.

Domestic outsourcers are the folks who have a pest issue but would rather just pay someone else to take care of it by either asking their landscaper to do it or by hiring a pest control company. SGA recommends that BASMAA target this audience by providing more visibility, to them as the consumer, about landscapers and pest control operators that have received eco certifications (e.g. Bay Friendly

Landscaping and Eco Wise Certified). There are a number of organizations in the Bay Area that provide certification to both landscapers and pest controllers in less toxic pest management strategies and BASMAA would nicely be able to supplement these efforts with some positive exposure for the certified businesses.

### **Getting the Audience to Take an Action**

All facets of the Our Water, Our World program should be working in tandem to get the audience on the road towards IPM. Less toxic products and very specific pest control solutions (e.g. baits for ants) are easiest and should therefore be considered the low hanging fruit. These are the types of foot-in-the-door allures that BASMAA would use with the audience to initially get them involved in the program.

Because the purpose should be to get people involved in the program, in a long lasting way, the advertising campaign should be no exception. The ads should be driven by real stories and they should pointedly ask the audience to take some type of action (e.g. try our coupon, enter our contest, sign up for our newsletter, etc). In all cases, the strategic plan recommends placing ads in locations and outlets that are specifically targeted to the audience so that dollars are not wasted reaching audiences who are not affected by the message.

While the ads may help get the program exposure, it is the online media that will really keep the fire going. Online media helps to keep the audience involved, invested and doing something. The online space also allows for peer-to-peer sharing, message distribution and a geographic reach wide enough to cover all of the counties involved in BASMAA simultaneously.

In short, the following strategic plan embraces some key principles. Engagement and commitment are the keys to changing behavior. Stories are the program's most powerful tool. Integrated Pest Management is a journey – start simply and build to there.

Thanks for the opportunity to work on this. Happy reading!

Sincerely,



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# I. Literature Review

## 1. Introduction

This literature review is meant to inform the development of BASMAA's five-year strategic marketing campaign, key messages and distribution channels. This study aims to reveal the motivators and barriers related to homeowner and renter pesticide use and misuse throughout BASMAA's eight counties including: Alameda, Contra Costa, Fairfield-Suisun, Marin, San Mateo, Santa Clara, Sonoma & Vallejo. Additionally, the review examines communication tactics focused primarily on traditional advertising approaches used to target adult homeowners about their pesticide use. By uncovering the barriers and motivators associated with the proper application of pesticides, BASMAA's current pesticide program — "Our Water, Our World" — can be better refined and expanded by developing outreach tactics that speak to these specific barriers and motivators. The program will also gain valuable insight about preferred methods of communication when disseminating pest control and integrated pest management messages.

The importance of identifying an audience's barriers and motivators in encouraging certain types of behaviors is a central tenet of Community-Based Social Marketing (CBSM). This approach focuses on analyzing the perceived barriers and benefits associated with the target behavior that the assessor aims to promote. By developing a complete understanding of what would limit the target population in engaging in the desired behavior, the assessor can create mechanisms in the intervention that overcome or remove these perceived barriers (Alcalay and Bell 2001; Neiger, Thackery, Merril, Miner, Larsen and Chalkey 2001; Walsh, Rudd, Moeykens and Moloney 1993).

The following literature review will discuss an array of barriers and motivators that have been identified in previous studies. All of the studies cited in this review analyzed public participation practices and tools with respect to surveys of residential pesticide use behaviors in Northern California as well as California Integrated Pest Management (IMP) and awareness programs. The results of these similar programs will provide an actionable context in developing a strategic advertising campaign to complement the current "Our Water, Our World" campaign.

## 2. Barriers & Motivators Associated with Pesticide Use

In developing this literature review, several barriers were identified with regard to adult homeowner pesticide use in Northern California. One of the most prominent barriers to the proper application or reduction of pesticide use was an overall lack of knowledge regarding (1) responsible pesticide usage, (2) non-toxic alternatives, and (3) the detrimental effects that these chemicals have on environmental and human health (Flint 2003; Matheny 2009; Brosseau 1999). For example, a 2005 awareness and effectiveness study of the "Our Water, Our World" campaign indicated that 45% of the people were unaware that there were less-toxic, safer pest control products available in the marketplace. Additionally, in a 2003 evaluation of the "Watershed Watch" campaign, a series of focus groups revealed that most participants were not aware that pesticide

use, especially within the home, adversely affects water quality (Evans/McDonough Company, Inc. 2003).

However, lack of knowledge is only one of the many barriers that may deter homeowners from engaging in a sustainable behavior. While attitudes and knowledge have been demonstrated to relate to behavior, frequently this relationship is extremely weak compared to the plethora of social, economic and cultural factors that are at play when individuals make environmental decisions (McKenzie-Mohr 1999). This correlation between knowledge and behavior change has been demonstrated across several studies, including an evaluation of the San Francisco Public Utilities Commission's "Grow It! And Control It!" program (Godbe Research Gain Insight 2005). The evaluation showed that even when homeowners had recently been exposed to information about the relationship between pesticides and water quality, approximately 75% of those same homeowners did not adopt more responsible pesticide use behaviors (Flint 2003).

This pattern of behavior reveals that while lack of knowledge is a barrier to thoughtful pesticide use, knowledge alone does not necessarily predicate the desired actions. To raise awareness in such a way that the individual's increased knowledge base translates into behavior change; more focus should be made on the specific actions that can be taken to achieve the desired results (Flint 2003).

### ***2.1 Stick to Clear & Simple Messaging***

A fundamental step in crossing the divide between awareness and behavior change is utilizing targeted and effective messaging. The markers of effective communication are numerous; however, two of the most important characteristics are clarity and simplicity. To achieve behavior change, the desired actions associated with the plan must be effectively and explicitly communicated to the target audience. This necessity for clear, simple and actionable message points regarding the proper use of pesticides is evident in a 2003 survey of over 3,200 Northern California residents. One of the questions in the survey asked "Do you follow (pesticide) label directions?" — To which 33% responded "No" (Flint 2003). This result was echoed in a related study examining the differences between residential and commercial pesticide use. Survey findings highlighted that households are generally less likely than farmers to use pesticides, read labels and take precautions (Templeton 1998).

Programs across the country have also identified this challenge and have developed several recommendations in crafting clear and simple message points to encourage responsible pesticide use. For example, a study evaluating the Watershed Watch Campaign prepared for the Santa Clara Valley Urban Runoff Pollution Prevention Program revealed that gardeners were receptive to reducing pesticide use under the condition that specific and actionable recommendations are provided (Evans/McDonough Company, Inc. 2003).

This finding demonstrates that messages should clearly answer the basic question: What is the desired action? Additional academic research supports this claim, finding that messages that are clearly articulated are more likely to be comprehended and abided by than those that are more complex (Brunetti Tomasik and Taraba 2000; Regger, Wootan, Booth-Butterfeild and Smith 1998). Incorporating these recommendations in the current work, the campaign may consider determining and prioritizing the top three pesticide

best practices that would have the largest pollution prevention impact and focus advertising messaging and outreach exclusively on those key steps.

### ***2.2 Demonstrate Convenience & Direct Benefits***

People are most willing to undertake relatively “cheap” activities, in the sense that they require few major behavioral changes or relatively small investments of time or money. As a result, the advertising campaign should demonstrate to consumers that proper pesticide or integrated pest management (IPM) use is not only “quick and easy,” but directly benefits them in some way. For example, a Santa Clara Valley Urban Runoff Pollution Prevention Program affirmed that communications promoting a specific behavior change should emphasize minimal effort required and personal benefits accruing from the action (Fairbank, Maslin, Maulin & Associates, 1999). Similarly, a study evaluating home gardener preferences and behaviors associated with pest management strategies found that homeowners and gardeners indicated a strong desire to use a pest control method that was easy to use, but when factors such as harm to humans or the environment were incorporated into the scenario, the broad majority also desired to use the method that would impose the least amount of harm (Matheny 2009).

Oftentimes, convenience is simply a matter of perception, as opposed to a reflection of reality. As a result, the convenience barrier can be successfully overcome through targeted messages. For instance, homeowners considering a transition from the use of conventional pest control products to integrated pest management methods (IPM) have anecdotally suggested that they will often choose to utilize a “simple” pesticide solution rather than IPM approaches. This demonstrates a preconceived notion that IPM strategies may appear inconvenient, costly and difficult to adopt (Matheny 2009). Similarly, McKenzie-Mohr points out those external barriers such as the “inconvenience” of adopting IPM strategies “are to some extent a matter of perception” because “after people have experience with an activity, they often come to see that activity as being more convenient than when they first began.”

### ***2.3 Combine Motivating Messages with Visual Images***

Communications campaigns have demonstrated that utilizing tangible visual images can be extremely influential in not only creating awareness, but changing behavior (Horn 1999; Roam 2008). The text-heavy nature of many public engagement and/or environmental campaigns often results in a “shut-down effect,” where community members are simply overwhelmed by the number of messages to which they are exposed (American Dietetic Association 1995). To this effect, a picture is really worth a thousand words, particularly in the information age, where individuals are constantly bombarded with complex information. Utilizing effective visual images can therefore be very successful in communicating program messages.

Through examining the “Our Water, Our World Promotional Awareness and Effectiveness Study” conducted for BASMAA in 2005, the top motivators to buy a less-toxic product for people who were planning to do so on the day they were interviewed were: “Health and Human Safety” (51%), “Environmental Concern” (46%) and “Pet Safety” (44%). Of the participants who were *not* planning on buying a less-toxic product, “safer product method” was still the top motivating factor (45%). The program’s key messages would benefit from emphasizing these behavioral drivers: human, pet, and environmental health and safety, preferably through visual, non-text-heavy formats. The Watershed

Watch Campaign survey prepared for Santa Clara Valley noted that focus group participants did not respond well to stormwater materials that were too text-heavy and did not clearly state the issue (Evans/McDonough Company 2003). Thus, program messages and advertisements should focus on the aforementioned behavioral motivators through a visual format.

#### ***2.4 Keep It Personal: Tailoring Materials to Your Target Audience***

After developing a strong understanding of the target audience, advertising messages and materials should speak to the specific attitudes and beliefs of the target population to increase participation. Adding a “personal touch” to the outreach materials by tailoring them to the target audience – in this case, homeowners and gardeners – and relating the information to what the audience already knows could encourage participation by increasing the impact of the message (Schultz and Tabanico 2008).

#### ***2.5 Utilize Prompts***

Prompts, or images or phrases that serve as an aid to remind people to perform an activity, can be powerful behavior-change tools. A trait almost every person possesses is forgetfulness, which is why prompts are so useful. People oftentimes overlook sustainable behaviors, not for lack of motivation, but simply for forgetting. With the help of prompts people are more likely to engage in a particular behavior, as they are provided with a reminder to do so. For a prompt to reach its pinnacle of effectiveness, it should be delivered as close in space and time as possible to the target behavior. Prompts are also typically most effective when they are used to reinforce overall campaign efforts and messages, as opposed to acting as a stand-alone piece.

#### ***2.6 Utilize Person-to-Person Contact to Distribute Materials***

Numerous studies have demonstrated that personal contact is the most powerful outreach mechanism in influencing individual attitudes and behaviors (McKenzie-Mohr and Smith 1999; Neiger *et al.* 2001; Schultz 2002; Schultz and Tabanico 2008). The absence of meaningful person-to-person education can act as a substantial barrier to behavior change. In motivating employees to adopt sustainable waste reduction practices, the Waste Board (2004) suggests utilizing personal channels to change behavior through the use of such resources as employees or trained volunteers. For the current program, garden supply and home improvement store employees could be utilized as message conduits as they are regularly on the communication front lines by engaging with homeowners on a daily basis. As such, it is imperative to educate employees on the proper use of pesticides and non-chemical alternatives as they relate to stormwater pollution prevention (Flint 2003).

A 2003 survey on residential pesticide use in Northern California showed that retail staff is a vital information source, and that better education initiatives among this group could greatly extend program messages (Flint 2003). A number of Southern California stormwater programs with a focus on smart pesticide use integrate one-on-one trainings with garden supply and home improvement store employees. Staying true to these values of person-to-person outreach, BASMAA’s current “Our Water, Our World” campaign’s direct outreach efforts fulfill the need of this critical behavior-change tactic.

#### ***2.7 Involve Employees & Forge Commitment***

When building buy-in, it is important to forge collaboration and consensus. This principle applies to nearly any public participation program, as noted by the University of British Columbia's (UBC) research on developing sustainability strategies within organizations (2006). Forging ownership and commitment is one basic criterion in encouraging participation. However, one's level of commitment to the program is of course secondary to the elemental prerequisite to "getting people 'on board' with change" (McKenzie-Mohr 1999). To this effect, studies have shown that the simple act of asking for someone's commitment actually encourages that person to participate in the voluntary program or behavior. For example, "individuals who were asked to wear a pin publicizing the Canadian Cancer Society were nearly twice as likely to subsequently donate than were those who were not asked to wear the pin" (UBC 2006).

There is a multitude of ways to ask for this commitment: through verbal or written pledges, or by requesting public commitments by publishing the participant's name in a newsletter or annual report (McKenzie-Mohr 1999; UBC 2006). With this in mind, it would be valuable for "Our Water, Our World" to consider the use of public pledges to encourage responsible pesticide use.

### 3. Barriers & Motivators: Review

Identifying & Overcoming Barriers	
Barrier	How to Overcome
<ul style="list-style-type: none"> <li>• <i>Lack of knowledge</i> regarding: (1) responsible pesticide usage, (2) non-toxic alternatives, (3) the detrimental effects that these chemicals have on environmental and human health</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Increase knowledge</i> of pesticide usage best practices, non-toxic alternatives, and negative effects of pesticides to environmental and human health</li> </ul>
<ul style="list-style-type: none"> <li>• Pesticide use/application messages/directions are <i>complex</i> and <i>confusing</i> (i.e. spray-can labels)</li> </ul>	<ul style="list-style-type: none"> <li>• Keep messages <i>clear</i> and <i>simple</i>. Messages should be <i>direct</i> and <i>focused</i> on answering the following questions: <i>What is the desired action, and why is it important?</i></li> <li>• Use <i>visual images</i> to convey messages, as opposed to complicated text-heavy formats that may otherwise result in a "shut-down effect"</li> </ul>
<ul style="list-style-type: none"> <li>• Proper pesticide use/IPM is <i>difficult to implement, time-consuming</i> and <i>inconvenient</i></li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate to consumers that proper pesticide use is not only "<i>quick and easy</i>," but <i>directly benefits</i> them in some way (through financial savings, etc.)</li> </ul>
Identifying & Utilizing Motivators	
Motivator	How to Utilize
<ul style="list-style-type: none"> <li>• <i>Ownership</i> of a cause and <i>commitment</i> to furthering the goals of a cause (in this case, responsible pesticide use)</li> </ul>	<ul style="list-style-type: none"> <li>• Ask store employees to sign <i>commitment letters</i> to remind customers of responsible pesticide use</li> <li>• Integrate a <i>pledge</i> or <i>honor badge</i> into the promotional effort to showcase a consumer's thoughtful dedication to gardening smart</li> </ul>
<ul style="list-style-type: none"> <li>• Concern for <i>human health</i> and <i>safety</i></li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate through messaging that proper pesticide use <i>protects</i> human health, pet safety and environmental integrity</li> </ul>
<ul style="list-style-type: none"> <li>• Concern for <i>pet health</i> and <i>safety</i></li> </ul>	
<ul style="list-style-type: none"> <li>• Concern for the <i>environment</i></li> </ul>	

How to Get Messages Across
<ul style="list-style-type: none"> <li>• Tailor materials to target audience: <i>Add a personal touch</i></li> </ul>
<ul style="list-style-type: none"> <li>• Utilize <i>prompts</i> to remind people to practice responsible pesticide use</li> </ul>
<ul style="list-style-type: none"> <li>• <i>Television</i> advertisements are an effective means to reach the target Northern California pesticide-using population</li> </ul>
<ul style="list-style-type: none"> <li>• Train garden supply and home improvement <i>store employees</i> to deliver program messages</li> </ul>

#### 4. Literature Review References

ALCALAY, R. & A. BELL. 2001. Strategies and practices in community-based campaigns promoting nutrition and physical activity. *Social Marketing Quarterly* 7 (4): 3-15.

AMERICAN DIETETIC ASSOCIATION. 1995. Nutrition trends survey. Chicago: *American Dietetic Association*. In Reger, B., M. G. Wootan, S. Booth-Butterfeild & H. Smith. 1998. 1% or less: A community-based nutrition campaign. *Public Health Reports* 113: 416.

ASTONE. 2008. *Public opinion survey*. Contra Costa Clean Water Program.

BROSSEAU, G. 1999. *Water pollution prevention and pest control operators*. San Francisco Public Utilities Commission. System Planning, Environment and Compliance Bureau.

BRUNETTI, G., H. H. TOMASIK & L. TARABA. 2000. Social marketing tools used to support the development of a community-based physical activity initiative. *Social Marketing Quarterly* 6 (3): 93-99.

EVANS/MCDONOUGH COMPANY, INC. 2003. *Evaluation of watershed watch campaign effectiveness 2003 public opinion survey and focus groups*. Santa Clara Valley Urban Runoff Pollution Prevention Program.

FAIRBANK, MASLIN, MAULIN & ASSOCIATES. 1999. *1999 Public Opinion Survey*. Santa Clara Valley Urban Runoff Pollution Prevention Program.

FLINT, M. L. 2002-2003. *Surveys of Residential Pesticide Use in Northern California*. UC Statewide IPM Program. UC Davis.

GODBE RESEARCH GAIN INSIGHT. 2005. *"Our water, our world" promotional awareness and effectiveness study*. Bay Area Stormwater Agencies Association.

HORN, R. E. 1999. *Visual Language: Global Communication for the 21<sup>st</sup> Century*. MacroVU, Inc.

KASPERSON, R. 1986. Six propositions on public participation and their relevance for risk communication. *Risk Analysis* 6(3):275-281.

LYON, T. P. & J. W. MAXWELL. 2007. Environmental public voluntary programs reconsidered. *Policy Studies Journal* 35(4):723-750.

MATHENY, A. L. 2009. *Home gardener preferences, perceptions, knowledge and*

*behaviors associated with pest management strategies and information acquisition.*

- MCKENZIE-MOHR, D. 2000. Promoting sustainable behavior: An introduction to community-based social marketing. *Journal of Social Issues* 56 (3): 543-554.
- MCKENZIE-MOHR, D. 2000. Fostering sustainable behavior through community-based social marketing. *American Psychologist* 55(5): 531-537.
- MCKENZIE-MOHR, D. & W. SMITH. 1999. *Fostering sustainable behavior: an introduction to community-based social marketing*. Gabriola Island, British Columbia: New Society Publishers.
- PANAGRAPH. 2004. *Public opinion survey November 2004*. BASMAA Regional Advertising Committee.
- REGER, B., M. G. WOOTAN, S. BOOTH-BUTTERFEILD & H. SMITH. 1998. 1% or less: A community-based nutrition campaign. *Public Health Reports* 113: 410-419.
- ROAM, D. 2008. *The back of the napkin: solving social problems and selling ideas with pictures*. Portfolio/Penguin Group (USA) Inc.
- SCHULTZ, P. W. & J. J. TABANICO. 2008. Community-based social marketing and behavior change. *Handbook on Household Hazardous Waste*, edited by A. Cabaniss, 133-156. Lanham, MD: Rowan and Littlefield.
- TEMPLETON, S. R.; D. ZILBERMAN; & S.J. Yoo. 1998. An economic perspective on outdoor residential pesticide use. *American Chemical Society* 32 (17): 416-423.
- UNIVERSITY OF BRITISH COLUMBIA (UBC). 2006. *How do communities change their culture towards more sustainable patterns of living, working and learning?* Okanagan: University of British Columbia.
- WALSH, D. C.; R. E. RUDD; B. A. MOEYKENS & T. W. MOLONEY. 1993. Social marketing for public health. *Health Affairs* 12 (2): 104-119.
- ZAJAZ, J. 1997. *Do your lawn right! Save money and keep the yard green*. CNN Money.com. April 1997. [http://money.cnn.com/magazines/moneymag/money\\_mag\\_archive/1997/04/01/224362/index.htm](http://money.cnn.com/magazines/moneymag/money_mag_archive/1997/04/01/224362/index.htm)

## II. Pesticides: Anatomy of a Message

### 1. THE SOURCE---*WHO IS THE MESSAGE FROM?*

The “Our Water, Our World” brand.

### 2. THE ISSUE---*WHAT IS THE ISSUE WE ARE PROMOTING?*

From the eyes of the program, the issue that we are promoting is the need to reduce or eliminate the use of toxic pesticides in or around the home – but to the consumer, the issue is the need to protect human and pet health against toxic pesticide use.

### 3. THE ACTION---*WHAT IS IT WE ARE ASKING THEM TO DO?*

Since there are two audiences in this campaign, it would follow that there would be two specified actions. The two audience groups are: (1) Do-It-Yourselfers (DIYers) who control pests in and around their homes themselves; and (2) domestic outsourcers who hire sustainable landscaping companies or pest control operators to accomplish this task for them. For the DIY group, the desired action is to encourage their purchase and use of less-toxic alternatives to regular pesticides. For the domestic outsourcing group, the desired action is to hire sustainable agricultural pest controllers or sustainable landscapers, hereafter referred to as “contractors,” and/or ask their current contractors for sustainable services (i.e. the use of IPM and/or less-toxic pesticide alternatives).<sup>1</sup>

For both groups, the focus during the initial phase of the program would be first on the action of purchasing/using less-toxic products and/or services. After obtaining this initial commitment, the second phase would be to focus on introducing the adoption of Integrated Pest Management (IPM) strategies including non-toxic pest control options. This second phase, and all consequent ones, could be accomplished by delivering targeted messages to consumers who already purchased less-toxic products or interacted with the “Our Water, Our World” program. These consumers could be tracked, for example, via a coupon redemption program for less-toxic products where the consumer is required to include an email or mailing address. These consumers could then be reached for phase two either electronically or through direct mail.

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<sup>1</sup> Certain key terms should be field testing during the message development phase of the campaign. For example, the terms “less-toxic pesticide alternatives” and “sustainable landscaping services” should be tested to ascertain the audience’s understanding of these phrases, in addition to identifying the most easily and commonly comprehensible terminology to express these ideas.

*A quick note about the action:* Research has shown that asking people to first take a simple action and then incrementally building commitment is the most effective way of achieving behavior change.<sup>2</sup> This approach especially rings true of practices such as IPM, which can be somewhat abstract and more complicated than just spraying a can of bug killer. IPM should be seen as the end of a journey vs. the “hook” that will get the majority of the audience interested in the campaign.

#### **4. THE BRAND---WHAT IS THE OVERALL, OVERARCHING IDENTITY OF THE CAMPAIGN?**

The identity of the campaign, like the source, will be the Our Water, Our World brand.

As a brand, “Our Water, Our World” will identify the campaign via name, logo, design and aesthetic, and will create a link between the campaign’s identity and how it relates to the target audience. The brand is what creates the campaign’s image, or the symbolic construct created within the minds of the target audience, consisting of the sum total of information and expectations associated with the campaign.

#### **5. THE FACE---WHO/WHAT WILL BE THE “FACE” OR THE AMBASSADOR OF THE CAMPAIGN?**

The outward face of the campaign, or the message ambassador, is the target audience themselves: everyday homeowners, trusted neighbors and fellow household gardeners. When it comes to household products and domestic fixes, people trust referrals from people like themselves.

The “face” is distinguished from the “brand” such that the face comprises only one facet of the larger campaign identity.

#### **6. THE ANGLE---HOW WILL THE CAMPAIGN BE PRESENTED?**

The angle, or how the campaign is presented to the target audience, will focus on two themes: health and a singular action. The primary angle will be slanted towards the protection of human and pet health. Based on the literature review, concern for one’s family’s health and one’s pet’s health were the primary motivators for reducing the use of toxic pesticides. As a result, the overarching angle will be slanted toward this emotional appeal.

The secondary angle will focus on promoting a singular action: using less-toxic pesticide alternatives and hiring sustainable contractors. The campaign may also want to consider the use of a “gateway pest,” something that is common such as ants, in order to get people initially interested and involved in the program. In the initial stages, especially for the advertisements themselves, simple is always better! As the campaign progresses and evolves, additional singular actions will be promoted through direct marketing (e.g. email, story bank, etc.) to guide the audience along the path of a more holistic IPM strategy.

#### **7. KEEPING IT RELEVANT---HOW WILL THE CAMPAIGN MAINTAIN A CONNECTION WITH THE TARGET AUDIENCE?**

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<sup>2</sup> “Foot-in-the-Door Technique” *Wikipedia: The Free Encyclopedia*. Wikimedia Foundation, Inc. Web. 23 Feb. 2011. [http://en.wikipedia.org/wiki/Foot-in-the-door\\_technique](http://en.wikipedia.org/wiki/Foot-in-the-door_technique) (see the scientific studies cited in the article’s footnotes).

To maintain a connection with the target audience, the campaign will partner with Home Owners Associations (HOAs), garden supply stores, home improvement stores and the like to both inform the development of the campaign and deliver its messages. The campaign’s story bank (see Page 15) will also provide an opportunity to stay connected with the actual target audience, both the good and the bad.

### III. Five-Year Pesticides Marketing Strategy

#### 1. The Big Picture: Communications Strategy Goals & Objectives

The overarching goal of the following advertising campaign strategy is to encourage the target population to use less-toxic pesticide alternatives in and around their homes, complementing the current “Our Water, Our World” (OWOW) campaign. These less-toxic alternatives include the use of less-toxic products, the practice of Integrated Pest Management (IPM) as well as the utilization of sustainable agricultural pest controllers, hereafter referred to as sustainable contractors. By promoting specific action-oriented messages, the campaign will be better equipped to successfully mold the behaviors of the target population, as opposed to simply raising awareness about the use of less-toxic pesticide alternatives.

#### 2. Nice to Meet You: Identifying & Tracking Your Audience

Targeting messages to specific audience groups helps conserve finite program resources by focusing efforts on those groups who engage in the target behavior most frequently (i.e. using toxic pesticides). By refining marketing efforts and messages to a well-defined subset of the larger population, the program will be able to target resources more efficiently while also strengthening the impact of the message through this tailored approach.

Leveraging Existing Resources

**Start the database by collecting emails and names from all of the contacts that have been made through the existing garden programs in the various cities.**

The target audience for this campaign is composed of adult homeowners residing in the eight Bay Area counties participating in BASMAA. This general audience has been further refined into two subgroups: (1) Do-It-Yourselfers (DIYers), who control pests in and around their homes themselves; and (2) Domestic Outsourcers (DO), who hire pest controllers or landscaping companies to accomplish this task for them (hereafter referred to as “contractors”). In marketing to these two subgroups, the program will roll out two interconnected yet distinct outreach campaigns to increase the impact of the message.

As the plan below will describe, the campaign will allow for a significant degree of interaction between the program and the populace. Offering this opportunity for engagement provides a simple and cost-effective means for increased participation on

the part of the audience member in addition to an increased opportunity for directly tracking campaign progress on the part of the program.

To track this participation and maintain engagement, the program is advised to build out a database for each target subgroup. The database should include the participant's name, mailing address, email address and the way the participant first came into contact with the program (e.g. an outreach event, coupon redemption program, etc.). In addition to general contact information, the database should also describe to what extent each participant has been involved in the project (e.g. participated in the coupon redemption program, provided a testimonial, etc.). The database should then record a follow-up action that should be taken for each participant (e.g. send email solicitation for testimonial, send coupon via mail, etc.) to automate and streamline interactions. Therefore, the purposes of this database are to:

1. **Target the Audience:** The database will allow BASMAA to reach the audience in the most targeted way possible by providing them with incentives and information that is specific to them. The more targeted we can make the correspondence (e.g. "Hey, Jill! We know that you've already tried a less-toxic pesticide product and we wanted to see if you had considered telling one of your fellow gardeners about our program."), the more effective the program is going to be (e.g. Jill passes on the message to her friend). Obama's online campaign did a great job of using this targeted marketing (see this article for more info: [salon.com/news/feature/2008/07/16/obama\\_data](http://salon.com/news/feature/2008/07/16/obama_data)).
2. **Build on Commitments:** By tracking participants' involvement in the program, BASMAA can continue to engage the participant by gradually asking for increasingly more complex commitments. If you introduce one commitment at a time, the request is seen as less onerous than if all of the changes were requested at once. Additionally, people typically change their perception of what a small commitment is compared to a large one depending on their point of reference. For example, if BASMAA were to ask participants to utilize an IPM strategy at the immediate onset of the program, participants might see it as too large of a commitment relative to their past efforts (presumably, nothing). However, if first asked to purchase less-toxic products, and then asked to engage in IPM, the latter commitment is viewed as less intensive given that we've changed the participants' point of reference by asking for a smaller commitment first.
3. **Allow for Strategic Outreach:** The database also provides the opportunity to easily grow and expand outreach efforts to include more personal, one-on-one interactions. For example, if the program wanted to grow the campaign to include "less-toxic pesticide parties" (like Tupperware parties, but for recommended products and IPM strategies) at residents' homes, BASMAA could easily organize this by utilizing the database to identify likely participants and hosts (e.g. by using the filter functions to search by zip code, engagement level, etc.).
4. **Track Engagement & Behavior Change:** By keeping track of the audience in a systematic way, BASMAA would have a way to truly track changes in behavior over a sustained period of time. Surveys and other evaluations would also be more cost-effective with a list of already established program participants.

### 3. In a Nutshell: Key Campaign Messages

#### 3.1 Overall Messaging Strategy

As described above, specific messages and distribution modes will be differentiated across the two target populations; however, each strategy will share the same fundamental approach. This approach is characterized by Community-Based Social Marketing's (CBSM) stepwise process for behavior change as described in the literature review:

- Phase 1. **Raising Awareness:** The campaign will begin with raising awareness regarding the adverse health effects for family members and pets associated with exposure to toxic pesticides through targeted advertisements and outreach.
- Phase 2. **Changing Behaviors:** In addition to raising awareness about the issue, the program will also deliver a series of targeted, action-oriented messages to drive the adoption of desired behaviors.
- Phase 3. **Produce Engagement:** To produce and continually engage both audience groups, the campaign will develop a feedback mechanism facilitated by electronic platforms such as email marketing and social networking sites.
- Phase 4. **Maintain Engagement:** The aforementioned feedback mechanism will then be utilized to produce a "story bank" of testimonials, where real people share their experiences in their adoption of the desired behavior. Positive testimonials will then feed back into the messaging campaign to encourage others to engage in the promoted behavior change (i.e. using less-toxic alternatives or hiring sustainable landscaping companies).

#### Leveraging Existing Resources

**Many cities already have people who would be great program messengers. These people could initially be the "face" of the ad campaigns and then new people would fill the bank more organically as the program progressed.**

#### 3.2 Specific Messaging Strategy for the Do-It-Yourself (DIY) Population

For both audiences, campaign strategy will follow the same basic stepwise approach as described above. However, each campaign will contain its own unique elements to ensure a tailored and impactful message. For the DIY population, the communications strategy will follow the process described below:

- Phase 1. **A Call to Action Is Issued:** The advertisement's overarching message would encourage the purchase and use of less-toxic pesticide alternatives to protect the health of the audience member's family and pets; however, the call to action would include the promotion of a specific behavior that allows BASMAA to collect the participant's contact

information. For example, the program could partner with a company like TerraCycle to provide a rebate or a coupon for a less-toxic pesticide within the ad.

Phase 2. **Recipients Respond to the Call:** Viewers of the coupon or promotion would then respond to the call to action by sending in their contact information (e.g. email address) to maintain and track their engagement in the program. For example, the participant would redeem their TerraCycle coupon by contacting the program, at which point they would provide their contact information to receive the discounted product. This incentive piece thereby serves the dual purpose of encouraging the adoption of the desired behavior (purchasing less-toxic products) while also providing a way for the program to collect contact information.

Phase 3. **Feedback Is Provided:** After redeeming the coupon, BASMAA would follow up with the recipient to reinforce their positive behavior and to ask about their experience using the eco-friendly alternative. For example, BASMAA could send an email recognizing the participant for their positive behavior (e.g. “Good job for buying green!”) and request that they share their story.

Phase 4. **Sharing Is Encouraged:** Recipients would be provided with the opportunity to share their story so that BASMAA can use the testimonials in future iterations of the campaign (e.g. in advertisements, on the website or as a quote for a media relations pitch). For example, the program could add a tab on the existing OWOW website to allow people to submit their stories and experiences in using less-toxic products. The tab could be entitled “Share Your Story,” for example, and comments and stories would be sent directly to the story bank. The story bank would then be privately managed by the program. Testimonials would be filtered and only those suitable for media pitching or future advertisements would remain in the bank.

Leveraging Existing Resources

Stories can also be used as an anecdotal evaluation tool. The program has the opportunity to take “negative” stories and see how they can be used as a learning experience to improve the program.

Phase 5. **Recipients Are Asked To Do More:** Finally, BASMAA could gradually expand the participant’s level of commitment by continually requesting that they take on increasingly more involved water-friendly pest management strategies. For example, after a participant shares their experience with the program, BASMAA could again provide positive reinforcement while making an additional request, such as introducing the adoption of Integrated Pest Management (IPM) strategies.

Simply providing the *opportunity* for engagement is the highlight of the program, distinguishing BASMAA’s advertising campaign from more traditional approaches.

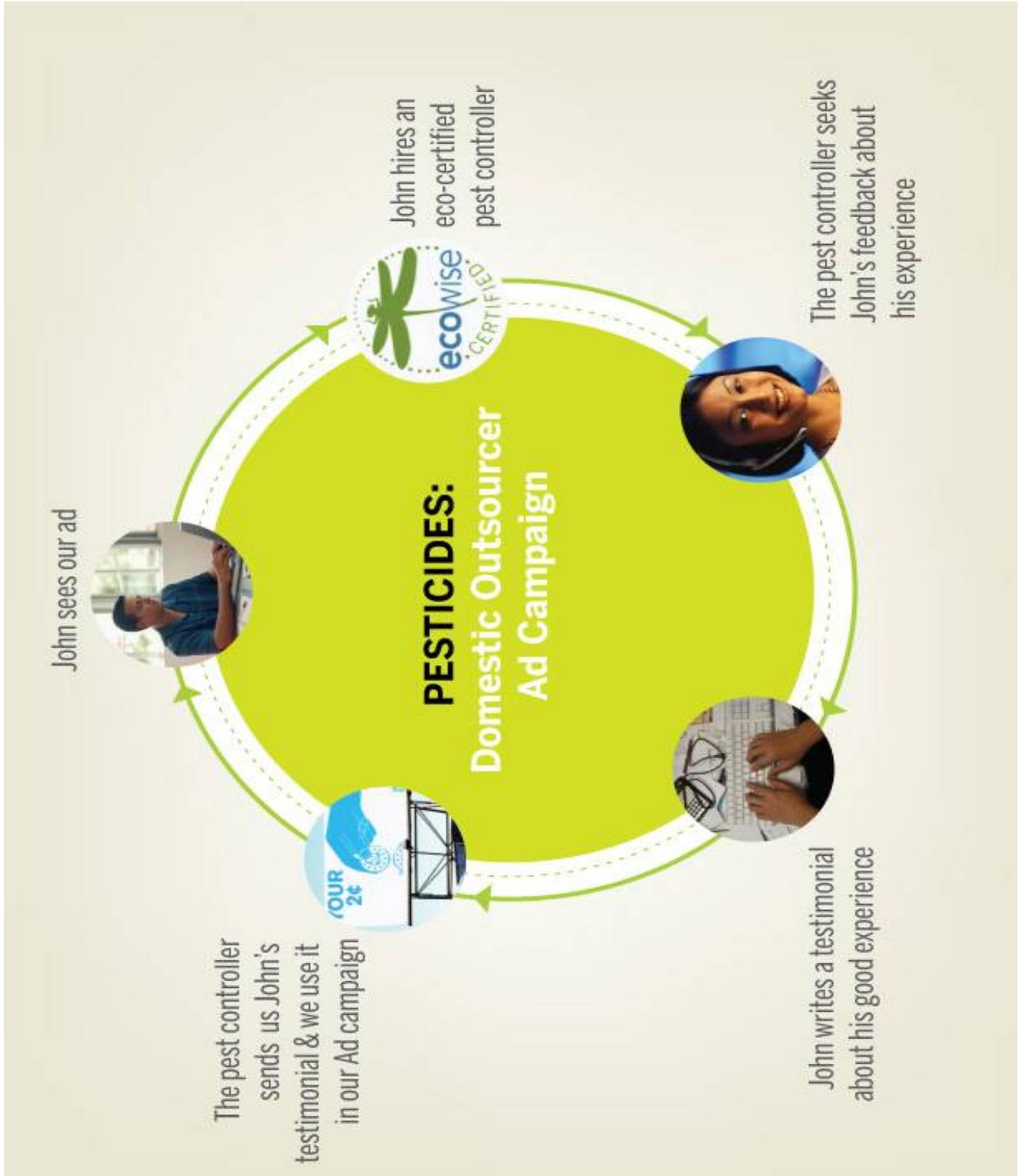
Allowing for engagement will come at a minimal marginal cost for the program as a large portion of the interaction workload can be automated thanks to a number of online networking and email marketing sites. The benefits of providing this opportunity for engagement greatly outweigh the nominal administration costs given that it produces a continuous outreach flow. Perhaps most importantly, the engagement process also allows the program to track outreach achievements such as the number of individuals reached and the rates of behavior change.



### 3.3 Specific Messaging Strategy for Domestic Outsourcers (DO) Population

For the DO population, campaign strategy resembles the DIY approach, with several key differences in terms of both messaging and structure, as noted below:

- Phase 1. **Deliver Targeted Messages:** The advertisement’s overarching message would encourage homeowners to hire sustainable agricultural pest controllers or sustainable landscapers, hereafter referred to as “contractors,” and/or ask their current contractors for sustainable services (i.e. the use of IPM and/or less-toxic pesticide alternatives) to protect the health of their family and pets against noxious pesticides.
  
- Phase 2. **Recipients Respond to Program Messages:** Viewers of the advertisement would then contact and hire sustainable contractors.
  
- Phase 3.* **Feedback is Provided:** After completion of service, the sustainable contractors would follow up with the recipient to reinforce their positive behavior and to ask about their experience using their less-toxic services. For example, BASMAA could provide a designed email template for participating contractors that would contain recognition of the customer’s positive behavior (e.g. “Thanks for going green!”) and request that they share their story about their experience using the sustainable service.
  
- Phase 4. **Sharing is Encouraged:** Customers would then be provided with the opportunity to share their stories for BASMAA to use as testimonials in future campaign efforts (e.g. in advertisements or as a quote for a media relations pitch). For example, customers could simply submit their stories via email, which would then be forwarded from the sustainable landscaping companies to BASMAA.



## 4. Getting the Word Out: Distribution Mechanisms

### 4.1 Paid Advertising

#### 4.1.1 Paid Advertising Approach for Both Target Audiences

Utilizing paid advertising will serve as the primary mechanism for initially raising the awareness of both target audiences about the behaviors being promoted. In addition to acting as the campaign “starting point,” paid advertising efforts will also seek to continually engage both audience groups by offering actual testimonials from program participants as the campaign grows and matures.

#### 4.1.2 DIY Population-Specific Paid Advertising Approach

For the DIY populations, paid advertising should be placed in targeted locations that are near in both location and frame of mind to the desired behavior (purchasing less-toxic products). Paid advertisements should span a variety of mediums, ranging from social networking sites to websites to print advertising. Despite this broad array of outlets, each medium should remain focused on issues relevant to purchasing less-toxic products, particularly DIY and sustainable gardening. For example, the program could place inserts and advertisements in gardening magazines, Home & Garden sections of newspapers, DIY and gardener blogs and websites, Facebook ads and niche “eco” media like *Greenopia*.

When reaching out to this population, it will also be important to further refine advertising approaches to the primary subgroups within the larger DIY subset. These primary subgroups include non-gardeners, or residents using pesticides to eliminate outdoor pest problems affecting their health and/or lifestyle; and gardeners, or residents using pesticides to address pest problems affecting their flower and/or produce gardens. In reaching these two groups, potential distribution mechanisms might include:

##### Non-Gardener DIY Population:

- Home & Garden show booklets/programs (e.g. Alameda County Home & Garden show)
- Home & Garden sections of the newspaper (e.g. Mercury News Home & Garden)
- Home improvement store inserts and leaflets
- General print newspapers

##### Leveraging Existing Resources

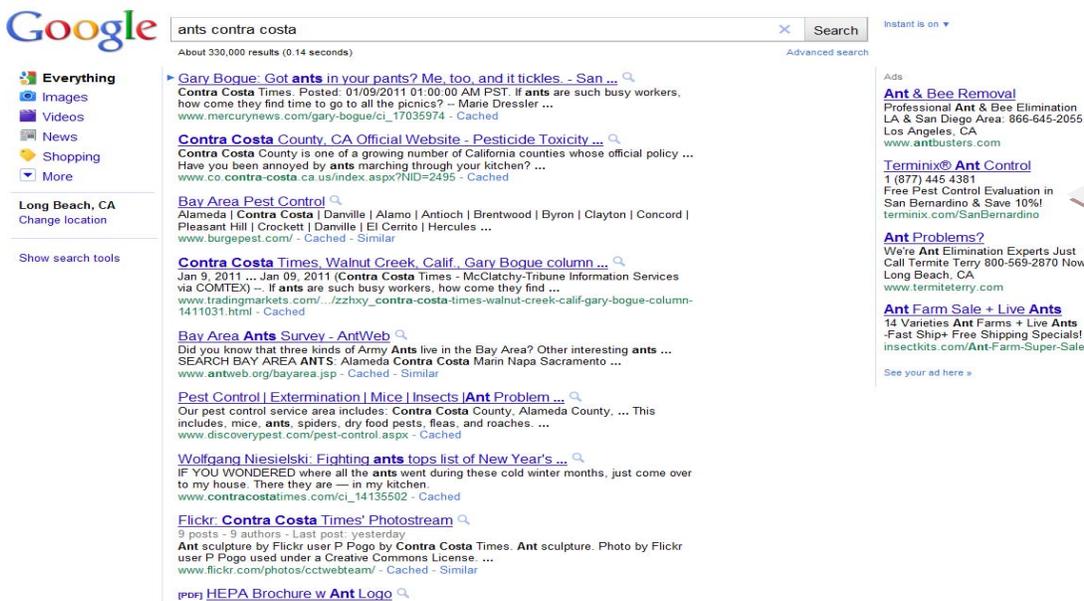
**If a program like Alameda County is already attending events such as the Alameda County Home and Garden Show, this would be a great event to distribute key program messages and place ads.**

##### Gardener DIY Population:

- Home & Garden show booklets/programs (e.g. Alameda County Home & Garden show)
- Home & Garden sections of the newspaper (e.g. Mercury News Home & Garden)
- Home improvement store inserts and leaflets
- Garden-specific targeted Facebook ads
- Gardening-targeted and keyword-specific online search term ads
- Garden-specific website banner ads

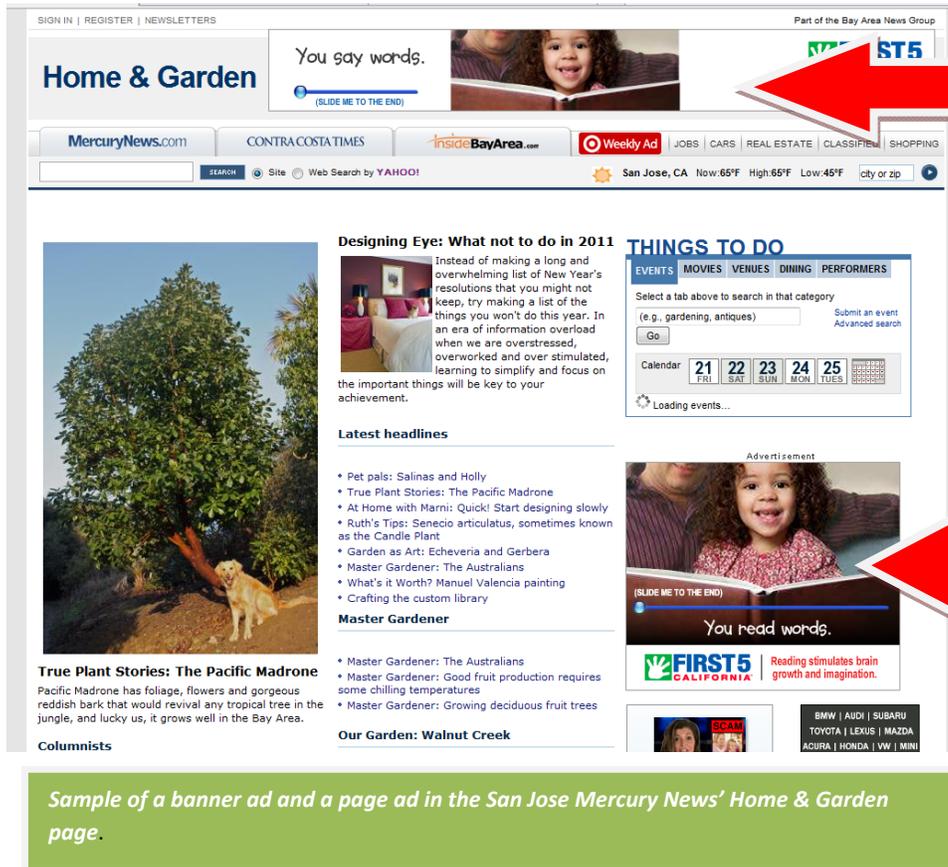
### 4.1.3 DO Population-Specific Paid Advertising Approach

Similarly, the paid advertising strategy for marketing to the DO population should follow the same comprehensive approach in terms of advertising modes, yet targeted in terms of the niche focus of those vehicles. Like the DIY strategy, the DO advertisements should also be placed in targeted locations that are near in both location and frame of mind to the desired behavior (hiring sustainable landscaping companies or finding an exterminator to deal with a pest problem). For example, the program could create online placements that appear during Google searches using specific search terms like “ants” + “Marin County.” It would also be advantageous to post advertisements in established databases and review sites that are commonly referenced to locate landscaping services and pest control companies such as the Yellow Pages, angleslist.com, yelp.com and Pennysaver.



The screenshot shows a Google search for "ants contra costa" with approximately 530,000 results. The search results include several organic links related to ant infestations in the Contra Costa area, such as "Gary Bogue: Got ants in your pants? Me, too, and it tickles - San...", "Contra Costa County, CA Official Website - Pesticide Toxicity...", and "Bay Area Pest Control". On the right side of the search results, there is a section for "Ads" (Pay Per Click Ads) featuring several pest control services like "Ant & Bee Removal", "Terminix® Ant Control", "Ant Problems?", and "Ant Farm Sale + Live Ants". A red arrow with the text "Pay Per Click Ads" points to this section.

*Shows a sample of where a keyword specific, geo-targeted ad would appear. For example, if someone only typed in the word “ants,” Google’s geo-targeting can make it so that only people in a certain geographic region would see the ad.*



#### 4.2 Earned Media Approach for Both Target Audiences

Earned, unpaid media offers a number of ripe opportunities to supplement the larger campaign and in the case of the electronic media, to drive engagement. For both target populations, earned media, such as user-generated content about the program posted on social networking sites, blogs or reported in news media, should convey the same messages as those communicated in the paid advertising campaign.

Promoting program messages across earned news media sources can be accomplished through BASMAA's existing media relations push. In driving this effort forward, the program should position "Our Water, Our World" as a go-to expert in local water quality issues so that BASMAA is the primary contact reporters seek when writing pieces related to this issue.

To further bolster BASMAA's reputation as an expert on water quality issues, the program should systematically seek out opportunities to comment on and contribute to related articles published online. By offering BASMAA's expertise, the program will be able to publicly build and assert its credibility, while simultaneously building a network of supporters. The program should therefore consistently monitor media to track articles and reporters writing about related subject matter.

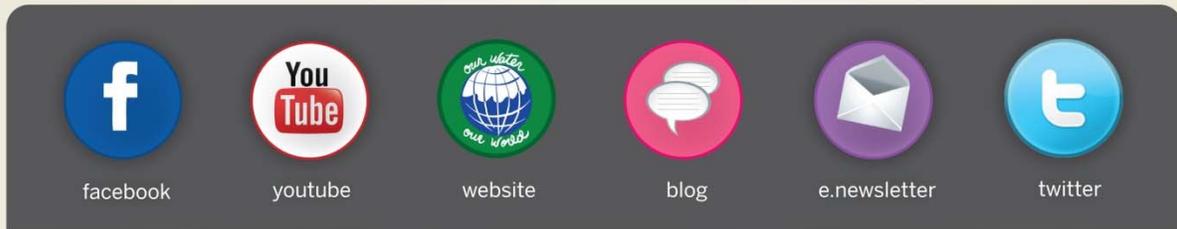
#### Leveraging Existing Resources

This should be in sync with BASMAA's already existing media relations push.

### 4.3 Building Engagement through Electronic Media

For the DIY population in particular, the use of unpaid electronic media will be a central mechanism in the consistent dissemination of program messages. Thanks to free electronic platforms, and user-generated social networking sites, the program will be able to regularly spread program messages on a continuous basis. Frequent message saturation and easy online access to participants will also allow the program to ask for increasingly more involved levels of commitment, culminating in the submittal of testimonials with regard to their adoption of sustainable pest management practices and products. In short, the paid advertising campaign – and any other interaction that the OWOW program has with a resident (e.g. events, trainings, etc.) – is ideally coupled with an opportunity for the recipients, if they are interested, to become further involved with the program online. In developing this e-engagement program, SGA recommends taking the following step-wise approach. The goal of the strategy below is to first build off simple actions to grow into more complex efforts as the online movement gains momentum. BASMAA should also leverage already existing resources by making every point of contact with a resident (e.g. how-to workshop, event, etc.) an opportunity to make them part of the online media program.

Allow People the Opportunity to Stay in Touch with the Program



## ONLINE OUTREACH

- Collect stories
- Cost effectively keep in touch with residents
- Obtain commitments
- Create an ongoing dialogue
- Allow for peer-to-peer (i.e. viral) spreading of information



Paid Ads



Media relations



How-to workshop



Event

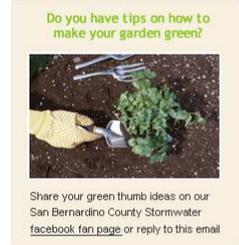
**Step 1** Reaching Out with e-Newsletters:  
 To quickly and efficiently foster audience involvement, BASMAA should develop an e-Newsletter specifically targeting the DIY population to increase their access to program messages. The newsletter could be sent out to individuals who provided their email address at community events or through coupon redemptions from the purchase of less-toxic products, for example. The newsletter should be sent out once a month, featuring short, easy “to do” tips. For example, the newsletter could feature one tip a month about the latest less-toxic products, related product discounts or useful IPM strategies. The newsletter should also promote website perusal by linking articles to an e-Newsletter section of the website where the program could store archived editions.



Dear Gardening Friends,

The San Bernardino County Stormwater Program proudly presents our [gardening web](#) page where you can find tips that help you garden smart and garden safe.

Every quarter, we'll be sending you a crafty tip, plant suggestion, or giveaway promotion to help your garden and community grow. **STAY TUNED!**



**Remember to Garden Smart!**  
 Strategically apply fertilizers and pesticides on sunny days and avoid applying before rainfall.



**Get water wise at these upcoming gardening workshops!**

Residents are invited to learn about landscape design basics, plant selection, irrigation, and soil. Find out the details on [our calendar](#).

*Example of an electronic newsletter that SGA created for the County of San Bernardino Stormwater Program. The medium allows for articles as well as user commenting and questions.*

**Step 2** Navigating the Eco-Blogosphere:  
 After developing the program e-Newsletter, BASMAA should start a blog where tips can be coupled with more extensive write-ups. Linking the tips sent out in the e-Newsletter with the blog also allows readers to comment, thereby increasing interactivity and engagement. Blogs also allow for the opportunity to reach out to audience members beyond those currently connected with the program, as their infrastructure includes the built-in capacity to push forward campaign messages through their viral network of readers and content-producers.

**Step 3** Fostering Trust and Buzz Through Social Networking:

While developing a blog presence, the program should also start a Twitter and/or Facebook page to allow for a more continuous dispersal of program information and increased opportunity for audience engagement. This type of platform also provides endless opportunities for peer-to-peer information sharing. DIYers should be encouraged to share their non-toxic solutions for dealing with pests and their peers would therefore be able to get advice from their online neighbors and, as a result, the messages would carry added credibility.

Leveraging Existing Resources

**By linking up with the Facebook pages of Contra Costa Clean Water Program, Sonoma County Water Agency and Santa Clara’s Watershed Watch, the program could instantly leverage over 600 fans!**

- Step 4** **Creating a Movement with Moving Pictures:** After building out a basic social networking framework, the program should then move to the development of an OWOW YouTube Channel. The YouTube channel will allow the program to quickly and easily post videos captured at outreach events and gardening workshops, or informational videos (e.g. how to spot an aphid).
- Step 5** **Growing Relationships to Build Credibility:** In building the program's credibility among the target DIY audience and growing its e-community to disseminate messages, BASMAA should seek to develop a broad coalition of online support. To accomplish this, BASMAA should identify related blogs, Facebook and Twitter pages, websites and YouTube channels and regularly provide comments, respond to posts, provide expertise, and/or share relevant articles. Collectively, these efforts will feed the larger effort by providing a mechanism for program messages to reach the wider audience and grow credibility through this cost-efficient "word of mouth" capacity.
- Step 6** **Evolving from Website to Program Hub:** Ultimately, social networking and blogging efforts will aim to drive users back to the OWOW website, which will unify the numerous electronic outreach activities described above. As the information hub of the program, it's important to grow and streamline the current website to increase its efficiency and usability. To do this, SGA suggests designing and executing a web optimization strategy based on the follow principles:
1. **Increase Site Usability and Accessibility:** Website navigability is one of the most important features of any effective information hub because if people can't use the site, they won't stay. With this in mind, the program should develop a strategy to increase the usability of the site by assessing current website information flow, layout and organization to determine retooling and reformatting needs.
  2. **Develop a Robust Search Engine Optimization (SEO) Plan:** Developing an effective SEO strategy is critical, because if people can't find you, then they won't be able to use your resources. In developing OWOW's SEO strategy, the program should examine the following features:
    - **Titles:** Reassess consistency and clarity of each title on every website page to ensure that each title accurately describes the content of the page.
    - **Link around:** Increase the use of internal links within web pages to easily direct external and internal users to information.
    - **Strengthen keywords:** Highlight critical keywords and phrases and add a *strong* tag around them to increase search results.
  3. **Put Your Best Face Forward:** The design and branding of the site acts as the face of the program, and should thereby engage and draw the audience in. In light of the updated Five-Year Strategic Plan, BASMAA should revisit the current website design to fully optimize the use of engaging website images, web layout and design consistency throughout the site.

4. **Clarify, Grow and Tailor Content:** The information that the site is providing is the central reason why the audience is visiting. To keep the target audience coming back for more, it is important that the program develop a plan to consistently and systematically refine and update website content.

#### 4.2.3 DO Population-Specific Earned Media Approach

For the DO population, the use of unpaid electronic media should be utilized as a mechanism where individuals could simply and easily submit testimonials describing their positive experiences using a sustainable contractor. Electronic media would also be implemented in conjunction with the sustainable contractors to leverage outside resources.

To easily automate this feedback loop, the program could develop a designed email template requesting testimonials from former sustainable contractor clients. This e-blast template could then be provided to partnering sustainable contractors to send directly to their customers. The e-blast would include several easy ways for customers to submit their testimonials, such as simply replying to the email (which would then be forwarded by the contractors to BASMAA) or by posting their testimonial to OWOW's future Facebook page.

#### 4.3 Strategic Partnerships

For the DO population in particular, developing strong relationships with sustainable landscaping companies will be critical in the successful execution of the campaign. However, the need for fruitful partnerships does not end there. To effectively reach and influence both target audiences, the program should develop, build on and utilize strategic partnerships with a number of relevant groups and existing stakeholders. While building these partnerships, the program should seek stakeholder input and assistance across a number of key objectives, including: (1) refining program messages, (2) identifying message distribution channels and (3) leveraging their own networks to distribute messages.

In seeking out potential partners, the program should reach out to organizations that appeal to the relevant interests of both populations, which include:

- **Environmental Issues:** The program could appeal to the target audience's desire to be environmentally friendly in using less-toxic pesticides by developing strategic partnerships with relevant environmental organizations (e.g. The Urban Pesticide Pollution Prevention Project, <http://www.up3project.org>).

#### Leveraging Existing Resources

**The program could easily draw on participants currently involved with Santa Clara Valley's Green Gardner Program or the Bay Friendly Landscaping Program.**

- **Health Concerns:** Like their concern for the environment, protecting the health of their families and pets is a major driver for many residents' use of less-toxic pesticides. Noting this interest, the program should seek out partnerships with related health organizations, particularly those that focus on the family and the home (e.g. Healthy Child, Healthy World, <http://healthychild.org/>).

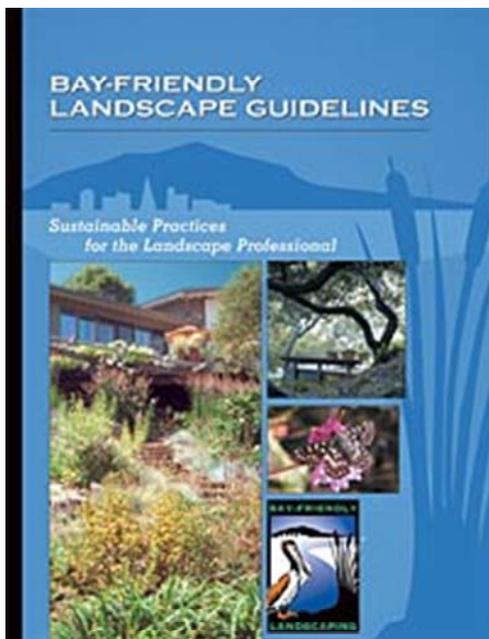
Leveraging Existing Resources

Santa Clara's Master Gardeners program is another great opportunity to leverage program resources and current participants ([www.mastergardeners.org/scc.html](http://www.mastergardeners.org/scc.html)). For example, BASMAA could build off the Master Gardeners program's La Mesa Verde, a newly established community project dedicated to building organic vegetable gardens at the homes of low-income families in Santa Clara County (pictured right).

- **Green Gardeners:** For the DIY sect, reaching out to sustainable gardening groups would allow the program to pick the low-hanging fruit of individuals who already have a developed interest in the message.



*Plug-in Opportunity: Alameda's guideline book for the County's Bay-Friendly Gardening program.*



*Plug-in Opportunity: Santa Clara's La Mesa Verde Project for the Master Gardeners program.*

- **Master Gardeners:** The program could also find a broad group of willing participants and effective channels of communication to leverage by partnering with master gardener

- **Sustainable Landscaping Companies:** Finally, partnering with sustainable landscaping companies will not only help move the program forward; it will be a necessary action in developing the DO campaign (e.g. The Bay-Friendly Gardening Program, <http://www.stopwaste.org/home/index.asp?page=8>).

#### Leveraging Existing Resources

**Alameda County’s Bay-Friendly Gardening program offers landscape professionals a number of tools and resources to help them stay competitive in the marketplace, such as workshops, qualifications, tours and guidelines (pictured right) ([www.stopwaste.org](http://www.stopwaste.org)). The program could utilize existing contacts from this program to build out strategic partnerships with sustainable landscapers.**

## 5. Making the Grade: Evaluation Approaches

### A Note about Our Approach

At SGA, we’ve come to rely on the term Outreach:ology to convey the unique way we approach public education. Outreach:ology (i.e., the science behind behavior change) uses a blend of Community-Based Social Marketing (CBSM) and proven tactics from social psychology and persuasion in order to influence the behavior of the target audience. CBSM focuses first on identifying the barriers and motivators of the target audience (See Literature Review, page 4), and then on finding ways to lower the barriers and increase the motivators. Social psychology allows us to use research from prominent leaders in the academic field who have tested and found tactics that work in influencing a person’s behavior. By using both social psychology and CBSM as the backbone of the approach, SGA has proposed strategies throughout the plan (e.g., power of stories, peer-to-peer communication, action-oriented messages, etc) that are all included as a result of their proven success in persuading people to change their behavior. Because these types of strategies have proven success, SGA recommends monitoring the audience’s participation (instead of their awareness) as one of the campaign’s primary metrics for success. For example, getting a home owner to sign up for the program’s eNewsletters would be more valuable than finding out that said homeowner is aware of the toxicity of pesticides.

### What Numbers Should Be Tracked for Success: Recommended Measures

In order to reflect the strategies proposed in the plan, the table below reflects which outreach tactics should be measured quantitatively.

CAMPAIGN COMPONENT	EVALUATION METRIC
<b>PAID ADVERTISEMENTS</b>	<ul style="list-style-type: none"> <li>• Number of impressions per advertisement</li> <li>• Number of interactions as a result of advertisement</li> </ul>
<b>TESTIMONIALS</b>	<ul style="list-style-type: none"> <li>• Number of testimonials received</li> </ul>
<b>ELECTRONIC MEDIA</b>	<b>SOCIAL NETWORKING (FACEBOOK AND/OR TWITTER)</b> <ul style="list-style-type: none"> <li>▪ Number of “friends” or “fans”</li> <li>▪ Number of interactions (e.g. posts/comments) from target audience</li> <li>▪ Number of interactions from OWOW</li> </ul>
	<b>WEBSITE</b> <ul style="list-style-type: none"> <li>▪ Number of unique visitors</li> <li>▪ Number of page views</li> </ul>
	<b>BLOGS</b> <ul style="list-style-type: none"> <li>• Number of posts by program on external blog sites</li> <li>• Number of comments to posts by program on external blog sites</li> </ul>
	<b>E-NEWSLETTER</b> <ul style="list-style-type: none"> <li>• Distribution number</li> <li>• Open rate</li> <li>• Number of article click-throughs</li> </ul>
<b>EARNED MEDIA</b>	<ul style="list-style-type: none"> <li>• Online news placements</li> <li>• Print news placements</li> </ul>
<b>STRATEGIC PARTNERSHIPS</b>	<ul style="list-style-type: none"> <li>• Number of partnerships with related organizations/non-profits/associations</li> <li>• Number of partnerships with sustainable landscaping companies &amp; pest control operators</li> <li>• Number of strategic partnership events/workshops</li> <li>• Number of people who attended all strategic partnership events/workshops</li> </ul>

### Learning from Mishaps and Successes: Monitoring and Adjusting

The most effective outreach plans are those that are able to be malleable and adjust tactics as needed. In terms of the overall strategy, periodic evaluations should be done at least once a year to allow the program to take a step back and assess what's working (and do more of that) and what's not working (and figure out how it can be improved). On a more tactical level, adjustments should be occurring on an ongoing basis. Because a good chunk of the plan focuses on online outreach, this comes with the added benefit of an ongoing evaluation component. Programs like Facebook, eNewsletters, etc., all produce statistics to see which posts are popular and which emails people are opening and not opening. This encourages a continuous stream of automated monitoring that would allow the program to optimize its rates of online engagement and success by simply giving their users more of what they want.

Pilot testing programs are also a means of assessing effectiveness before they are implemented on a large scale. Pilot testing is best used when conducting "on the ground" outreach programs. That is, programs that involves face-to-face contact like the store outreach being done for the Our Water, Our World program. Because of the geographic area of BASMAA, face-to-face outreach was not included as an integral part of this plan due in part to the budget and the fact that the strategic plan was written to comply

with the MRP's advertising requirement. However, for some components of the plan (e.g., Youth Panel), pilot testing is feasible and recommended as a way of seeing what works and what doesn't—before rolling it out on a larger scale.

### To Ask or Not to Ask: Self-Reported Surveys

SGA is aware that one of the MRP's requirements is to do a pre- and post- campaign survey before and after the advertising buy. Because we are recommending that BASMAA veer away from traditional paid advertising buys, we are also recommending that this evaluation approach be adjusted accordingly. SGA's concern with self-reported surveys are as follows: (1) They tend to place an emphasis on knowledge and awareness. As we know from CBSM, the idea that knowledge equals behavior change is an erroneous one. Case in point: every smoker knows that smoking cigarettes is bad for their health, but does this stop them from smoking? For this reason, it is amiss to assume that simply because a homeowner knows that IPM is the most eco friendly pest control alternative, that they are going to stop using pesticides altogether; (2) They are self-reported and therefore are limiting in their ability to get candid answers from the participants; and (3) They can be quite expensive for little return. Administering these types of surveys is often costly, and the data that is received is not always actionable or of value to the program.

SGA instead recommends taking the following approach to self-reported surveys: (1) Stay away from focusing on questions related to awareness; (2) Rely primarily on the people who are part of the program's outreach database (see page 13) as the means for getting survey data. The people who become part of the program can therefore be tracked and their progress monitored in terms of how successfully they are moving along the road to behavior change. This also minimizes program costs if the surveys are sent out and collected online; and (3) Only collect face-to-face surveys in conjunction with other programs and outreach initiatives the individual cities/counties are already doing as part of MRP compliance. For example, taking surveys to a community event and doing them there. In this way, no added budget is spent in trying to collect survey data.

**BASMAA  
Media Relations Campaign  
Final Report FY 2010-2011**

**Submitted by O'Rorke Inc  
June 30, 2011**

During the fiscal year 2010-2011, O'Rorke Inc. continued to serve as BASMAA's media relations contractor.

Early in the year O'Rorke worked directly with project manager Sharon Gosselin and the PIP committee to brainstorm pitch topics. The result was several planned pitches and distributing radio/online public services announcements on key stormwater issues as well as monitoring of breaking news opportunities. Additionally, O'Rorke provided localized templates of each release developed for use by local agencies to pitch community-specific media.

The pitches resulted in thirty-five total media placements. The report that follows gives a synopsis of each pitch and the number and type of placements each garnered. Details coverage reports for each pitch are attached.

**Rainy Season/Car Maintenance PSAs**

O'Rorke drafted a series of public service announcements (PSAs) for use on radio. The copy focused on the importance of basic car maintenance, particularly fixing leaks, in the rainy season.

The PSAs were aired on eleven radio stations, posted on ten station websites and also resulted in interviews on two radio stations for a total of twenty-three placements.

**Don't Burn Holiday Gift Wrap**

O'Rorke drafted a press release focusing on the pollution caused when holiday gift wrap is burned or used as a fire starter.

This pitch resulted in five placements: four radio stories and coverage on KQED's blog.

**Reusable Lunch Boxes/Water Bottles**

To call attention to one of the major pollutants BASMAA is dealing with, O'Rorke conceived of a pitch designed to call attention to litter via choices a consumer can

make in daily behaviors. Two press releases were drafted: one dealt with eating on the go and how reusable items can fit into that (reusable coffee cups, water bottles, etc). The other release, sent to parenting publications, focused solely on building a greener lunch box for children.

This pitch resulted in one interview placement on the family-friendly station, KMKY (Radio Disney).

### **Hiring an IPM Certified PCO**

This pitch focused on the wide availability of pest control operators certified in integrated pest management (IPM) techniques. O'Rorke worked to have BayWise.org updated to include a "box" on the homepage advising users to "click here to find a pest control professional." Also included were links to listings of Bay Area contractors certified by three different programs.

This pitch resulted in three placements: one on claycord.com and two radio interviews. The claycord story drove eighty-six visitors to BayWise.org the day it was posted. Since the pitch began, the pest control page has received over 150 visitors.

### **Ant Control PSAs**

These PSAs dealt with effective ways to control ants and also promoted BayWise.org as a resource for pest control information.

The PSAs aired on three stations: KLIV, KDIA and KCBS.

### **Summertime Reusables/Anti-Litter Tips**

This pitch began at the end of the FY and, although some media outlets expressed interest in running the tips and/or using them in conjunction with other summertime/destination stories, no placements have been confirmed as of this writing.

### **Recommendations for FY 2011-12**

- Work to find new ways to present the litter story and messages to the media. O'Rorke found this topic to be a "tough sell." It may be, in part, because downsizing at news organizations has made lighter, lifestyle-oriented pieces more difficult to get covered. But there also did seem to be a real lack of interest in this topic from the media.
- Look to new local/regional studies as a jumping off point for pitching. Timeliness and a sense of having real news to share would help get BASMAA

more coverage.

- Continue to pitch FM radio stations and seek out public affairs coverage via PSAs or direct pitches. Public affairs directors have been receptive to BASMAA messages.
- Update BayWise.org to include more stormwater related information.
- Continue to pitch/seek out online coverage as much as possible. One story on claycord.com drove over eighty visitors to BayWise.org. Online stories and placements can lead to the public directly getting even more information about water pollution prevention activities at home.
- Brainstorm things on the horizon in the next six months that could prove to be strong media opportunities for BASMAA. This could range from new regulations to surveys and studies.

## Rainy Season/Car Maintenance PSA Coverage Report

### Online

- [KISS-FM \(98.1\)](#)
- [KMEL-FM \(106.1\)](#)
- [WILD 94.9](#)
- [KKSF-FM \(103.7\)](#)
- [STAR 101.3](#)
- [GREEN 960](#)
- [910 KNEW](#)
- [KКИQ-FM \(101.7\)](#)
- [KKDV-FM \(92.1\)](#)
- [107.7 THE BONE](#)

### Radio

- KISS-FM (98.1)
- KMEL-FM (106.1)
- WILD 94.9
- KKSF-FM (103.7)
- STAR 101.3
- GREEN 960
- 910 KNEW
- KИQI-AM (1010) (Spanish)
- KКИQ-FM (101.7)
- KKDV-FM (92.1)
- KUFХ-FM (98.5) (KFOX) – Will begin airing week of 12/27

### Radio (Interview)

- **KEAR-AM (610)**. Sharon Gosselin w/ Jonathan Rickert on Tuesday 12/14. Two 5-minute segments aired Wednesday 12/15/10 and Thursday 12/16 at both 11:04 a.m. and 4:04 p.m.
- **Radio Disney KMKY-AM (1310)**. Sharon Gosselin w/ Shalon Rogers on Monday 11/20 at 11 a.m.

## Don't Burn Gift Wrap Coverage Report

### Radio

- **GREEN 960.** Sharon Gosselin w/ Sebastian Kunz on Friday 12/10/10.
- **KEAR-AM (610).** Sharon Gosselin w/ Jonathan Rickert on Tuesday 12/14/10. Two 5-minute segments aired Wednesday 12/15/10 and Thursday 12/16/10 at both 11:04 a.m. and 4:04 p.m.
- **KGO-AM (810).** Sharon Gosselin w/ Ravi Peruman on Monday 12/20/10.
- **KCBS-AM (740).** Lisa Fasano (Air District) on Friday 12/24/10. Two segments.

### Online

- **KQED News Fix Blog.** [What Not to Burn This Holiday Season](#). Dan Brekke. 12/24/10.

## Reusable Lunch Box/Water Cups Media Coverage Report

### Radio

- KMKY – Geoff Brosseau interviewed by Shalon Rogers on March 30<sup>th</sup>.

## Hiring an IPM Certified PCO Coverage Report

### Online

- Claycord.com

### Radio

- KEAR – Interview with Jim Scanlin; aired in two parts on two consecutive days.
- KIQI – Interview with Ricardo Barajas

## Ant Control PSA Coverage Report

### Radio

- KCBS
- KDIA
- KLIV





**Got Bugs? Get Answers!**

Choose less toxic products for a healthy home and garden

visit [www.ourwaterourworld.org](http://www.ourwaterourworld.org)

Product recommendations are for general information only. Always read the label for proper use.



Look for this symbol  
to find your way



Table displaying various cleaning products, including bottles of disinfectant, spray cleaners, and boxes of wipes. A sign on the table reads "Our Water Our World".




A grid of six photographs showing various insects and their damage to plants. The top-left photo shows a sunflower. The other photos show close-ups of insects like mosquitoes and beetles on leaves.



A large chart or poster displaying numerous small images of different insects, likely used for identification purposes. It includes various types of flies, mosquitoes, and other pests.



**TRAPPING**

**SKUNKS**

**RACCOONS**

**POSSUMS**

**FERAL CATS**

**WILD PIGS**

**SNAKES**





Pesticide Safety 101  
How to protect your family  
from the risks of pesticides

3,3'-DDT  
Walden  
Pesticide Safety 101  
How to protect your family  
from the risks of pesticides

Got Bugs? Get A  
Choose less toxic products for a healthy home and garden  
visit [www.ourwaterourway.org](http://www.ourwaterourway.org)

Permittee Name: Fairfield-Suisun Urban Runoff Management Program

This provision is handled at the city level. Please see individual city reports for this information.

**C.5.f.iii.(1), (2), (3) ▶ Spill and Discharge Complaint Tracking**

Spill and Discharge Complaint Tracking (fill out the following table or include an attachment of the following information)

	Number	Percentage
Discharges reported (C.5.f.iii.(1))		
Discharges reaching storm drains and/or receiving waters (C.5.f.iii.(2))		
Discharges resolved in a timely manner (C.5.f.iii.(3))		

Comments:

This provision is handled at the city level. Please see individual city reports for this information.

**C.5.f.iii.(4) ▶ Summary of major types of discharges and complaints**

Provide a narrative or attach a table and/or graph.

This provision is handled at the city level. Please see individual city reports for this information.

Section 6 – Provision C.6 Construction Site Controls

<b>C.6.e.iii.1.a, b, c ▶ Site/Inspection Totals</b>		
<b>Number of sites disturbing &lt; 1 acre of soil requiring storm water runoff quality inspection (i.e. High Priority) (C.6.e.iii.1.a)</b>	<b>Number of sites disturbing ≥ 1 acre of soil (C.6.e.iii.1.b)</b>	<b>Total number of storm water runoff quality inspections conducted (C.6.e.iii.1.c)</b>
#	#	#
Comments:		
This provision is handled at the city level. Please see individual city reports for this information.		

<b>C.6.e.iii.1.d ▶ Construction Activities Storm Water Violations</b>		
<b>BMP Category</b>	<b>Number of Violations<sup>40</sup></b>	<b>% of Total Violations<sup>41</sup></b>
Erosion Control		
Run-on and Run-off Control		
Sediment Control		
Active Treatment Systems		
Good Site Management		
Non Stormwater Management		
<b>Total</b>		<b>100%</b>

<sup>40</sup> Count one violation in a category for each site and inspection regardless of how many violations/problems occurred in the BMP category.

<sup>41</sup> Percentage calculated as number of violations in each category divided by total number of violations in all six categories.

**C.6.e.iii.1.e ▶ Construction Related Storm Water Enforcement Actions**

	Enforcement Action (as listed in ERP) <sup>42</sup>	Number Enforcement Actions Taken	% Enforcement Actions Taken <sup>43</sup>
Level 1			
Level 2			
Level 3			
Level 4			
<b>Total</b>			<b>100%</b>

**C.6.e.iii.1.f, g ▶ Illicit Discharges**

	Number
Number of illicit discharges, actual and those inferred through evidence (C.6.e.iii.1.f)	
Number of sites with discharges, actual and those inferred through evidence (C.6.e.iii.1.g)	

**C.6.e.iii.1.h, i ▶ Violation Correction Times**

	Number	Percent
<b>Violations fully corrected within 10 business days after violations are discovered</b> or otherwise considered corrected in a timely period (C.6.e.iii.1.h)		% <sup>44</sup>
<b>Violations not fully corrected within 30 days after violations are discovered</b> (C.6.e.iii.1.i)		% <sup>45</sup>
<b>Total number of violations for the reporting year<sup>46</sup></b>		100%

**Comments:**

This provision is handled at the city level. Please see individual city reports for this information.

<sup>42</sup> Agencies should list the specific enforcement actions as defined in their ERPs.

<sup>43</sup> Percentage calculated as number of each type of enforcement action divided by the total number of enforcement actions.

<sup>44</sup> Calculated as number of violations fully corrected in a timely period after the violations are discovered divided by the total number of violations for the reporting year.

<sup>45</sup> Calculated as number of violations not fully corrected within 30 days after the violations are discovered divided by the total number of violations for the reporting year.

<sup>46</sup> Total number of violations equals the number of initial enforcement actions (i.e. one violation issued for several problems during an inspection at a site). It does not equal the total number of enforcement actions because one violation issued at a site may have a second enforcement action for the same violation at the next inspection if it is not corrected.

**C.6.e.iii.(2) ► Evaluation of Inspection Data**

Describe your evaluation of the tracking data and data summaries and provide information on the evaluation results (e.g., data trends, typical BMP performance issues, comparisons to previous years, etc.).

Description:

This provision is handled at the city level. Please see individual city reports for this information.

**C.6.e.iii.(2) ► Evaluation of Inspection Program Effectiveness**

Describe what appear to be your program's strengths and weaknesses, and identify needed improvements, including education and outreach.

Description:

The Program revised its inspection forms to correlate with the data collection requirements in the MRP. Inspections are made and data is collected in the field and brought back to the office for compilation into an Excel database. Training has been provided to inspectors at both cities. In addition, several inspectors and engineers from both cities have been trained and/or certified by the State as QSP or QSDs depending on their background and experience level.

Program members participate monthly on the Program's Stormwater Management Meetings. Information is distributed to the cities through city representatives at those meetings. The Program also participates in BASMAA's new development subcommittee meetings.

**C.6.f ► Staff Training Summary**

Training Name	Training Dates	Topics Covered	No. of Inspectors in Attendance	Percent of Inspectors in Attendance
See individual city annual reports				

**Section 7 – Provision C.7. Public Information and Outreach**

**C.7.b.ii.1 ► Advertising Campaign**

Summarize advertising efforts. Include details such as messages, creative developed, and outreach media used. The detailed advertising report may be included as an attachment. If advertising is being done by participation in a countywide or regional program, refer to the separate countywide or regional Annual Report.

Summary:

The Program is participating in the BASMAA Regional Litter Ad Campaign. BASMAA is also working with a consultant on a Five-Year Strategic Advertising Plan "Our Water, Our World" Pesticides Program. Please see BASMAA FY 2010/2011 MRP Regional Supplement for Training and Outreach Annual Report for more details relating to these outreach efforts.

**C.7.b.iii.1 ► Pre-Campaign Survey**

*(For the Annual Report following the precampaign survey)* Summarize survey information such as sample size, type of survey (telephone survey, interviews etc.). Attach a survey report that includes the following information. If survey was done regionally, refer to a regional submittal that contains the following information:

- Summary of how the survey was implemented.
- Analysis of the survey results.
- Discussion of the outreach strategies based on the survey results.
- Discussion of planned or future advertising campaigns to influence awareness and behavior changes regarding trash/litter and pesticides.

Place an **X** in the appropriate box below:

<input type="checkbox"/>	Survey report attached
<input checked="" type="checkbox"/>	Reference to regional submittal: The Program is participating in the Regional Litter Ad Campaign, consequently a regional submittal is not required for this Annual Report

**C.7.c ► Media Relations**

Summarize the media relations effort. Include the following details for each media pitch in the space below, AND/OR refer to a regional report that includes these details:

- Topic and content of pitch
- Medium (TV, radio, print, online)
- Date of publication/broadcast

Summary:

**BASMAA**  
**Media Relations Campaign**  
**Final Report FY 2010-2011**

**Submitted by O'Rorke Inc**  
**June 30, 2011**

During the fiscal year 2010-2011, O'Rorke Inc. continued to serve as BASMAA's media relations contractor.

Early in the year O'Rorke worked directly with project manager Sharon Gosselin and the PIP committee to brainstorm pitch topics. The result was several planned pitches and distributing radio/online public services announcements on key stormwater issues as well as monitoring of breaking news opportunities. Additionally, O'Rorke provided localized templates of each release developed for use by local agencies to pitch community-specific media.

The pitches resulted in thirty-five total media placements. The report that follows gives a synopsis of each pitch and the number and type of placements each garnered. Details coverage reports for each pitch are attached.

**Rainy Season/Car Maintenance PSAs**

O'Rorke drafted a series of public service announcements (PSAs) for use on radio. The copy focused on the importance of basic car maintenance, particularly fixing leaks, in the rainy season.

The PSAs were aired on eleven radio stations, posted on ten station websites and also resulted in interviews on two radio stations for a total of twenty-three placements.

**Don't Burn Holiday Gift Wrap**

O'Rorke drafted a press release focusing on the pollution caused when holiday gift wrap is burned or used as a fire starter.

This pitch resulted in five placements: four radio stories and coverage on KQED's blog.

**Reusable Lunch Boxes/Water Bottles**

To call attention to one of the major pollutants BASMAA is dealing with, O'Rorke conceived of a pitch designed to call attention to litter via choices a consumer can

make in daily behaviors. Two press releases were drafted: one dealt with eating on the go and how reusable items can fit into that (reusable coffee cups, water bottles, etc). The other release, sent to parenting publications, focused solely on building a greener lunch box for children.

This pitch resulted in one interview placement on the family-friendly station, KMKY (Radio Disney).

### **Hiring an IPM Certified PCO**

This pitch focused on the wide availability of pest control operators certified in integrated pest management (IPM) techniques. O'Rorke worked to have BayWise.org updated to include a "box" on the homepage advising users to "click here to find a pest control professional." Also included were links to listings of Bay Area contractors certified by three different programs.

This pitch resulted in three placements: one on claycord.com and two radio interviews. The claycord story drove eighty-six visitors to BayWise.org the day it was posted. Since the pitch began, the pest control page has received over 150 visitors.

### **Ant Control PSAs**

These PSAs dealt with effective ways to control ants and also promoted BayWise.org as a resource for pest control information.

The PSAs aired on three stations: KLIV, KDIA and KCBS.

### **Summertime Reusables/Anti-Litter Tips**

This pitch began at the end of the FY and, although some media outlets expressed interest in running the tips and/or using them in conjunction with other summertime/destination stories, no placements have been confirmed as of this writing.

### **Recommendations for FY 2011-12**

- Work to find new ways to present the litter story and messages to the media. O'Rorke found this topic to be a "tough sell." It may be, in part, because downsizing at news organizations has made lighter, lifestyle-oriented pieces more difficult to get covered. But there also did seem to be a real lack of interest in this topic from the media.
- Look to new local/regional studies as a jumping off point for pitching. Timeliness and a sense of having real news to share would help get BASMAA

more coverage.

- Continue to pitch FM radio stations and seek out public affairs coverage via PSAs or direct pitches. Public affairs directors have been receptive to BASMAA messages.
- Update BayWise.org to include more stormwater related information.
- Continue to pitch/seek out online coverage as much as possible. One story on claycord.com drove over eighty visitors to BayWise.org. Online stories and placements can lead to the public directly getting even more information about water pollution prevention activities at home.
- Brainstorm things on the horizon in the next six months that could prove to be strong media opportunities for BASMAA. This could range from new regulations to surveys and studies.

## Rainy Season/Car Maintenance PSA Coverage Report

### Online

- [KISS-FM \(98.1\)](#)
- [KMEL-FM \(106.1\)](#)
- [WILD 94.9](#)
- [KKSF-FM \(103.7\)](#)
- [STAR 101.3](#)
- [GREEN 960](#)
- [910 KNEW](#)
- [KKIQ-FM \(101.7\)](#)
- [KKDV-FM \(92.1\)](#)
- [107.7 THE BONE](#)

### Radio

- KISS-FM (98.1)
- KMEL-FM (106.1)
- WILD 94.9
- KKSF-FM (103.7)
- STAR 101.3
- GREEN 960
- 910 KNEW
- KIQI-AM (1010) (Spanish)
- KKIQ-FM (101.7)
- KKDV-FM (92.1)
- KUFY-FM (98.5) (KFOX) – Will begin airing week of 12/27

### Radio (Interview)

- **KEAR-AM (610)**. Sharon Gosselin w/ Jonathan Rickert on Tuesday 12/14. Two 5-minute segments aired Wednesday 12/15/10 and Thursday 12/16 at both 11:04 a.m. and 4:04 p.m.
- **Radio Disney KMKY-AM (1310)**. Sharon Gosselin w/ Shalon Rogers on Monday 11/20 at 11 a.m.

## Don't Burn Gift Wrap Coverage Report

### Radio

- **GREEN 960.** Sharon Gosselin w/ Sebastian Kunz on Friday 12/10/10.
- **KEAR-AM (610).** Sharon Gosselin w/ Jonathan Rickert on Tuesday 12/14/10. Two 5-minute segments aired Wednesday 12/15/10 and Thursday 12/16/10 at both 11:04 a.m. and 4:04 p.m.
- **KGO-AM (810).** Sharon Gosselin w/ Ravi Peruman on Monday 12/20/10.
- **KCBS-AM (740).** Lisa Fasano (Air District) on Friday 12/24/10. Two segments.

### Online

- **KQED News Fix Blog.** [What Not to Burn This Holiday Season](#). Dan Brekke. 12/24/10.

## Reusable Lunch Box/Water Cups Media Coverage Report

### Radio

- KMKY – Geoff Brosseau interviewed by Shalon Rogers on March 30<sup>th</sup>.

## Hiring an IPM Certified PCO Coverage Report

### Online

- [Claycord.com](http://Claycord.com)

### Radio

- KEAR – Interview with Jim Scanlin; aired in two parts on two consecutive days.
- KIQI – Interview with Ricardo Barajas

## Ant Control PSA Coverage Report

### Radio

- KCBS
- KDIA
- KLIV

Please see BASMAA Media Relations Final Report FY 10-11 which Summarizes media relations efforts conducted during FY 10-11.

**C.7.d ► Stormwater Point of Contact**

Summary of any changes made during FY 10-11:

The Program promoted its Point of Contacts through the distribution of outreach materials: *You Are the Solution to Water Pollution / Creek and Marsh Watch*. This catchy trifold piece provides contact information to report illegal discharges and spills. These materials are given out at nearly every public event that the Program participates in.

No other changes.

**C.7.e ► Public Outreach Events**

Describe general approach to event selection. Provide a list of outreach materials and giveaways distributed.

Use the following table for reporting and evaluating public outreach events

Event Details	Description (messages, audience)	Evaluation of Effectiveness
Provide event name, date, and location. Indicate if event is local, countywide or regional.	Identify type of event (e.g., school fair, farmers market etc.), type of audience (school children, gardeners, homeowners etc.) and outreach messages (e.g., Enviroscene presentation, pesticides, stormwater awareness)	Provide general staff feedback on the event (e.g., success at reaching a broad spectrum of the community, well attended, good opportunity to talk to gardeners etc.). Provide other details such as: <ul style="list-style-type: none"> <li>• Estimated overall attendance at the event.</li> <li>• Number of people that visited the booth, comparison with previous years</li> <li>• Number of brochures and giveaways distributed</li> <li>• Results of any spot surveys conducted</li> </ul>
The Leaven Event; July 14, 2010; Fairfield-Suisun Regional Wastewater Treatment Plant; this is a Program event	Leaven's mission is to increase academic achievement, self-esteem, and life opportunities for children living in low-income, urban communities. Together 50	50 Leaven children and 10 adults visited the FSSD treatment plant, and were given a lesson in environmental protection and the water cycle. Giveaways included lunch, reusable

**FY 2010-2011 Annual Report**

**C.7 – Public Information and Outreach**

**Permittee Name: Fairfield-Suisun Urban Runoff Management Program**

	Leaven children with Council Members and Mayors of both Fairfield and Suisun City, learned about what happens to water when it runs off of the street to our local creeks or goes down the drain, through the sewers, and to the wastewater treatment plant.	grocery bags, grease scrapers and activity books for stormwater. No spot surveys were conducted.
Farm to Families; September 17, 2010; Groves Apartment Complex in Fairfield; this is a Program event.	This event was held at a large, low income apartment complex. The Program message was focused on keeping our streets clean and the direct, untreated connection between our streets and creeks. The audience was a mix of children and adults.	40 children and 30 adults were reached. Giveaways included reusable grocery bags and <i>Creek and Marsh Watch</i> brochures. No spot surveys were conducted.
Coast and Creek Cleanup; September 25, 2010; 12 cleanup sites throughout Fairfield and Suisun City; this is a Program event.	The Program lead volunteer cleanup of local creeks, marsh and open space areas.	384 volunteers picked up 7,667 pounds of trash and recyclables along 23 miles of waterway. This was a reduction of 144 people from the previous year. It is thought that the reduction is due to several events occurring on the same day including two Boy Scout jamboree's and a large event at Travis Air Force Base. It is also thought the reduction in the number of people is because the day of the event was not the same third Saturday of September.
Earth Day; April 30, 2011; City of Fairfield Civic Center at the ponds; this is a Fairfield event in which the Program participated.	The Program gave away many items including reusable grocery bags, removable environmental message tattoos, pan and countertop scrapers and brochures. The Program promoted stormwater pollution prevention, alternative methods to washing cars in the street, IPM practices, and F.O.G. awareness.	The overall attendance must have been more than 1,000 people, of which approximately 400 were contacted at the Program booth. More than 400 free items were given away. The spot surveys had mixed results in part because of the way the questions were phrased. The Program will be going to a more pictorial survey in the future to avoid linguistic barriers.
Napa Solano Home and Garden Show; May 14, 2011; Napa County Fairgrounds; this is a Program event.	The Program consultant, Annie Joseph, promoted Our Water Our World and stormwater pollution prevention messages focusing on trash.	Approximately 112 people from the Fairfield and Suisun city area were engaged regarding Program messages. Approximately 50 packets of Slugo were given away and many OWOW pamphlets for various pests control methods were distributed. No spot surveys were conducted.

**FY 2010-2011 Annual Report**

**C.7 – Public Information and Outreach**

**Permittee Name: Fairfield-Suisun Urban Runoff Management Program**

<p>Anheuser-Busch Environmental Awareness Day; June 1, 2011; Anheuser-Busch Plant; this is a Program event.</p>	<p>Program Staff communicated with Anheuser-Busch staff promoting stormwater pollution prevention including alternative methods to washing cars in the street, IPM practices and F.O.G. awareness.</p>	<p>Approximately 130 people were contacted and engaged regarding Program messages. Approximately 50 reusable grocery bags, <i>Creek and Marsh Watch</i> brochures and 100 grease scrapers were distributed. Spot surveys indicated a very high level of knowledge regarding stormwater awareness.</p>
<p>Fairfield-Suisun Sewer District Plant Tours; ongoing throughout the fiscal year; Fairfield Suisun Sewer District Wastewater Treatment Plant; this is a Program event.</p>	<p>District staff, acting on the half of the Program provided tours and environmental outreach to diverse groups ranging from career counselors and politicians to third-grade children. Along with describing the treatment process, emphasis is placed on stormwater awareness and the direct connection from our streets to our creeks.</p>	<p>More than 200 people were brought through the District treatment plant and engaged with both wastewater and stormwater messages. Repetitive message deliveries ensured an audience which fully understands the difference between stormwater and wastewater.</p>
<p>Solano County Master Gardener Training; February 4, 2011; 501 Texas Street , Fairfield, CA; this is a Program activity.</p>	<p>IPM Consultant Annie Joseph along with Program manager, provided IPM training for Solano County Master Gardeners, who in turn instruct the general public on safe gardening practices at local farmers' markets and events throughout the county. Program representative on hand to describe connectivity of the streets to our local creeks; the difference between storm water and wastewater; the wastewater treatment process; how pesticides can impact the process.</p>	<p>35 Master Gardeners were in attendance, based on the interaction between the presenters and speakers, the audience was highly engaged. Initial understanding of the direct connection between the streets and creeks appeared to be low initially. Upon completion of the event the understanding of the direct connection was very near to 100%.</p>

**C.7.f. ► Watershed Stewardship Collaborative Efforts**

Summarize watershed stewardship collaborative efforts and/or refer to a regional report that provides details. Describe the level of effort and support given (e.g., funding only, active participation etc.). State efforts undertaken and the results of these efforts. If this activity is done regionally refer to a regional report.

Evaluate effectiveness by describing the following:

- Efforts undertaken
- Major accomplishments

Summary:

The Program conducts an array of activities which qualify for watershed stewardship collaborative efforts. These efforts are also mentioned in other portions of this Annual Report. Efforts directed toward Coast and Creek Cleanup result in watershed stewardship collaboration. Presentations were made to schools in the Fairfield Suisun Unified School District which resulted in the Armijo Super Band – Program cleanup of Laurel Creek. Creek Captains meetings are also used encourage public involvement in watershed volunteer efforts. In addition, Anheuser-Busch and the Program collaborated on two additional cleanup events which indicate an increase in collaborative activities.

Major accomplishments include the increase in citizen involvement events. Three additional cleanup events occurred during the fiscal year with Program members coordinating and working side-by-side volunteers. Armijo High School band cleanup of Laurel Creek, Anheuser-Busch cleanup of Union Avenue Creek and Program participation in the World Environment Day and cleanup of Lake Berryessa are all new events and show accomplishments and an increase of effectiveness and participation by the Program.

**C.7.g. ► Citizen Involvement Events**

List the types of events conducted (e.g., creek clean up, storm drain inlet marking, native gardening etc.). Use the following table for reporting and evaluating citizen involvement events.

Event Details	Description	Evaluation of effectiveness
Provide event name, date, and location. Indicate if event is local, countywide or regional	Describe activity (e.g., creek clean-up, storm drain marking etc.)	Provide general staff feedback on the event. Provide other evaluation details such as: <ul style="list-style-type: none"> <li>• Number of participants. Any change in participation from previous years.</li> <li>• Distance of creek or water body cleaned</li> <li>• Quantity of trash/recyclables collected (weight or volume).</li> <li>• Number of inlets marked.</li> <li>• Data trends</li> </ul>

**FY 2010-2011 Annual Report**

**C.7 – Public Information and Outreach**

**Permittee Name: Fairfield-Suisun Urban Runoff Management Program**

Coast and Creek Cleanup; September 25, 2010; 12 cleanup sites throughout Fairfield and Suisun City; this is a Program event.	The Program lead volunteer cleanup of local creeks, marsh and open space areas.	384 volunteers picked up 7,667 pounds of trash and recyclables along 23 miles of waterway. This was a reduction of 144 people from the previous year. It is thought that the reduction is due to several events occurring on the same day including two Boy Scout jamboree's and a large event at Travis Air Force Base. It is also thought the reduction in the number of people is due to the day of the event was not the same third Saturday of September.
Armijo Super Band and Program Cleanup of Laurel Creek; April 3, 2011; Wood Hollow Court at Laurel Creek; this is a Program event	The Program lead volunteer cleanup of Laurel Creek and adjacent open space areas.	71 Participants, 3 cubic yards of densely packed waste and 2 miles of creek cleaned. This is a new event so the above data establishes a new baseline.
Anheuser-Busch and Program cleanup Of Union Avenue Creek; May 7, 2011; Union Ave., Creek at Acacia Street; this is a Program event.	The Program lead volunteer cleanup of Union Avenue Creek and adjacent open space areas.	20 people participated, 550 pounds or 145 cubic feet of trash (primarily from illegal campers) and .75 miles of creek. This is a new event so the above data establishes a new baseline.
Lake Berryessa Cleanup on World Environment Day; June 5, 2011; Lake Berryessa; this is a Program event.	The Program participated in volunteer cleanup of Lake Berryessa (city of Fairfield water supply).	60 people participated in cleaning up 2.5 miles of shoreline. No records were provided for the number of pounds or volume Collected. This is a new event so the above data establishes a new baseline.

**C.7.h. ► School-Age Children Outreach**

Summarize school-age children outreach programs implemented. A detailed report may be included as an attachment. Use the following table for reporting school-age children outreach efforts.

<b>Program Details</b>	<b>Focus &amp; Short Description</b>	<b>Number of Students/Teachers reached</b>	<b>Evaluation of Effectiveness</b>
Provide the following information: Name	Brief description, messages, methods of outreach used	Provide number or participants	Provide agency staff feedback. Report any other evaluation methods used (quiz, teacher feedback etc.). Attach evaluation summary if

**FY 2010-2011 Annual Report**

**C.7 – Public Information and Outreach**

**Permittee Name: Fairfield-Suisun Urban Runoff Management Program**

Grade or level (elementary/ middle/ high)			applicable.
School Water Education Program (SWEP); this program is available for Kindergarten through 12 <sup>th</sup> grade.	SWEP provides free water education resources to teach water awareness and conservation to students, teachers and parents in our service areas of Dixon, Vacaville, Fairfield, Suisun City and Travis Air Force Base. The in-class education programs as well as the resource materials and assembly programs are multi-discipline and aligned to the content standards for California public schools. The programs encourage students and adults to develop a healthy attitude of personal responsibility towards our environment and develop skills needed to contribute meaningfully to decision-making process on issues involving our resources and particularly conserving our most precious resource, water.	2,606 students and 46 teachers were reached	See attached Annual Summary Report from SWEP.
The Watershed Explorers Program; Solano County third-graders.	This program is held at Lynch Canyon open space and Hanns Park. The program utilizes science and placed base learning to build awareness and understanding of local creeks and watersheds, their unique ecosystems and ways in which we care for them. In the field discussions and activities teach children about the fragile habitats of birds and other wildlife. Students learn the importance of water quality in a watershed and discover that it is negatively impacted by urban runoff and its complements: trash, oil, household chemicals and other human and domestic animal	1,181 students from 54 classes in every city in the county participated in the 2011 program.	See attached Annual Summary Report from The Watershed Explorers Program.

**FY 2010-2011 Annual Report**

**C.7 – Public Information and Outreach**

**Permittee Name: Fairfield-Suisun Urban Runoff Management Program**

	waste and discards.		
<p>Clean Water Outreach Program; secondary school age youth in the Fairfield and Suisun school district area.</p>	<p>This program is a CWEA 2011 Public Outreach and Education Award winner for Large Agencies. It consists of three distinct elements: <u>Sewer Science High School Program</u> introduces students to how Fairfield and Suisun City collect, treat and release wastewater. The unit revolves around a straightforward lab that simulates the wastewater treatment process, accompanied by water quality testing. <u>Curb2Creek High School Program</u> is a high school environmental science curriculum focused on studying urban runoff from school sites to local streams, followed by a student designed action projects. The goals of the program are to help young adults understand the consequences of stormwater pollution and to support behavior changes in those students and their peers. <u>Wastewater Science Middle School Program</u> features an engaging explanation of local water systems and includes modified versions of activities from the high school curricula to introduce middle schoolers to the biology and physics of wastewater treatment and stormwater systems engineering.</p>	<p>210 students participated in the clean water outreach program for a total of 1,650 student hours.</p>	<p>See attached Clean Water Outreach Program 2010 - 2011 Year End Report</p>

**School Water Education Program  
SWEP  
Committee Meeting Agenda**

June 14, 2011  
SID Office, Vacaville, CA  
1:30 - 3:00 pm

1. Introductions
2. Ursula Heffernon, SWEP, Consultant, overview
  - Brochure distribution and responses; SCOE assistance
  - Project WET workshop
  - ZunZun assembly programs
  - Inventory for '11-'12 give-a-ways and student activity booklets
  - Best Management Practices reporting numbers for 2010-11
  - Water Conservation Bookmark Contest
  - SCWA HS Water Conservation Video Contest
  - DWR-WEC Solano County meeting
  - Need for new May-Water Conservation Book Mark Art Contest poster design & theme
  - Budget summary
3. Public outreach in general for SWEP
4. WIP Grant discussion (SCOE and Solano Community College Collaboration)
5. Ursula's contract for next year
6. Websites, social media & links
7. Other discussion
8. Set next meeting date

**School Water Education Program  
(SWEP)  
2010-2011 Annual Summary Report  
As of June 14, 2011**

The School Water Education Program (SWEP) started the new fiscal year July 1, 2010 through June 30, 2011 with the distribution to the Vacaville, Dixon, Fairfield-Suisun, and Travis school districts ~2500 revised SWEP brochures highlighting:

- o 'Discovering Drought' for grades 3-6 student work booklets
- o ZunZun Musical Watershed Assembly offering
- o SCWA High School Water Conservation Video Contest
- o 2010-2011 Bookmark Art Contest winners' art work

Additionally, SCWA and the Fairfield-Suisun Sewer District (FSSD) provided the hand reference guide booklets titled, "Control It!" and the "Discover Storm Water" student activity booklets. SCWA and the Urban Water Committee provided "Save Our Water" slap bracelets; "Our Water for Solano County" posters; the "California Water Facts" booklets; erasers; pencils; and rulers.

Kevin Cullen and Rita Arwine of FSSD are continuing to provide the opportunity for teachers to bring their students to the FSSD facility for fieldtrips, with pre- and post-fieldtrip in-class presentations, which have been well received by teachers and students.

In the past few years, Solano County Office of Education facilitated the free distribution of the SWEP brochures to the various school districts which has a substantial savings to the SWEP budget. This year, Ursula Heffernon personally distributed the brochures to schools since the number of teachers participating in the SWEP programs had significantly declined over the last couple of years. By introducing the program offerings on a personal basis, it is hoped that teachers will more likely receive the brochures and will be given a better chance of utilizing these resources. It has been the mission of SWEP to increase the number of teachers and students reached.

The 'WaterWays' outdoor watershed program at Lake Solano coordinated by Megan Harns, reached ~1,500 4-6<sup>th</sup> grade students from 22 schools.

The Watershed Explorers Program (624 students), the Suisun Marsh Watershed Program (1,314 students), and the Biomonitoring Vallejo Program (175) were once again offered in the SWEP brochure. Marianne Butler of the Solano RCD coordinated each of the programs which totaled 2,113 student participants for the school year.

The successful, 'ZunZun' assembly program was offered for the first time this year and all 20 assemblies had been booked. I have had good reports from teachers about it. They had approximately 10,772 students in attendance. This year it was financed by the Solano County Water Agency.

Ursula Heffernon organized a Project WET teacher's workshop scheduled for January 8, 2011 but had only 4 registrants - so it was rescheduled for February 19, 2011 in hopes that we could reach our usual 20-30 participant level. With 18 participants registered, it was a success. The 18 teachers in turn reached 2,607 students. The workshop was co-hosted with the City of Vallejo helping SWEP to underwrite the cost of the workshop with the additional teaching assistance and support by Roger Judy and May Cooc.

Due to various personal circumstances, I did not have SWEP participate in the annual 'Suisun Valley Fun Family Farm Days' event. We may consider participating once again this coming fall. Other outreach venue possibilities should be explored for the next school year.

SWEP participated in the March 2010 Solano Ag Day for third graders. We distributed 51 classroom resource packets to teachers and at least 1,351 students were reached. I was grateful for the tremendous help Paul Lum, Marianne Butler and two other volunteers contributed. It was a daunting task! Go online for the Times-Herald Vallejo Home page. Click on Media Gallery selection for Ag Day to watch a 3 minute video of the event. We are featured for about 2 seconds! We did not get our free lunch! We plan to participate next March.

SWEP's "May-Water Awareness Month" public library bookmark art contest was expanded to include the Rio Vista public library as the seventh county library to participate. They were appreciative to be included. We did not have the time or budget to create a new poster for this year. Only a few entries were submitted in total from the libraries. Most of the 338 entries received came from the classrooms that participated in the SWEP in class presentations during the year. Many of the last year's winner's art work was incorporated into this year's SWEP brochure in hopes that more teachers and students would participate with these fine examples of art work to encourage them. This was the largest number of entries at least since 2004. The digital image 1<sup>st</sup> place winner was featured on on the www.Dixon.Patch.com electronic newspaper (search for 'art contest' on Home page) in the Dixon community and Ursula Heffernon was also interviewed.

At least 63 out of ~2,500 teachers who received the SWEP brochure have requested resource materials. 32 teachers received in-class SWEP presentations reaching 974 students. Please see attached spreadsheet to reference the distribution amongst the various school districts.

I have taken additional steps to meet directly with school district curricula directors in hopes that they will support and promote SWEP to their principals and teachers. Each was left with several additional copies of the SWEP Brochure to distribute at their next principals' meetings. Since their agendas are already impacted, I was not able to speak directly to the principals.

Additionally, I met with several SCOE and Solano Community College administrators during a couple of meetings to promote SWEP and to move forward with possibly coordinating the various water conservation and environmental education programs such that educators can understand who we are and what we have to offer being that there is possibly insufficient and

inadequate information about each program. Out of these meetings, SWEP has been recognized as an outstanding educational program and has been invited to partner in the Community Collaborative Water/Wastewater and the Workforce Innovation Partnerships Grants (WIP grant) funding that is available through the, Solano Community College and SCOE possibly for the next two years. Solano RCD and WaterWays educational programs were invited as well. A proposed SWEP budget is in draft form (see attachment) to be submitted by June 18, 2011. This partnership would increase Ursula Heffernon's work hours and responsibilities considerably and could influence SWEP's goals and direction for the future.

In December, March, and June, I had the pleasure of presenting to the Urban Water Committee meetings status of the High School Water Conservation Video Contest and SWEP updates.

With the outstanding efforts, financial support, and coordination of Paul Lum, Frank Morris, Andy Walker, Andy Florendo, Ramiro Jimenez, Roger Judy, I and others, SWEP hosted the annual Department of Water Resource Water Educators Committee (DWR WEC) two-day meeting (September 23-23, 2010) for the first time in Solano County. The first day was a bus tour of the Solano watershed, industries, and agriculture of which 37 California water educators participated. The second day was a conference with various presenters and the sharing of educational programs and resources of which 42 educators attended. It was well received and a very successful educational meeting.

We are looking to having SID and SCWA post the SWEP Brochure, the Book mark Art Contest winners and the High School Water Conservation Video Contest winners on their respective web sites soon. Discussion needs to be had over in getting involved with social media to promote SWEP.

The same starting budget of \$24, 500 since 2004 was accepted to run this year's various SWEP endeavors. As of May, 31, 2011, there was a deficit of \$679.22. This amount will increase by the end of the contractual/fiscal year due to wages and mileage expenditures. No large purchases will be made until after July 1, 2011 for the next contractual year. Mileage expenses hit the budget hard with the increase in fuel costs to ~\$4.00/gallon and more hours spent in organizing the DWR WEC September meeting.

### Challenges!

- Due to ever tightening school budgets and constraints, most teachers are experiencing significant increases in the number of students per class (most are now 34-36 students) and the rigid administration of the curricula such that they have nearly no time or support for additional activities or the privilege of enriching their students' education. Also, school districts are now in the process of adopting and adapting to National Standards rather than adhering to the California State Standards which have been in place for the last 15 years. Even if our programs/presentations are aligned with either the CA or National Standards, the focus is on the correlation of time needed for the teacher to the number of questions on the annual STAR

- New educational BMP measures will soon be implemented. How will this affect our SWEP program? What are the new parameters we need to know?
- To sustain what SWEP offers, we need to look for a larger budget or a restructuring of what we provide. Can we incorporate more financial support from SCWA or other sources?
- Is there some way to combine and better align the SWEP program with the Vallejo and Benicia programs to more effectively cover ALL of Solano County under one consistent and financial umbrella inclusive of SCWA?
- SWEP truly needs to have a dedicated "Education" button/tab on its Home Page so that links and postings can be made readily. Venturing into Face Book, Twitter, YouTube, etc. social media need to be incorporated as well. Please check out Sonoma CWA website to see how they have incorporated it.
- Mileage/fuel expenses are hurting the budget significantly.
- I rescinded my resignation for one more year. I hope I can continue in some capacity while working with a new hire/intern part time shadowing me such that there will be a more effective transition of the SWEP program to the new person.

See attached spreadsheets for the numerical distribution of grade levels and numbers of student and teacher participation in this year's programs.

Respectively submitted,  
Ursula Heffernon  
SWEP Education Consultant  
June 14, 2011

Zun Zun

FINAL PERFORMANCE SCHEDULE 2010 - 11

DATE	SCHOOL	# of SHOWS	GRADES	TIMES	STUDENTS	CITY
9-7-10	Foxboro	2	K-6	8:45 & 9:45	300	Vacaville (Travis USD)
9-7-10	Orchard	1	K-6	1:30	350	Vacaville
9-8-10	Center	2	K-6	8:30 & 9:30	400	Fairfield (Travis USD)
9-9-10	Tolenas	3	K-5	8:15, 9:15, 10:15	780	Fairfield
9-10-10	Cleo Gordon	2	K-5	9:00 & 10:00	688	Fairfield
10-4-10	Robert Semple	2	K-5	9:00 & 9:50	400	Benicia
10-5-10	Matthew Turner	2	K-5	9:00 & 10:30	500	Benicia
10-6-10	Vallejo Charter	2	K-7	9:30 & 10:30	360	Vallejo
10-6-10	Mare Island	1	K-5	1:15	300	Vallejo
10-7-10	KI Jones	2	K-6	8:20 & 9:10	839	Fairfield
10-8-10	Loma Vista	2	K-5	9:30 & 10:30	400	Vallejo
11-1-10	Anna Kyle	2	K-5	9:00 & 10:00	700	Fairfield
11-1-10	Sierra Vista	1	K-6	2:00	310	Vacaville
11-2-10	Cooper	3	K-6	8:30, 9:30, 10:30	900	Vacaville
11-3-10	Fairmont Charter	2	K-6	8:45 & 10:00	500	Vacaville
11-4-10	Hemlock	1	K-6	9:00	400	Vacaville
3-14-11	Markham	2	K-6	9:00 & 10:00	700	Vacaville
3-15-11	Nelda Mundy	2	K-6	9:00 & 10:00	800	Fairfield
3-16-11	Padan	1	K-6	10:20	205	Vacaville
5-6-11	Browns Valley	3	K-6	8:45, 10:10, 1:30	940	Vacaville

TOTALS 20 schools, 38 presentations

Approximately 10,772 Students

**Solano RCD Water Education Programs 2010-11**  
**Coordinated by Marianne Butler**

PROGRAM NAMES	STUDENT #'S
Suisun Marsh Watershed Program Fall 2010	624
Biomonitoring Vallejo Spring 2011	175
Watershed Explorers at Rockville & BRSC Spring 2011	1,314
Total # of student participants =	2,113

# WaterWays Program Numbers 2010-2011

3 school districts served

22 schools served

50 teachers served

1500 children served (50 classes, average of 30 children each)

76.5 program hours presented

3165 contact-hours achieved

Table 1. Class Participation

District	# of Schools	# of 4 <sup>th</sup>	# of 5 <sup>th</sup>	# of 6 <sup>th</sup>	# combos	Total # classes
Travis	4	6	1	3	1	11
Vacaville	8	6	15	0	2	23
Fairfield	9	2	9	3	2	16
<b>Totals</b>	<b>3</b>	<b>22</b>	<b>14</b>	<b>25</b>	<b>6</b>	<b>50</b>

Table 2. Program Hours by Program Type

Program Type	Number Programs	Time per Program	Total Program Hours
Single Class Visit	20	1 hour	20 hours
Pre-Field Trip Class Visit	14	1 hour 15 minutes	17.5 hours
Lake Solano Field Trip	15	2 hours	30 hours
Walking Field Trip	4	2 hours	8 hours
			<b>76.5 program hours</b>

Table 3. Contact hours by Program Type

Program Type	# Student Contacts	Time per Program	Total Contact Hours
Single Class Visit	600	1 hour	600
Pre-Field Trip Class Visit	420	1 hour 15 minutes	525
Lake Solano Field Trip	900	2 hours	1800
Walking Field Trip	120	2 hours	240
			<b>3165 contact hours</b>

\*Please note, some classes received more than one WaterWays program, like a class visit and field trip. In Table 3, the # of student contacts includes each time a student received a WaterWays program. To avoid error, each class was only counted once toward the actual class and student totals in Figure 1.

Working Totals			
2010-2011 SWEP			
<b>Unified School District</b>		<b>#Students</b>	<b>#Teachers</b>
		<b>Reached</b>	<b>Reached</b>
Dixon		82	3
Vacaville		509	14
Travis		969	11
Fairfield		976	17
Suisun		661	18
<b>Totals reached in classroom</b>		<b>3197</b>	<b>63</b>
Miscellaneous		4268	407
<b>Classroom + Miscellaneous</b>		<b>7465</b>	<b>470</b>

2004-2011 Master Totals per Ursula Heffernon's SWEP Contracts

(Provided resource materials and/or in-class presentations)

	2004-2005 Total		2005-2006 Total		2006-2007 Total		2007-2008 Total		(Shano Taber Year) 2008-2009 Total		2009-2010 Total		2010-2011		Cumulative 2004-11 TOTALS		Reached by SWEP		
	Reached Teachers	Students	Reached Teachers	Students	Reached Teachers	Students	Reached Teachers	Students	Reached Teachers	Students	Reached Teachers	Students	Reached Teachers	Students	Reached Teachers	Students	Reached Teachers	Students	
Dixon	1	20	11	220	1	125	2	41	0	0	2	92	3	82	20	20			
Fairfield	16	528	29	908	89	1149	89	1149	0	0	46	1372	17	976	197	197			
Suisun	4	102	3	454	15	300	15	300	0	0	31	661	18	661	80	80			
Travis	11	391	25	591	4	100	4	100	0	0	17	707	11	969	87	87			
Vacaville	9	561	12	649	32	1283	32	1283	0	0	19	471	14	509	107	107			
Miscellaneous Vallejo or other outreach efforts	0	0	0	0	2	43	2	43	0	0	75	1423	407	4288	495	495			
Annual Totals Reached Teachers = Students =	41	1602	80	2720	94	2915	94	2915	0	0	190	5061	470	7465	966	966			
															All Districts Total Teachers =		All Districts Total Students =		23,767

**2009-2013 Master Totals per Ursula Heffernon's SWEP Contracts**

	2009-2010 Total Reached Teachers	2009-2010 Total Reached Students	2010-2011 Total Reached Teachers	2010-2011 Total Reached Students	2011-2012 Total Reached Teachers	2011-2012 Total Reached Students	2012-2013 Total Reached Teachers	2012-2013 Total Reached Students	2009-2013 TOTALS	Reached by SWEP
Dixon	2	92	3	82					5 Teachers 174 Students	5 Teachers 174 Students
Fairfield	46	1372	17	976					63 Teachers 2348 Students	63 Teachers 2348 Students
Suisun	31	996	18	661					49 Teachers 1657 Students	49 Teachers 1657 Students
Travis	17	707	11	969					28 Teachers 1676 Students	28 Teachers 1676 Students
Vacaville	19	471	14	509					33 Teachers 980 Students	33 Teachers 980 Students
Others	75	1423	407	4268					482 Teachers/Adults 5691 Students	482 Teachers/Adults 5691 Students
									<b>All Districts Total Teachers =</b>	<b>660</b>
									<b>All Districts Total Students =</b>	<b>12526</b>



**DIXON USD**

SWEP Teacher Orders * = completed	Teacher	Nov '10 Dixon HS	Jan '11 *E. Bradley Anderson	Nader Anderson	2010-11		ANNUAL TOTALS
					Fall Totals	Spring Totals	
U. Helfemon	School Grade Students	10, 11, 12 12	2 33	2 37	1	12	2 70 82
All About Water: Waves, Wetlands & Watersheds	DWR		1	1			2
California Water Story	Coastal WEE						
Fountains of Columbia	WEE						
Water Treasures Water	DWR		1	1			2
Hands-on Water Activities	DWR		1	1			2
Conserve Water Educator's Guide	WEE						
Groundwater Education	WEE						
California Water Problems	WEE						
Project Water Science	WEE						
Water and Me	DWR						
Save Water	Self-repnt EBMLJD						
Water Play	WEE		33	37			70
Salmon Savers	WEE		33	37			70
Water Fun	DWR						
Discoversing Drought	WEE						
California Water Works & Why It Does	DWR						
Conserve Water Student's Booklet	WEE						
Discover Short Water	WEE						
Discover Short Water	DWR						
Caplan 1960s A Water Conservation Workbook	DWR						
Erasers	SWEP		33	37			70
Parcels	SWEP		33	37			70
Rulers	SWEP						
Static Clings	SWEP						
Sipsters	DWR		33	37			70
Kids Save Water Coloring Pamphlet	SWEP						
California Amazing Delta Bookcovers	DWR		33	37			70
Bookmarks	SWEP						
California Water Facts Booklet	DWR		33	37			70
Control It!	FSSD						
F.O.G. - No Fats, Oil or Greasy Scrapers	FSSD						
Water Conservation Pledge Sheets	DWR						
Parent/Student Water Conservation Survey	DWR		33	37			70
Checklist Sheets	DWR						
Water for Tomorrow Booklet	DWR						
Save Our H2O Static Cling	DWR						
Save Our Water slip bracelets	DWR		33				33
Water Cycle Map	WEE						
California Water Ways Poster Map	DWR						
Delta Map	WEE						
Watershed Water Supply and Uses Poster	WEE						
How Does Groundwater Affect you?	WEE						
Water Supply	DWR		1	1			2
How We Can Save Water at Home Poster	DWR		1	1			2
Our Water-Solano County Watershed	SCWA						
Entroscape Model	SWEP						
Groundwater Model	SWEP						
Watershed & California Relief Maps	SWEP						
Water Test Kit	SWEP						
DVD complementary Water Cycle/Water	DWR		1				1
Conservation							
Ohio Saves the Planet	WEE						
Cardiac Deeren Video Series	SWEP						
In-classlibrary SWEP presentations (*-presentations given)			1	1			2
Start SWEP presentations-Circulation director							
Bookmark Art Contest			1	1			2
Waterways							
Lynch Canyon Watershed Explorer Program							
Russell Ranch-Suisun Marsh Education Program							
Suisun Marsh Field Trips							
Project WET Workshop							
Coastweeks							
High School Video Contest			1				1







TRAVIS USD		2010-11		TOTALS
SWEP Teacher Orders * = completed		Teacher	March, 11	
U. Heffernon		School	Golden West MS	
		Grade	8	168
		Students	168	
All About Water	DWR			
Waves, Wetlands & Watersheds	Coastal			
California Water Story	WEF			
Fountains of Columbia	WEF			
Water Precious Water	DWR			
Hands-on Water Activities	DWR			
Conserve Water Educator's Guide	WEF			
Groundwater Education	WEF			
California Water Problems	WEF			
Project Water Science	WEF			
Water and Me	DWR			
Save Water	Self-report			
Water Play	EBAUD			
Salmonid Savers	WEF			
Water Fun	DWR			
Discovering Drought	WEF			
California Water Works & Why It Does	DWR			
Conserve Water Student's Booklet	WEF			
Discover Storm Water	WEF			
Captain Hydris, A Water Conservation Workbook	DWR			
Essays	SWEP			
Pencils	SWEP			
Rulers	SWEP			
Static Clings	SWEP			
Sickens	DWR			
Save Our Water! Slip Bracelets	SWEP			
Kids Save Water Coloring Pamphlet	DWR			
California Amazing Delta Bookcovers	SWEP			
Bookmarks	DWR			
California Water Facts Booklet	FWSSD			
Control It!	FWSSD			
F.O.G. - No Fats, Oil or Greasy Scraps	DWR			
Water Conservation Fridge Stickers	DWR			
Parent/Student Water Conservation Survey	DWR			
Checklist Sheets	DWR			
Water for Tomorrow booklet	DWR			
Save Our H2O Static Cling	DWR			
Hamburger Sheet	DWR			
Water Cycle Map	WEF			
California Water Ways Poster Map	DWR			
Delta Map	WEF			
Watershed Water Supply and Uses Poster	WEF			
How Does Groundwater Affect Your	WEF			
Water Supply	DWR			
How We Can Save Water at Home Poster	DWR			
Our Water-Solano County Watershed	SCWA			
EmbiOScape Model	SWEP			
Groundwater Model	SWEP			
Watersheds & California Relief Maps	SWEP			
Water Test Kit	Set, Prod.			
DVD-complementary Water Cycle/Water	DWR			
Conservation	SWEP/WEF			
Clile Saves the Planet	SWEP/WEF			
Catillac Desert Video Series	SWEP			
In-class SWEP presentation				
Staff SWEP presentations				
Bookmark Art Contest				
WaterVixes				
Lynx Canyon-Watershed Ecology Program				
Rustin Harvest-Suisun Marsh Education Program				
Suisun Marsh Field Trips				
Project WET Workshop				
CoastalWeeks				
High School Science Fair Project Awards				
Solano Youth Ag Day-Vialajo				









Solano County Ag Day for 3rd Graders

SWEP presentation - March, 16, 2011 at the Solano County Fair Grounds, Vallejo, CA

Presenters: Ursula Heffernon, Paul Lum, Marianne Butler, Carla Murphy, and Don

Teacher Names	Email Addresses	School Names	# of Students/Class	# of Teachers
<b>Dixon Unified School District</b>				
			0	0
<b>Vacaville Unified School District</b>				
Barton	l4steach@comcast.net	Padan	29	1
Smith	smithy99@comcast.net	Callison	27	1
Rickett		Padan	24	1
Howell-Reeddit		Callison	24	1
Stehert		Sierra Vista	28	1
*Winn		Vaca Heritage Park (Home School)	9	1
<b>Fairfield Unified School District</b>				
Hamilton	ivanh1@aol.com	Wilson	28	1
Smart	dorathvsm@fsusd.k12.ca.us	Wilson	30	1
Toet	vickiet@fsusd.k12.ca.us	Wilson	29	1
Ratterman		Rolling Hills	30	1
*Szmurlo	sszmurlo@sbcdglobal.net	Solano Christian Academy	10	1
<b>Travis Unified School District</b>				
Kruckewitt	skruckewitt@travisusd.k12.ca.us	Travis	27	1
<b>Suisun Area School District</b>				
Stone	dstone@fsusd.k12.ca.us	Cordelia Hills	32	1
Noble	cnoble@fsusd.k12.ca.us	Cordelia Hills	31	1
Szynanski	sfacias@fsusd.k12.ca.us	Cordelia Hills	22	1
Gadd	alvslag@fsusd.k12.ca.us	Cordelia Hills	31	1
*Glossow		Oakbrook	31	1
*Martheau		Suisun	16	1
*Campbell		Suisun	19	1
*Co		Suisun	19	1
*Barloggi		Suisun	20	1
*Young		Suisun	19	1



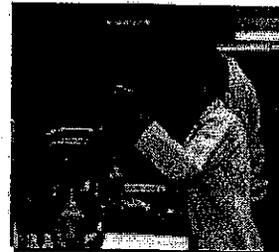


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# SOLANO COMMUNITY COLLEGE

## Contract Education

Solano Community College partners with local businesses, industry, and agencies to develop solutions for your workforce or workplace needs. We will assess your concerns and together develop and implement optimum training opportunities for your employees. The Solano Community College Office of Contract Education and Training specializes in designing and delivering appropriate and comprehensive customized programs to meet your specific training and education needs. As processes, procedures, products, and goals change, employees need new and upgraded skills. Through a careful assessment, we will:



- Help you to identify your real workplace needs
- Customize solutions specifically for your business and employees
- Implement training on a schedule, and at a site that best meets your organization's requirements
- Offer excellent and appropriate instruction, as well as a variety of delivery methods
- Evaluate the training to assure that there has been a transfer of skills and knowledge from the training environment to the workplace
- Provide cost effective training and services

For information and a free needs assessment, call or email our office at (707) 864-7195, or [deborah.mann@solano.edu](mailto:deborah.mann@solano.edu).

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Questions/Comments for SCC? Please [contact us](#).

**Draft 2011-12 Budget Proposal for  
WIP Grant/School Water Education Program (SWEP) Partnership**

Ursula Heffernon, SWEP Education Consultant

June, 2011

2011-12 WIP Grant proposed budget of \$60,940 to partner between SWEP:

- To reach at least 14 major high school and 12 middle school campuses in Solano County (Dixon, Vacaville, Travis, Fairfield-Suisun, Vallejo, Benicia, and Rio Vista)
- The total number of students to possibly reach for the school year ~ 936  
(1 class/school x 26 MS + HS schools x 36 students/class = 936 students/school year)
- The total number of educators to possibly reach for the school year ~ 26  
(26 teachers in 26 schools = 26 teachers/school year)

Proposed budget itemization:

One additional Project WET teacher's workshop at ~ \$5000.00 (Last year I reached 18 teachers who reached 2,107 students in turn)	\$5,000
Consultant's wage for ½ time position = \$40,000/year (1000 hours* x \$40/hour = \$40,000 includes driving hours)	\$40,000
Liability insurance ~ \$550	\$ 550
Mileage reimbursement at ~ \$0.55/m ~ \$3,390	\$3,390
Publications/graphics ~ \$5000	\$5,000
Info-mercial HS video contest prizes ~ \$5000	\$5,000
Resource materials/supplies/incentives/give-a-way items ~ \$2000	\$2,000

\*(inclusive of meeting time, curricula development, job fairs, professional development, etc.)

Hence, \$60,940 total program/classroom working budget for 2011-12 for a WIP/SWEP partnership

In summary, SWEP's broad recognition of quality education throughout most of Solano County's school districts could become a worthy vehicle to accomplish the Solano County Office of education (SCOE), Solano Community College (SCC) and the Community Collaborative Water/Wastewater project goals and dovetail creatively with the proposed Workforce Innovation Partnership (WIP) grant funding. The main goal being to bring awareness to hundreds of Solano County middle and high students about career options in the industry of water and wastewater management from both the technical and administrative sides. The financial support of the WIP Grant would bring together a worthy partnership with SWEP, SCOE, and SCC. We look forward to attaining this collaborative effort together.

Respectively submitted,

Ursula Heffernon  
SWEP Education Consultant  
And members of the School Water Education Committee  
June 9, 2011

<b>Communities</b>	<b>Middle School Names</b>	<b>High School Names</b>
Dixon	CA Jacobs Intermediate School	Dixon
Vacaville	Willis Jepson MS Vaca Pena MS	Vacaville Will C wood Elise P Buckingham Charter Magnet
Fairfield-Suisun	Charles L. Sullivan Grange Crystal	Fairfield Armijo Angelo Rodriguez Sem Yeto Continuation
Travis	Golden West	Vanden
Vallejo	Mare Island Technical Academy American Canyon Vallejo	Jesse Bethel Vallejo
Rio Vista	Rio Vista	Rio Vista
Benicia	Benicia	Benicia Liberty
<b>Total # of schools for WIP/SWEP program to engage with 2011-12.</b>	<b>12 middle schools</b>	<b>14 high schools</b>



**Solano Resource Conservation District  
The Watershed Explorers Program  
Final Program Summary  
July 2011**

**Overview**

The Watershed Explorers Program utilizes science and place-based learning to build awareness and understanding of local creeks and watersheds, their unique ecosystems, and ways in which we care for them. In-the-field discussions and activities teach children about the fragile habitats of birds and other wildlife. Students learn the importance of water quality in their watershed and discover that it is negatively impacted by urban runoff and its components: trash, oil, household chemicals and other human and domestic animal waste and discards. Concepts are directly linked to the California State Standards and the program offers local children, many of whom have little or no experience being in open space settings, a concrete, experiential introduction to their watershed and creatures that inhabit it.

**Audience**

The Watershed Explorers Program was located in Lynch Canyon Open Space in 2007 and 2008. Four classes participated (~120 students) in 2007. Eighteen classes participated (~ 427 students) in 2008. Four classes participated in an abridged program in Hanns Park along the Blue Rock Springs Corridor (~ 80 students) in 2009. In 2010, we expanded the program to encompass both locations and 807 students and 214 adults participated.

1,181 students from 54 classes in every city in the county participated in the 2011 program. In Hanns Park, Benicia and Vallejo students participated along the Blue Rock Springs Corridor. The Lynch Canyon location was moved to Rockville Hills Park in Fairfield. Students from Rio Vista, Fairfield, Suisun City, Vacaville and Dixon were involved in the program. 1,489 students and parents attended at one of the two locations from February through June 2011.

In 2012 the program is projected to reach 1,700 students in 62 classes from across the County. The Watershed Explorers Program will take place at Hanns Park, Rockville Park and possibly at a location in Vacaville.

**Goals and Objectives**

The primary program goal is to help students develop an awareness of the outdoor, natural world. Participants leave the program:

- understanding the impact of storm water on their watershed, particularly the impacts of oil, chemicals and human debris in that storm water;
- learning individual stewardship practices in their watershed, i.e., how they can mitigate or eliminate the impacts of their own and their family's behaviors around storm water protection and water quality;
- understanding the difference between native and non-native, invasive plants;
- knowing about at least one pollinator species the study watershed is habitat to.

Prior to the field trip, teachers are provided with manuals to prepare students for their experience. Students are given journals and participate in various activities including:

- making their own paper watershed model to observe what happens when oil or other contaminants are improperly disposed of somewhere in the watershed;
- learning how water flows;
- counting the number of gallons of water they use each day and discussing ways to lessen their consumption;

- drawing the life cycle of a plant, reading about pollinators and discussing phenology and its relevance to the interconnectedness of humans, animals, weather and our environment.

### **Method**

When students arrive for the field trip, they are greeted with an introduction to the Watershed Explorers Program. As young scientists, students are informed of their tasks and are equipped with instruments to assist them with data collection: their journal, clipboard, magnifying lens, and binoculars.

In the natural environment, students, teachers and parents engage in an interactive learning experience about the relationship between human behaviors in urban areas and the impact of those behaviors in wild or open space. An enviroscape presentation demonstrates the dynamics of a watershed and how it is affected by pollution. This hands-on activity provides students with a three-dimensional visual of the watershed and allows them to see how urban runoff enters nearby storm drains and ends up in the Sacramento River, Suisun Marsh, or San Pablo Bay (depending on the students' residence). Students are instructed to think about the runoff on the topographies of their study watershed and their constructed watershed. Following the demonstration, students receive a used oil collection brochure, which is intended for the use of their parents/guardians.

As students look for traces of birds, insects and mammals, they hike through open spaces only miles from their home. Students use their journals and identify popular plant species, learn how some plants are pollinated and learn how seed dispersal works for different plants. While engaged in these activities, students are asked to continually keep in mind how everything in nature fits together.

During the field trip, usually for the first time, students have the opportunity to plant plugs or propagate plants. Students attending at Rockville Park propagated 2400 sedges and rushes. At Blue Rock Springs Creek students planted 1509 plugs of creeping wild rye, Santa Barbara sedge, and Idaho fescue. Students have the chance to place their hands in the soil and conceptually learn how these plants support our creeks and waterways.

At the end of the field trip the majority of students exclaim that the planting and seeing wildlife was their favorite component to the program. Many also note that they learned so much new and valuable information.

### **2011 Watershed Explorers Narrative**

We don't expect that our four-hour field trip will or can fill in the gaps in applied learning created by a curriculum that teaches only to test results; rather, we believe that our program will enable the children participating to leave our program with a beginning experiential understanding of their local watershed systems and a curiosity to learn more about the natural world. We also expect students will leave our program with a heightened sense of stewardship, and some practical means of demonstrating good stewardship in their daily lives.

The questions we asked with this evaluation were crafted to measure students' understanding of two watershed systems (the water cycle, focusing on storm water runoff and native plant and pollinator systems), and to assess students' grasp of concrete ways they can interact with those systems to protect and enhance their watershed.

This year brought program expansion and a change in one of the sites. We administered 1140 pre-assessments to participating students, followed by 1000 post assessments.

In the pre-assessment, 37% of respondents were able to answer all questions with correct/partially correct answers. By the post assessment, 72% of the respondents were able to respond to all questions with correct/partially correct answers. This represents a performance increase of 36%, and represents a "grade" movement from an "F" to a "C." Students who participated at the Blue Rock Springs Creek site demonstrated an increase of 40% in their overall assessment score: in the post-assessment 80% of respondents were able to provide correct or partially correct answers; while students who participated at the Rockville Park site increased their overall post-assessment score by 34% (68% of respondents providing correct or partially correct answers).

Attached to this summary is the 2011 evaluation spreadsheet. The orange columns provide information about the total number of correct and partially correct answers for each question. The delta columns in the post assessment section demonstrate the percent change in correct answers from the pre-assessment to the post assessment. At the Blue Rock Springs Creek site, 89% of respondents responded with correct/partially correct answers to question 5 (the question that asked for students to demonstrate real-life applications to what they learned) in the post assessment. In the pre-assessment, only 23% of those same students gave correct/partially correct answers for that question, an improvement in performance of 66%. This sort of improvement was generally consistent with all questions, though as is shown in the tables, some concepts were more difficult for the students than others. The differences between native and non-native/invasive organisms proved most difficult (51% of all respondents could correctly or partially correctly explain the difference),

The post-assessment response improvements are better than the early years of the program and consistent with last year's scores. However, since we begin with a fresh audience each year, we cannot compare results across program years. We can attribute at least part of this improvement in post assessment performance with our continual fine tuning of the program and our teaching strategy, as well as with our growing number of established relationships with many of the teachers of participating classes, whom we assume – and in some cases know – incorporate the Watershed Explorers program concepts into their curriculum.

One of Solano RCD's big picture program goals is to expand watershed education efforts so that we are able to see Watershed Explorer program alumni again in middle school and then again in high school. When that happens, we will be able to do some more sophisticated measurements of long-term retention of concepts and concrete use of the knowledge students take away from their Watershed Explorers experience.

### **Teacher Quotes**

*On the trip back to school I overheard several students discussing the trash on the side of the road and how it could end up in the bay and hurt the animals there. Even my "troubled" students stayed engaged.*

- Hillary Gutierrez from Cooper Elementary in Vallejo.

*My students said that they enjoyed the views, hiking, the items they saw as they hiked, the animals (IE. goslings, lizards, bullfrog in his hole, dragonflies), walking along the boardwalk and*

looking into the water at the tadpoles, flowers, learning about the tree types, watershed model and putting the "pollution" on and watching the water flow, and learning new things.

- Mrs. Symanski from Cordelia Hills Elementary in Fairfield.

The instructors were well prepared for the trip. They were able to present materials at grade level with age appropriate instruction. The instructors were very patient with the groups of excited children. They were able to teach and demonstrate to the students in a professional and experienced way that made the trip more exciting. Many students liked the view at the top. Many students hadn't been in the outdoors before. They liked seeing animals like the woodpecker, turkey, frog, ducks, lizards, and egrets. They liked doing the activities. I really liked the experience at Rockville Park much better than Lynch Canyon. The area is much nicer to experience the outdoors. The leaders were experienced with grade level information and skills. All the teachers here agree that it was the best, most learning orientated field trip.

- Bruce Rasmussen from Laurel Creek Elementary in Fairfield.

The program was very well organized! The instructors are very knowledgeable. The students said the instructor's were "kid friendly" and they made sure the student's were attentively listening.

- Bobbie Cravalho from Mary Farmer Elementary in Benicia

Everything was very well prepared and engaging. Our naturalist was well versed, and informative. Her demeanor was liked by all the students. She answered all kinds of questions and kept the students interest. My class thoroughly enjoyed the program and the chaperones had nothing but positive reviews. The booklet helped to prepare the students with the material covered during the walking program. The curriculum ties in perfectly with 3<sup>rd</sup> grade standards and program brings it to life. I know they enjoyed the "Watershed" demonstration and all the wildlife that Rockville had to offer. Everybody had a chance to speak and share their observations. They felt valued. Students always love hands on activities. We appreciate the informative booklets. The students enjoyed working in them with the anticipation of the field trip. Your program is extremely organized! I appreciate the time that went into preparing for our classes. It showed! Thank you for providing the funding for this valuable educational experience. With dwindling funds, your generosity made this experience possible.

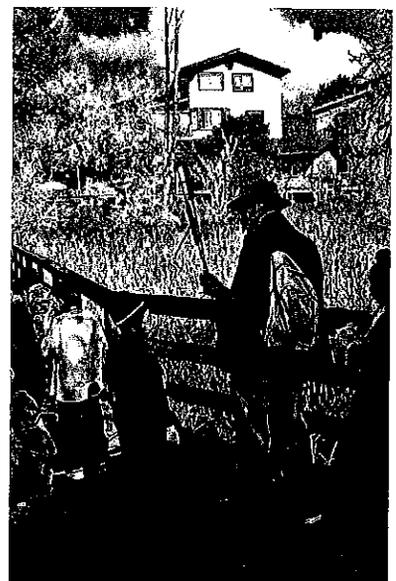
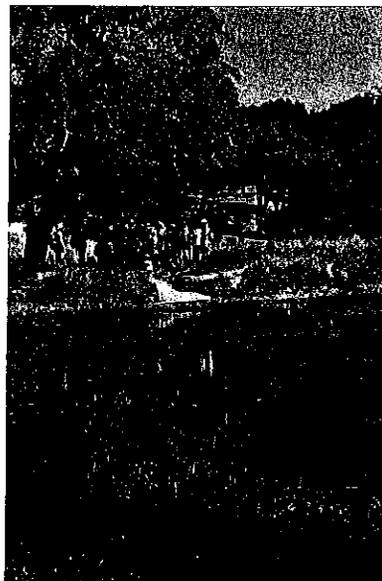
- Orchard Elementary in Vacaville

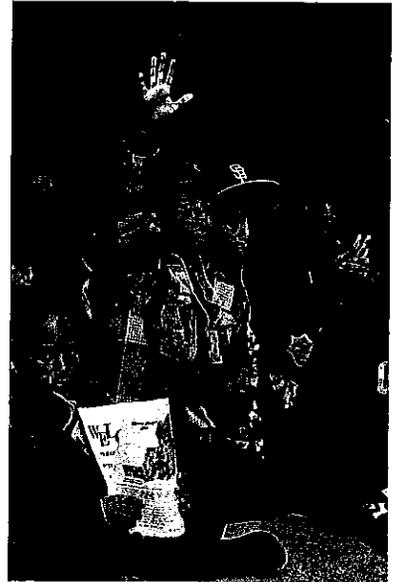
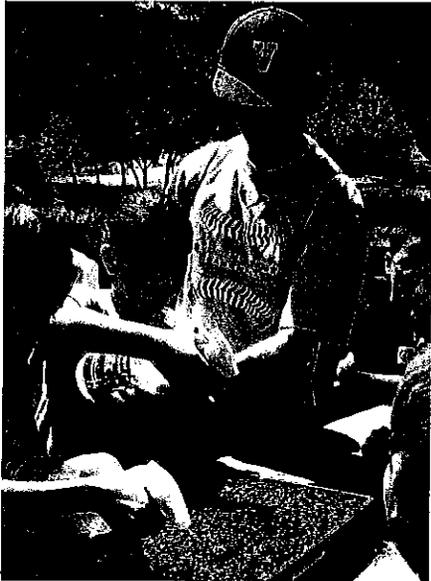
### Total Participants

<i>Watershed Explorers at Rockville Park 2011</i>			
Date	# Students	# Parents & Teachers	TOTAL # of People
Friday April 29	54	18	72
Thursday May 19	63	21	84
Friday May 20	52	17	69
Monday May 23	85	26	111
Wednesday May 25	58	19	77
Thursday May 26	58	20	78
Tuesday May 31	31	9	40
Wednesday June 1 - Cancelled			

Thursday June 2	54	12	66
Friday June 3	75	19	94
Wednesday June 8	55	14	69
Thursday June 9	47	10	57
Friday June 10	59	6	65
Tuesday June 7 - Rescheduled	32	4	36
<b><i>Watershed Explorers at Hanns Park 2011</i></b>			
<b>Date</b>	<b># Students</b>	<b># Parents &amp; Teachers</b>	<b>TOTAL # of People</b>
Friday Feb 18	56	10	67
Tuesday Feb 22	47	7	55
Wednesday Feb 23	47	10	58
Thurs Feb 24	35	7	43
Monday Feb 28	36	7	44
Tuesday March 1	54	12	67
Thursday March 3	36	11	48
Wednesday March 9	45	11	57
Thursday March 10	52	9	62
Monday March 14	50	19	70
<b><i>2011 TOTALS from both locations</i></b>	<b><i>1181</i></b>	<b><i>298</i></b>	<b><i>1489</i></b>

## 2011 Photographs





2011 Solano County Environmental Education  
Watershed Explorers Program  
Pre and Post Class Assessment Data

#	Assessment Questions	Pre-Assessment					Post-Assessment																		
		correct	%	partially correct	%	correct & partially correct	%	wrong no answer	%	correct	%	Δ	partially correct	%	Δ	correct & partially correct	%	Δ	wrong no answer	%	Δ				
1	Name a native plant that grows in Solano County	211	19%	97	9%	308	27%	832	73%	770	77%	58%	7	1%	-8%	777	78%	51%	223	22%	51%				
2	What makes a native plant "native"?	52	5%	139	12%	191	17%	919	83%	210	21%	16%	302	30%	18%	512	51%	34%	388	39%	44%				
3	Give an example of an insect that pollinates flowers	791	69%	56	5%	847	74%	293	26%	748	75%	5%	52	5%	0%	800	80%	6%	200	20%	6%				
4	Where does rainwater go after it hits the ground?	33	3%	317	28%	350	31%	790	69%	94	9%	7%	599	60%	32%	693	69%	39%	307	31%	39%				
5	Name two things you can do to make your watershed a healthier place to live	91	8%	295	26%	386	34%	751	66%	547	55%	47%	285	29%	3%	832	83%	49%	168	17%	49%				
Total percentage by category		21%		16%		37%		63%		47%		27%		25%		9%		72%		36%		26%		38%	

Total Program # pre-class assessment participants: 1140

# post-class assessments: 1000

2011 Solano County Environmental Education  
 Blue Rock Springs Creek Watershed Explorers Program  
 Pre and Post Class Assessment Data

#	Assessment Questions	Pre-Assessment						Post-Assessment														
		correct	%	partially correct	%	correct & partially correct	%	wrong no answer	%	correct	%	Δ	partially correct	%	Δ	correct & partially correct	%	Δ	wrong no answer	%	Δ	
1	Name a native plant that grows in Solano County	61	13%	97	21%	158	34%	302	66%	210	58%	45%	7	2%	-19%	217	60%	26%	43	10%	26%	
2	What makes a native plant "native"?	22	5%	39	8%	61	13%	399	87%	150	42%	37%	132	37%	28%	282	78%	65%	78	22%	65%	
3	Give an example of an insect that pollinates flowers	381	83%	36	8%	417	91%	49	9%	308	85%	3%	52	14%	7%	360	100%	9%	0	0%	9%	
4	Where does rainwater go after it hits the ground?	33	7%	147	32%	180	39%	280	61%	34	9%	2%	229	64%	32%	263	73%	34%	97	27%	34%	
5	Name two things you can do to make your watershed a healthier	21	5%	85	18%	106	23%	364	77%	217	60%	56%	105	29%	11%	322	89%	66%	38	11%	66%	
Total percentage by category			23%		18%		40%		60%		51%	29%		29%	12%		80%	40%		20%		40%

# pre-class assessment participants: 460

# post-class assessments: 360

2011 Solano County Environmental Education  
 Rockville Park Watershed Explorers Program  
 Pre and Post Class Assessment Data

#	Assessment Questions	Pre-Assessment						Post-Assessment													
		correct	%	partially correct	%	correct & partially correct	%	wrong/no answer	%	correct	%	Δ	partially correct	%	Δ	correct & partially correct	%	Δ	wrong/no answer	%	Δ
1	Name a native plant that grows in Solano County	150	22%	0	0%	150	22%	530	79%	560	88%	65%	0	0%	0%	560	88%	65%	89	13%	65%
2	What is the difference between a native and invasive non-native?	30	4%	100	15%	130	19%	550	81%	60	9%	5%	170	27%	12%	230	36%	17%	510	78%	32%
3	Give an example of a pollinator	410	60%	20	3%	430	63%	250	37%	440	69%	8%	0	0%	-3%	440	69%	6%	200	31%	6%
4	Where does rainwater go after it hits the pavement?	0	0%	170	25%	170	25%	510	75%	60	9%	9%	370	58%	33%	430	67%	42%	210	33%	42%
5	Name two things you can do to make your watershed a healthier place to live	70	10%	210	31%	280	41%	400	59%	330	52%	41%	180	28%	-3%	510	80%	39%	130	20%	39%
Total percentage by category			19%		15%		34%		66%		45%	26%		23%	8%		69%	34%		28%	37%

# pre-class assessment participants: 680

# post-class assessments: 640



# Clean Water Outreach Program 2010-2011 Year End Report



Fairfield High School teacher Mrs. Bolduc and three students collect macroinvertebrates and crayfish at Laurel Creek as part of Curb2Creek's Field Trip Investigation.

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Report to Fairfield Suisun Sewer District  
2010-2011 Clean Water Outreach Program  
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Report to Fairfield Suisun Sewer District  
2010-2011 Clean Water Outreach Program  
**Summary**

Fairfield-Suisun Sewer District (FSSD) personnel and educators from the UC Davis John Muir Institute of the Environment (UCD) have completed the third phase of a partnership to develop and implement a Clean Water Outreach Program (CWOP) for secondary school-aged youth in the FSSD service area. Major goals in 2010-2011 were to obtain school district approval of the curriculum, to complete the transition from coordinator-led to teacher-led implementation, and to explore partnerships that would ensure the future of the CWOP within the FSSD service area, as well as make portions of the program available to other agencies and schools in the region. Progress on these initiatives and program participation data are reported herein.

**Sewer Science High School Program**

FSSD's Sewer Science is a high school curriculum that introduces students to how Fairfield and Suisun collect, treat, and release wastewater. The unit revolves around a straightforward lab that simulates the wastewater treatment process, accompanied by water quality testing.

**Curb2Creek High School Program**

The Curb2Creek program is a high school environmental science curriculum focused on studying urban runoff from school sites to local streams, followed by student-designed action projects. The goals of the program are to help young adults understand the consequences of stormwater pollution and to support behavior changes in those students and their peers.

**Wastewater Science Middle School Program**

This curriculum features an engaging explanation of local water systems and includes modified versions of activities from the high school curricula to introduce middle schoolers to the biology and physics of wastewater treatment and stormwater system engineering.

**“At a Glance” Facts about the 2010-2011 Clean Water Outreach Program**

- ≈ The CWOP lead educator presented to the Workforce Innovation Partnership (WIP) Advisory Committee and joined the Curriculum sub-committee to promote the CWOP curricula as a major part of the emerging county-wide Water & Wastewater Curriculum
- ≈ A special version of the CWOP high school curriculum was approved by the Fairfield Suisun Unified School District for use in environmental science classes district-wide
- ≈ In FSUSD, two teachers at different schools ran Sewer Science, Curb2Creek, or both
- ≈ Approximately 210 students participated in the CWOP
- ≈ A total of 1,650 student-hours (hours/student x # students added across programs)

Report to Fairfield Suisun Sewer District  
 2010-2011 Clean Water Outreach Program  
**Curb2Creek**

Program Background

“Curb to Creek: An Urban Stormwater Research and Action Program” was originally developed by UC Davis educators in 2004-2005 to provide an environmental science class at Rodriguez High School with a comprehensive study of urban runoff. In 2008-2009, the original curriculum was modified, pilot tested, and evaluated by FSSD and JMIE educators. Student assessments, educator feedback, and correspondence with the school district contributed to further refinements and evaluation in 2009-2010 under the direction of the CWOP lead educator. This resulted in the submission of an abbreviated Curb2Creek curriculum to the FSUSD Director of Secondary Education for district approval, required before any 2010-2011 implementation.

Current Program

FSUSD has approved the 12 part “Clean Water Curriculum” which includes two class sessions of introduction, four sessions for the Sewer Science lab, and six sessions for Curb2Creek investigations. (The Creating Context section of the full Curb2Creek curriculum was slimmed to fit into one of the introductory sections and the first of the Curb2Creek sections in the FSUSD version. The remaining five C2C class sessions correspond mostly to the School Investigation section of the full curriculum.) Teachers were provided with both the FSUSD-approved and full versions of C2C on CD so that they could enrich their teaching with additional activities.

The FSUSD “Clean Water Curriculum” was approved in mid-January 2011. Past-participating teachers Jill Rithmire-Bolduc (FHS) and Matthew Love (RHS) were immediately provided with both the full and FSUSD-approved curricula on CD and were sent supplementary materials. Each teacher presented the introductory PowerPoints and the *Synthetic Seas* DVD to their classes. Short on teaching time at the end of the school year, both Mr. Love and Mrs. Bolduc selected a few additional C2C activities that best fit their needs and schedules. Outreach to Armijo High School’s (AHS) new environmental science teacher by the CWOP lead educator and Mrs. Bolduc did not result in either teacher training or student participation at AHS; sadly, we also learned that environmental science classes will most likely be cancelled at AHS. Despite these challenges, approximately 210 high school students in FSSD’s service area were reached with stormwater systems education and pollution prevention messages, and this year’s teachers expressed their desire to teach Curb2Creek more fully in 2011-2012. Below, Table 1 summarizes this year’s participation, as well as time spent on the program.

Table 1. 2010-2011 Curb2Creek participation summary

<b>High School</b>	<b># teachers</b>	<b># classes</b>	<b># hours/ class</b>	<b># students Total</b>	<b>total student hours</b>
Fairfield HS	1	3	8	90	720
Rodriguez HS	1	4	4	120	480
<b>Totals</b>	<b>2</b>	<b>7</b>	<b>12</b>	<b>210</b>	<b>1,200</b>

### *Fairfield HS*

In 2009-2010, teacher Mrs. Jill Rithmire-Bolduc had co-presented the full version of Curb2Creek with the CWOP lead educator and UCD student educators to one of her environmental science classes, and selected C2C activities with her remaining classes. In 2010-2011, Mrs. Bolduc took full ownership of C2C and presented all three of her classes with the Creating Context and the Field Investigation sections; her attempts to conduct the School Investigation were thwarted by unusually late rain storms. Mrs. Bolduc chose to use her own review sessions and short quizzes instead of the comprehensive end-of-unit reflection and assessment provided, to better match the material she actually presented. She reported that her students clearly understood the path of stormwater from the street to a creek to the ocean, and that litter and pollutants in stormwater adversely affect water quality and wildlife health. The CWOP lead educator was able to corroborate this understanding during the field trip to evaluate Laurel Creek, particularly through discussion with students in the AP Environmental Science class. Mrs. Bolduc says she looks forward to implementing C2C more consistently with all her future students.

### *Rodriguez High School*

Approval of the FSUSD “Clean Water Curriculum” came one week into teacher Mr. Matthew Love’s unit on water, but nonetheless, in his own words he “took the CD and ran with it.” Mr. Love showed the *Synthetic Seas* DVD, took each class on a campus tour to view storm drains and trash, and discussed pollution hot-spots and possible solutions with all four of his environmental science classes. In email correspondence, Mr. Love wrote that he incorporated questions from the C2C assessment into his own unit test, and that his students were able to verbalize their understanding that the ocean is like “plastic soup” because of the litter entering it through the storm drain system. Mr. Love regretted that there was not enough time to conduct the field investigation with his students, but looks forward to adding this in 2011-2012.

### *Armijo High School*

As mentioned before, outreach to AHS’ newest environmental science teacher by phone and email, by both the CWOP lead educator and FHS teacher Mrs. Bolduc, did not secure an in-person meeting with the AHS teacher or her participation. A phone conversation with a school counselor revealed that environmental science will be discontinued at AHS, and that this was the likeliest factor for the current teacher’s reticence, as her investment in attending training and presenting the curriculum would be invalidated the following school year. Alternative methods of reaching AHS students with stormwater pollution education are currently being investigated.

### Program Evaluation

Email, phone, and in-person communication with participating teachers revealed the following:

- ≈ Training & prior use increased teacher confidence in implementing C2C on their own
- ≈ The intentional flexibility of the C2C curriculum let teachers easily adapt it to their needs
- ≈ Teachers value the curriculum so much that despite its late approval, they rearranged their packed end-of-year schedules to accommodate as many activities as possible
- ≈ Inclement weather, lack of time, and lack of student follow-through (for independent work) meant dropping certain sections; teachers still want these activities
- ≈ Past & current participating teachers are excited to recruit and help colleagues to run C2C
- ≈ Teachers need to be able to borrow digital cameras for the school investigation section

### Looking Forward

FHS and RHS will continue implementing selected C2C sections with FSSD support next year.

Report to Fairfield Suisun Sewer District  
 2010-2011 Clean Water Outreach Program  
**Wastewater Science Middle School Program**

Program Structure

The structure of the middle school wastewater science unit begins with an introductory activity to explain the sources, paths, and destinations of sewer and stormwater. This is followed by two hands-on activities to explore an important aspect of each system (Table 2). Each grade requires its own set of hands-on activities because science standards vary by grade, but each grade can use the identical Wastewater System Introduction activity in Part One.

Table 2. Components of the 7<sup>th</sup> and 8<sup>th</sup> grade wastewater science curriculum

	<b>7th Grade</b>	<b>8th Grade</b>
Part One	Wastewater systems introduction	Wastewater systems introduction
Part Two	Sewer system activity: activated sludge microscope lab (from PARWCCP “Microbes”)	Sewer system activity: density and gravity demonstration (from Sewer Science “Primary Treatment”)
Part Three	Stormwater activity: storm-water mapping and water testing (from Curb2Creek “School Investigation”)	Stormwater activity: Chutes n’ Golf Balls velocity lab (from WaterWays “Canals”)

Program Background

Curriculum structuring, activity modifications, and pilot testing of the introductory activity were accomplished in 2009-2010 by the CWOP lead educator. Attempts to recruit previously interested teachers at Green Valley Middle School for a pilot were unsuccessful.

Current Program

The middle school program was not implemented in classrooms in 2010-2011, pending the outcome of talks with district staff and the Solano County Office of Education, but was promoted at County Water & Wastewater Curriculum meetings and was positively received by teachers.

Looking Forward

Golden West Middle School (TUSD) 8<sup>th</sup> grade teacher Miss Karin vanKlaveren wishes to use activities from FSSD’s middle school offerings in 2011-2012. The CWOP lead educator will see if any 7<sup>th</sup> grade teachers at the same school can be recruited as well. Demand for the program at other middle schools will be assessed next year for 2012-2013 and beyond.

Report to Fairfield Suisun Sewer District  
2010-2011 Clean Water Outreach Program  
**Sewer Science**

Program Background

From 2008-2010, FSSD sponsored the modification, implementation, evaluation, and refinement of the Bay Area’s original Sewer Science program for use with high school classes in its own service area. A more straight-forward four day lab emerged from this iterative process, with PowerPoints to guide teachers and students, easier-to-use water quality testing methods, and most importantly, a strong correlation to science standards in Biology and Ecology.

During the two-year pilot, participating teachers were from Rodriguez High School’s Biology department. Taking into account teacher feedback, educator observations, and direction from the Director of Secondary Education, the final version of Sewer Science submitted to FSUSD in Fall 2010 for approval (bundled into the 12 session “Clean Water Curriculum”) was meant to be implemented in high school environmental science classes only.

Current Program

Fairfield Suisun Unified School District approved the “Clean Water Curriculum” in January 2011 for any high school environmental science teacher who wishes to participate. Former Sewer Science teacher Matthew Love at Rodriguez High (who taught biology and environmental science) was contacted immediately, but as his students had done the lab the previous year in their Biology classes, Sewer Science was put on hiatus at RHS until 2011-2012.

Attempts to recruit the newest environmental science teacher at Armijo High School were unsuccessful, and the environmental science program is slated for cancellation after 2010.

Fairfield High School environmental science teacher Mrs. Jill Rithmire-Bolduc had previously conducted only Curb2Creek with her students, but signed up to teach Sewer Science as well this year. As she was the only teacher to require training in 2010-2011, she received almost 4 hours of training from the CWOP lead educator after school at FHS, and the CWOP lead educator observed her teaching of Day 1 of the lab to offer suggestions, support, and feedback. Mrs. Bolduc conducted Sewer Science with her AP Environmental Science class first, and two weeks later, led the labs with her two College Prep environmental science classes. She was pleased with the activities and student outcomes, and looks forward teaching with more confidence and to more students, as she may have up to five periods of environmental science in 2011-2012. Below, Table 3 summarizes this year’s participation.

Table 3. 2010-2011 Sewer Science participation summary

<b>High School</b>	<b># teachers</b>	<b># classes</b>	<b># hours/ class</b>	<b># students total</b>	<b>total student hours</b>
Fairfield HS	1	3	5	90	450

Looking Forward

RHS, FHS, and Travis’ Vanden High School plan to conduct Sewer Science in 2011-2012.

Report to Fairfield Suisun Sewer District  
2010-2011 Clean Water Outreach Program  
**County-wide Partnerships**

Workforce Improvement Partnership

Solano Community College (SCC) has received a series of large grants to establish a Workforce Improvement Partnership (WIP) to foster formal relationships in Solano County that will result in more students opting into careers in water/wastewater industries. SCC contracts with the Solano County Office of Education (SCOE) for major sections of the grant, and SCOE in turn contracts with teachers, industry-educators, and water education specialists to do this work.

In August 2010, a WIP Advisory Council was created to involve key representatives of the water/wastewater industry, faculty and administrators at SCC, and SCOE staff. Five sub-committees were established: Career Awareness, Communication & Marketing, Growth & Sustainability, Curriculum, and Pathways. FSSD was identified as a major stakeholder.

At the December 16 meeting of the Advisory Committee, with the backing of FSSD, the CWOP lead educator gave a presentation on the content and benefits (both to agencies and students) of Sewer Science and Curb2Creek; Marianne Butler of Solano Resource Conservation District and Ursula Heffernon of the School Water Education program also explained how they currently provide water and wastewater education to teachers and secondary students in Solano County. FSSD's Rita Arwine was present to represent FSSD's interests in the WIP partnership.

Curriculum Sub-committee

Following the December Advisory meeting, SCOE approached the CWOP lead educator and asked to contract with her to co-facilitate meetings of the Curriculum sub-committee and help to create a county-wide curriculum, of which Sewer Science and Curb2Creek would be major components. As this did not interfere with the CWOP educator's roles with FSSD or JMIE, and would in fact help to achieve each organization's goals of sharing the curriculum, she agreed.

By late January 2011, middle and high school teachers from across Solano County had been recruited by SCOE for two reasons: one, to gather from them whatever activities they were already using to teach about water, and two, to provide those teachers with access to new information, activities, and resources so as to immediately modernize and expand on their teaching of water and wastewater science in the classroom. With the approval of the 12 session "Clean Water Curriculum" by FSUSD just weeks prior, the CWOP lead educator had four programs to offer (middle school, CWC, full SS, full C2C); all were well received.

Under contract as sub-committee co-facilitator, over the next five months, the CWOP lead educator gathered suggestions and lesson plans from several key teachers to add to a growing collection of water and wastewater-related curricula. She organized them into sections (Basic Properties and Chemistry of Water, Drinking Water, Sewer Water, and Environmental Studies) and created a suggested order of implementation for teachers who may wish to use the collection as a basis for a comprehensive water/wastewater curriculum. FSSD's middle school activities, full Sewer Science curriculum, and full Curb2Creek curriculum were included with permission. In late May, a draft of the WIP Water & Wastewater Curriculum was presented to sub-committee members and industry-educators for preliminary approval. The curriculum is now being "polished" and should be available to Solano County secondary teachers starting in 2011-2012.

### Sustainability and the Industry

As the initiator of wastewater education efforts in the Fairfield-Suisun area, FSSD has from the beginning realized the vital role of water/wastewater agencies in the survivability of programs like CWOP. Agencies provide accurate, localized, and up-to-date information to educators. To successfully conduct CWOP activities, teachers need to know which sewage treatment plant serves the neighborhood that their school is located in, where their school's stormwater goes, and what paths and prerequisites their students should be aware of when considering industry careers. Additionally, water and wastewater agencies like FSSD can sponsor and sustain education programs in their service areas by buying consumable goods for participating teachers or providing free tours of their facilities, sometimes even covering the cost of bus transportation. Schools do not have funds for such purchases, and for want of such, many worthy learning and career awareness opportunities are lost. The leadership of agencies like FSSD pays off: districts can meet their K-12 outreach goals, provide rationalized behavior modification messages directly to young adult consumers, and increase the local pool of potential employees by raising the profile of water & wastewater careers and directing young people to the right pathway.

### Sustainability and SCOE

The Solano County Office of Education (SCOE) Career Technical Education (CTE) division is the hub of activity for the career awareness and curriculum outcomes of the WIP partnership. With their county-wide service area and "insider access" to schools and teachers, SCOE involvement is critical to the sustainability of the WIP partnership and its main programs after the grants expire. SCOE's leadership will positively impact FSSD's ability to provide CWOP programs in the FSSD service area in the future. Some of SCOE's responsibilities will include:

1. buying a filter and calorimeter to complete FSSD's set of Sewer Science equipment, to the benefit of CWOP-participating teachers traditionally supported by FSSD
2. housing and lending out a complete set of durable goods for Sewer Science that any Solano County teacher can borrow, meaning that CWOP teachers at AHS, FHS, RHS and Vanden high schools will have two sets of SS equipment at their disposal
3. providing other durable goods and copies of the WIP Water & Wastewater Curriculum (which includes CWOP activities) for loan so that any Solano County secondary teacher—including those traditionally supported by FSSD—can access these resources and conduct expanded water and wastewater education year after year
4. promoting the WIP Water & Wastewater Curriculum (including CWOP activities) to Solano County teachers—this gives the curriculum legitimacy and keeps it popular
5. providing Solano County teachers with professional development opportunities including training in the more complex activities in the WIP Curriculum, especially Sewer Science

### Transitioning to Sustainability in Solano County

During the next two years, as the WIP Partnership solidifies and SCOE develops the structures necessary to fulfill its future roles, FSSD's leadership and support will be critical. In 2011-2012, FSSD will continue to support its key teachers with access to CWOP curricula, training, and materials (both durable and consumable) as well as leveraging the professional development training provided by SCOE contractors to support the use of Sewer Science at Vanden High School in the Travis Unified School District, which falls within FSSD's service area as well.

### Looking beyond Solano County

FSSD will work with its partners in industry and education to assess the possibility of expanding access to activities originating with the CWOP to teachers in other counties in California.

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

### **Overview**

The Clean Water Curriculum teaches students environmental science through an introduction to natural and engineered water systems within local contexts. Students gain an appreciation for water as a limited resource that can be affected by human actions. The Curriculum uses a lab simulation about wastewater treatment and student-directed research about stormwater pollution to teach science concepts and standards while equipping students with science application skills, information about career options, and the knowledge to make educated choices for the environment. Using hands-on learning to meet science content goals, the curriculum engages students in the process of authentic science inquiry and experimentation. The Curriculum consists of three units. In the Background Unit, students review concepts of freshwater scarcity and water cycles and then move on to an overview of their water systems. In the Sewer Science Unit, using chemistry, biology, and physics, students simulate the process of wastewater treatment to solve the real-life problem of contaminated waste water as a threat to human and environmental health. In the Curb2Creek Unit, students study the real-life problem of stormwater pollution, with an emphasis on plastic litter and its widespread effects. Students learn the consequences of stormwater pollution on wildlife and human health and then conduct research on the contributions that their community may be making to this global crisis.

### **Goals**

The understanding of natural and engineered water systems provided by the Clean Water Curriculum has multiple goals: it is a working conceptual model from which to study applied environmental science, it provides a fact-based rationale for messages about water quality protection, and it is an introduction to multiple career paths that can be attained by utilizing local resources like Solano Community College and local sewer districts.

### **Audience**

The Clean Water Curriculum is intended for use in high school Environmental Science classrooms in the Fairfield-Suisun Unified School District. ES classes are generally comprised of 11<sup>th</sup> and 12<sup>th</sup> graders who have already taken earth science and a biology and/or chemistry course. UC Guidelines “strongly recommend” taking a third year of lab science, and since Environmental Science meets “a-g requirements” at Fairfield and Rodriguez high schools, this course can give participating students a competitive edge. The interdisciplinary nature of environmental science allows students to deepen their understanding of the chemistry, biology, and earth science concepts that they have learned before. The Clean Water Curriculum is interdisciplinary and targets a selection of key science content standards from students’ prior coursework for review and elaboration.

### **Implementation**

Environmental Science teachers attend a one day training that shows them how to set up and run the labs. Teachers also secure a reservation from the Fairfield Suisun Sewer District to borrow specialized equipment necessary for parts of the curriculum. Teachers receive a teaching binder and the Clean Water Curriculum on a CD-ROM complete with all the necessary files. The Clean Water Curriculum has three Units: Background, Sewer Science, and Curb2Creek. The order of presentation for Sewer Science and Curb2Creek does not matter, as long as the Background Unit has been conducted first. Because of the nature of the lab, the Sewer Science Unit must be conducted in 4 back-to-back class sessions. The Curb2Creek Unit can be conducted on a more flexible schedule. The Clean Water Curriculum helps environmental science teachers to meet the 20% of class time devoted to “hands-on scientific activities that are directly related to and support other class work, and that involve inquiry, observation, analysis, and write-up” as required of Lab Science (D) certified courses such as Environmental Science at Fairfield and Rodriguez High Schools.

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

### **Evaluation**

The Clean Water Curriculum has student evaluation built into each Unit. In the Background Unit, students do pre-post drawings of the water cycle and take a quiz about water systems. In the Sewer Science Unit, there is a pre-and-post test with 5 questions taken from released CA Standardized Tests with three additional questions about sewer systems and three student reflection questions. In the Curb2Creek Unit, there is a pre-and-post test for content and a student reflection questionnaire. In addition, teachers should also evaluate student work products from each Unit, such as lab journals and presentations, to determine student progress and assign credit or grades.

### **Standards Correlation**

Minimum number of 45 minute class sessions: 12

- 2 background sessions, 4 sessions for Sewer Science, 6 sessions for Curb2Creek

Minimum number of CA Science Content Standards Addressed: 12

1. Grades Nine through Twelve: Chemistry: Acids and Bases: 5d: "Students know how to use the pH scale to characterize acid and base solutions."
2. Grades Nine through Twelve: Earth Sciences: California Geology: 9c: "Students know the importance of water to society, the origin of California's fresh water, and the relationship between supply and need."
3. Grades Nine through Twelve: Biology/Life Sciences: Cell Biology: 1c: "Students know how prokaryotic cells, eukaryotic cells (including those from plants and animals), and viruses differ in complexity and general structure."
4. Grades Nine through Twelve: Biology/Life Sciences: Ecology: 6b: "Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size."
5. Grades Nine through Twelve: Biology/Life Sciences: Ecology: 6d: "Students know how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration."
6. Grades Nine through Twelve: Biology/Life Sciences: Ecology: 6e: "Students know a vital part of an ecosystem is the stability of its producers and decomposers."
7. Grades Nine through Twelve: Investigation and Experimentation: 1a: "Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data."
8. Grades Nine through Twelve: Investigation and Experimentation: 1b: "Identify and communicate sources of unavoidable experimental error."
9. Grades Nine through Twelve: Investigation and Experimentation: 1c: "Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions."
10. Grades Nine through Twelve: Investigation and Experimentation: 1d: "Formulate explanations by using logic and evidence."
11. Grades Nine through Twelve: Investigation and Experimentation: 1l: Analyze situations and solve problems that require combining & applying concepts from more than one area of science.
12. Grades Nine through Twelve: Investigation and Experimentation: 1m: "Investigate a science-based societal issue by researching the literature, analyzing data, and communicating the findings. Examples of issues include irradiation of food, cloning of animals by somatic cell nuclear transfer, choice of energy sources, and land and water use decisions in California."

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

### **Standards-Correlated Lesson Plans for the Clean Water Curriculum**

#### **BACKGROUND UNIT: 2 Sessions**

**Background Session 1:** Background information on global, regional, and local water systems; introduce CA Science Content Standard concepts that will be developed by Sewer Science and Curb2Creek sections

**Objectives and Goals:** students will know:

- the scarcity of clean fresh water in the world and in California, now and in the future
- how the water cycle and watershed processes differ between natural and constructed environments, with implications for the availability of water and the transport of pollutants

**California Science Content Standards Introduced:**

- Grades Nine through Twelve: Earth Sciences: California Geology: 9c: "Students know the importance of water to society, the origin of California's fresh water, and the relationship between supply and need."
- Grades Nine through Twelve: Biology/Life Sciences: Ecology: 6d: "Students know how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration."

**Pre-requisite Skills and Entry Level Assessments:**

- students should have a basic understanding of the water cycle

**Final Assessment Methods:**

- students will show increased complexity in their "draw the water cycle" assignment

**Instructional Experience:**

Intro/Hook: 5 minutes: "draw the water cycle" pre-assessment (instructions on first slide of PowerPoint)

Lesson: 20 minutes: present the Water Background 1 PowerPoint using annotated teacher notes

Guided Practice: none

Independent Practice/Homework: none

Closure/Review: 5 minutes: repeat the water cycle assignment and turn into the teacher for comparison

Differentiated Instruction: teachers may modify methods as needed

**Instructional Materials and Resources:**

Clean Water Curriculum CD-ROM with Water Background 1 PowerPoint file, computer, LCD projector

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

**Background Session 2:** Delineating engineered water systems (drinking water, sewage, and stormwater); introduce CA Science Content Standards that will be developed by Sewer Science and Curb2Creek sections

**Objectives and Goals:** students will know:

- the reasons for developing engineered water systems i.e. need for safe drinking water, need to remove pathogens and reduce biological oxygen demand, and need to prevent flooding
- the sources, destinations, level of treatment, and connections between each system

**California Science Content Standards Introduced:**

- Grades Nine through Twelve: Earth Sciences: California Geology: 9c: "Students know the importance of water to society, the origin of California's fresh water, and the relationship between supply and need."
- Grades Nine through Twelve: Biology/Life Sciences: Ecology: 6d: "Students know how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration."
- Grades Nine through Twelve: Biology/Life Sciences: Ecology: 6e: "Students know a vital part of an ecosystem is the stability of its producers and decomposers."

**Pre-requisite Skills and Entry Level Assessments:**

- students should be able to recall activities from their own experience that require water

**Final Assessment Methods:**

- quiz: given a water source, students will be able to identify its destination and treatment level

**Instructional Experience:**

Intro/Hook: 5 minutes: ask students to volunteer activities from their daily lives that use water, record on a white board, chalkboard, or poster for use later

Lesson: 20 minutes: present the Water Background 2 PowerPoint using annotated teacher notes

Guided Practice: use the previously created list of water activities to identify destination & treatment

Closure/Review: 5 minutes: present slide with water systems quiz, collect, and provide correct answers

Independent Practice/Homework: none

Differentiated Instruction: teachers may modify methods as needed

**Instructional Materials and Resources:**

Clean Water Curriculum CD-ROM with Water Background 2 PowerPoint file, computer, LCD projector

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

### **SEWER SCIENCE UNIT: 4 Sessions**

**Sewer Science Session 1:** The reasons and methods for treating sewage water are explained; students begin the wastewater treatment simulation following the step-by-step PowerPoint guide

**Objectives and Goals:** students will know:

- the reasons for treating sewage water (lowering BOD and toxic chemicals, removing pathogens)
- the main steps of the treatment process, in order, and whether each step is a primarily a biological, physical, or chemical process
- how testing for pH, NH<sub>3</sub>, and turbidity will track changes in water quality through the simulation
- the tools and procedures necessary to conduct water quality testing for pH, NH<sub>3</sub>, and turbidity

**California Science Content Standards Addressed:**

- Grades Nine through Twelve: Biology/Life Sciences: Ecology: 6e: "Students know a vital part of an ecosystem is the stability of its producers and decomposers."
- Grades Nine through Twelve: Chemistry: Acids and Bases: 5d: "Students know how to use the pH scale to characterize acid and base solutions."
- Grades Nine through Twelve: Investigation and Experimentation: 1a: "Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data."

**Pre-requisite Skills and Entry Level Assessments:**

- none; Sewer Science pre-assessment should be administered and collected

**Final Assessment Methods:**

- teacher observation: monitor if students are following testing instructions and safety protocols
- students will keep on-going lab journals and report water quality test results on class chart

**Preparation:**

Teachers must obtain experimental materials, set up tanks, and pre measure ingredients.

Teacher training demonstrates this; more instructions included on Clean Water Curriculum CD-ROM.

**Instructional Experience:**

Intro/Hook: 1 minute: review need for sewage treatment from Background 2, pass out Student Flowchart and Sketches Handout for student to reference during Session 1 and the rest of the lab

Lesson: 40 minutes: present the Sewer Science Session 1 PowerPoint using annotated teacher notes, and at indicated times, follow instructions to conduct lab set up using pre-measured ingredients

Guided Practice: integrated with lesson: water quality testing done as a demonstration by teacher

Closure/Review: integrated with lesson: slides review lab steps completed, preview steps in session 2

Independent Practice/Homework: none

Differentiated Instruction: teachers may modify methods as needed

**Instructional Materials and Resources:**

Clean Water Curriculum CD-ROM with Sewer Science Session 1 PowerPoint file, computer, LCD projector; materials for Sewer Science Lab as described in teacher training and listed on the CD-ROM.

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

**Sewer Science Session 2:** Students track changes in water quality and advance the simulation; students examine and categorize microscopic organisms in activated sludge

**Objectives and Goals:** students will know:

- how the use of activated sludge in wastewater treatment mimics portions of the nitrogen cycle
- how to differentiate bacteria, plant, and animal cells by the features visible in microscopes

**California Science Content Standards Addressed:**

- Grades Nine through Twelve: Biology/Life Sciences: Ecology: 6d: "Students know how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration."
- Grades Nine through Twelve: Biology/Life Sciences: Cell Biology: 1c: "Students know how prokaryotic cells, eukaryotic cells (including those from plants and animals), and viruses differ in complexity and general structure."

**Pre-requisite Skills and Entry Level Assessments:**

- students should be familiar with the water quality testing protocols and safety measures
- students should be familiar with the basic internal structures of bacteria, plant, and animal cells; teachers can use a comparative chart or diagram to review these with students before the lab

**Final Assessment Methods:**

- teacher observation: monitor if students are following testing instructions and safety protocols
- students will keep on-going lab journals and report water quality test results on class chart
- students will submit drawings of the micro-organisms they observed with cell structures labeled; students will categorize each cell seen as a bacteria, plant, or animal cell based on its structure.

**Preparation:**

Teachers must obtain microscopes, organize materials, set up tanks, and procure activated sludge.

Teacher training demonstrates this; more instructions included on Clean Water Curriculum CD-ROM.

**Instructional Experience:**

Intro/Hook: 5 minutes: observe and sketch tank, noting changes and discussing causes

Lesson Part 1: 10 to 15 minutes: present the Sewer Science Session 2 PowerPoint using annotated teacher notes, and at indicated times, follow instructions to advance the lab and conduct water testing

Guided Practice: teacher observes and corrects as students conduct water quality testing

Closure/Review: integrated with lesson: slides review lab steps completed, preview steps in session 3

Lesson Part 2: 15 to 20 minutes: set up microscope slides with activated sludge, students observe

Guided Practice: teacher assists students in identifying key structures in observed cells

Closure/Review: teacher uses photo CD of activated sludge organisms to review & correct identifications

Independent Practice/Homework: none

Differentiated Instruction: teachers may modify methods as needed

**Instructional Materials and Resources:**

Clean Water Curriculum CD-ROM with Sewer Science Session 2 PowerPoint file, computer, LCD projector; materials for Sewer Science Lab as described in teacher training and listed on the CD-ROM.

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

**Sewer Science Session 3:** Students track changes in water quality and end the simulation

**Objectives and Goals:** students will know:

- how testing for pH, NH<sub>3</sub>, and turbidity will track changes in water quality through the simulation
- the tools and procedures necessary to conduct water quality testing for pH, NH<sub>3</sub>, and turbidity

**California Science Content Standards Addressed:**

- Grades Nine through Twelve: Investigation and Experimentation: 1a: "Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data."

**Pre-requisite Skills and Entry Level Assessments:**

- students should be familiar with the water quality testing protocols and safety measures

**Final Assessment Methods:**

- teacher observation: monitor if students are following testing instructions and safety protocols
- students will submit their on-going lab journals as proof of their participation

**Preparation:**

Teachers must organize materials and set up tanks in advance.

Teacher training demonstrates this; additional instructions included on Water Curriculum CD-ROM.

**Instructional Experience:**

Intro/Hook: 5 minutes: note changes in tank, predict changes in water quality parameters as a result

Lesson Part: 40 minutes: present the Sewer Science Session 3 PowerPoint using annotated teacher notes, and at indicated times, follow instructions to advance and then end the lab

Guided Practice: none, students should be proficient in conducting water quality testing

Closure/Review: integrated with lesson: slides review lab steps completed, preview steps in session 4

Independent Practice/Homework: none

Differentiated Instruction: teachers may modify methods as needed

**Instructional Materials and Resources:**

Clean Water Curriculum CD-ROM with Sewer Science Session 3 PowerPoint file, computer, LCD projector; materials for Sewer Science Lab as described in teacher training and listed on the CD-ROM.

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

**Sewer Science Session 4:** Students connect to real-life applications; students analyze data and report on success of simulation; students take end of unit test

**Objectives and Goals:** students will know:

- how to organize, evaluate, and interpret scientific data

**California Science Content Standards Addressed:**

- Grades Nine through Twelve: Investigation and Experimentation: 1a through 1d, 1g, 1i

**Pre-requisite Skills and Entry Level Assessments:**

- students should be familiar with calculating averages and creating bar graphs

**Final Assessment Methods:**

- students will submit their on-going lab journals as proof of their participation
- students will submit their data charts, graphs, and summary statements
- students will take the end of unit test

**Preparation:**

Teachers must pre-analyze the class data to use as a guide and grading key. Teacher training demonstrates this; additional instructions included on Clean Water Curriculum CD-ROM.

**Instructional Experience:**

Intro/Hook: 5 minutes: display 1<sup>st</sup> slide from the Sewer Science Session 4 PowerPoint with application questions; have students record their answers on paper and turn in, discuss correct answers with class.

Lesson: 30 minutes: present the Sewer Science Session 4 PowerPoint using annotated teacher notes, and at indicated times, follow instructions to organize and analyze class data sets

Guided Practice: integrated with lesson: teacher facilitates data analysis and graphing with whole class

Closure/Review: 10 minutes: students complete end of unit test and turn in for teacher to grade

Independent Practice/Homework: none

Differentiated Instruction: teachers may modify methods as needed

**Instructional Materials and Resources:**

Clean Water Curriculum CD-ROM with Sewer Science Session 4 PowerPoint file, computer, LCD projector; materials for Sewer Science Lab as described in teacher training and listed on the CD-ROM.

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

### **CURB2CREEK UNIT: 6 Sessions**

**Curb2Creek Session 1:** Students review the structure of the stormwater system, will learn the characteristics of the Pacific Garbage Patch, and learn about the consequences of stormwater pollution

**Objectives and Goals:** students will know:

- the route(s) by which trash from their community travels to the Pacific Garbage Patch
- how scientists are studying the consequences of stormwater pollution on wildlife and people

**California Science Content Standards Addressed:**

- Grades Nine through Twelve: Biology/Life Sciences: Ecology: 6b: "Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size."

**Pre-requisite Skills and Entry Level Assessments:**

- none; Curb2Creek pre-assessment should be administered and collected

**Final Assessment Methods:**

- teachers may require students to take notes and then check them for misconceptions/gaps

**Preparation:**

Teachers must gather materials and determine the route of stormwater from their school to the SF Bay. Teacher training will assist with this; more instructions included on Clean Water Curriculum CD-ROM.

**Instructional Experience:**

Intro/Hook: 5 minutes: display 1<sup>st</sup> slide from the Garbage Patch Intro PowerPoint; have students record their answers on paper and turn in.

Lesson Part 1: 5 minutes: present the first part of the Garbage Patch Intro PowerPoint using annotated teacher notes, and at indicated times, begin the DVD "The Synthetic Sea Story"

Lesson Part 2: 30 minutes: show the DVD "The Synthetic Sea Story," students may take notes

Guided Practice: none

Closure/Review: 10 minutes: present the last part of the GP Intro PowerPoint to summarize & preview

Independent Practice/Homework: teachers may assign PDF articles as additional reading

Differentiated Instruction: teachers may modify methods as needed

**Instructional Materials and Resources:**

Clean Water Curriculum CD-ROM with Garbage Patch Intro PowerPoint file, "The Synthetic Sea Story" DVD, computer, LCD projector

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

**Curb2Creek Session 2:** Students conduct surveys of their school campus to identify sources, paths, and destinations of possible stormwater pollutants including trash

**Objectives and Goals:** students will know:

- the route(s) by which trash from their community travels to the Pacific Garbage Patch
- the composition, distribution, and frequency of stormwater pollution on their campus

**California Science Content Standards Addressed:**

- Grades Nine through Twelve: Biology/Life Sciences: Ecology: 6b: "Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size."
- Grades Nine through Twelve: Investigation and Experimentation: 1a: "Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data."

**Pre-requisite Skills and Entry Level Assessments:**

- students should be able to correlate their actual location to a map of the school campus; teachers can model this skill by locating the classroom on the map as a point of reference

**Final Assessment Methods:**

- students will turn in their surveys and cameras for review by the teacher and use in next session

**Preparation:**

Teachers must arrange for one digital camera per group of 4 to 6 students.

**Instructional Experience:**

Intro/Hook: 10 minutes: teacher explains the goals and procedures, organizes students into groups

Lesson: student groups tour the campus to document location and conditions of storm drains; locations of trash cans and litter; types and frequency of litter; and note any possible chemical pollutant sources

Guided Practice: teachers may model documentation processes before tour if warranted

Closure/Review: Session 3 continues this activity

Independent Practice/Homework: none

Differentiated Instruction: teachers may modify methods as needed

**Instructional Materials and Resources:**

Clean Water Curriculum CD-ROM with supporting files, computer, LCD projector, campus map

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

**Curb2Creek Session 3:** Students analyze results of their surveys by creating an annotated map; students present their findings and draw conclusions about their campus' contribution to marine pollution.

**Objectives and Goals:** students will know:

- the route(s) by which trash from their community travels to the Pacific Garbage Patch
- the composition, distribution, and frequency of stormwater pollution on their campus
- the impact that their campus has on the environment, particularly marine habitats

**California Science Content Standards Addressed:**

- Grades Nine through Twelve: Biology/Life Sciences: Ecology: 6b: "Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size."
- Grades Nine through Twelve: Investigation and Experimentation: 1a: "Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data."

**Pre-requisite Skills and Entry Level Assessments:**

- class must have completed the campus tour investigation in a previous session

**Final Assessment Methods:**

- students will present their maps; the class will draw conclusions for use later.

**Preparation:**

Teachers must print key photos for each group before class; teachers must provide poster board.

**Instructional Experience:**

Intro/Hook: 5 minutes: teacher explains the goals and procedures, passes out materials to groups

Lesson Part 1: 20 minutes: groups follow guidelines to create annotated map using session 2 data

Guided Practice: teachers may use an example poster to model the steps of creating the annotated map

Lesson Part 2: 15 minutes: student groups answer questions and present their findings to their peers

Closure/Review: teachers facilitate summary of major findings across all groups.

Independent Practice/Homework: none

Differentiated Instruction: teachers may modify methods as needed

**Instructional Materials and Resources:**

Clean Water Curriculum CD-ROM with supporting files, computer, printer, campus maps, posterboard, tape, scissors, yarn, data pages and printed photos from previous session

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

**Curb2Creek Session 4:** Student groups write up a plan to conduct their own research on follow-up questions such as: motivation to not litter, policies to reduce stormwater pollution, physical projects to reduce litter (such as more trash cans or trash capture devices in storm drains), or the effects of stormwater pollution (of types seen at the school) on the environment

**Objectives and Goals:** students will know:

- how to plan, conduct, evaluate, and present a science-and-society research project

**California Science Content Standards Addressed:**

- Grades Nine through Twelve: Investigation and Experimentation: 1l: Analyze situations and solve problems that require combining & applying concepts from more than one area of science.
- Grades Nine through Twelve: Investigation and Experimentation: 1m: “Investigate a science-based societal issue by researching the literature, analyzing data, and communicating the findings. Examples of issues include irradiation of food, cloning of animals by somatic cell nuclear transfer, choice of energy sources, and land and water use decisions in California.”

**Pre-requisite Skills and Entry Level Assessments:**

- class must have completed the campus investigation in sessions 2 and 3

**Final Assessment Methods:**

- teachers must approve group research projects before they may begin work on them

**Preparation:** depends on parameters set by the teacher

**Instructional Experience: note: times will vary with the parameters set by the teacher**

Intro/Hook: teacher leads class in brainstorming follow-up research questions

Lesson: student groups write research and action plans, turn in to teacher for approval, then conduct research in or out of class time (at teacher’s discretion)

Guided Practice: as needed at teacher’s discretion

Independent Practice/Homework: the majority of research may be conducted out of class time, at the discretion of the teacher, according to the stated goals and methods of each student group

Closure/Review: in session 5 with group presentations

Differentiated Instruction: teachers may modify methods as needed

**Instructional Materials and Resources:**

Clean Water Curriculum CD-ROM with supporting files, computer, other materials as needed by project

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

**Curb2Creek Session 5:** Student groups present the results of their research projects

**Objectives and Goals:** students will know:

- how to present a science-and-society research project and learn collectively from their peers

**California Science Content Standards Addressed:**

- Grades Nine through Twelve: Investigation and Experimentation: 1l and 1m (above).

**Pre-requisite Skills and Entry Level Assessments:**

- groups must have completed their research projects from session 4

**Final Assessment Methods:**

- teachers will grade the content and style of the presentation using the rubric provided

**Instructional Experience: note: times will vary with the parameters set by teachers**

Intro/Hook: teacher explains order of presentations and grading guidelines

Lesson: student groups present the findings of their research projects

Guided Practice: none

Independent Practice/Homework: none

Closure/Review: teacher facilitates discussion to summarize major findings from research projects

Differentiated Instruction: teachers may modify methods as needed

**Instructional Materials and Resources:** Clean Water Curriculum CD-ROM, computer, LCD projector

## **CLEAN WATER CURRICULUM: an Environmental Science Curriculum for 11th & 12th grade students**

**Curb2Creek Session 6:** Students review main concepts and findings from their research; end of unit test

**Objectives and Goals:** students will know:

- mechanisms and consequences of stormwater pollution on aquatic wildlife and human health

**California Science Content Standards Addressed:**

- review of Standards previously addressed in the unit

**Pre-requisite Skills and Entry Level Assessments:**

- class must have completed sessions 1 through 4

**Final Assessment Methods:**

- Curb2Creek post-assessment with additional questions should be administered and collected

**Preparation:**

Teachers must procure chart paper, post it notes, tape, and markers for the “review gallery”

**Instructional Experience:**

Intro/Hook: 10 minutes: students write their answers to the provided review questions on post it notes

Lesson Part 1: 15 minutes: students place post it notes answers on chart paper with matching question; students read others’ answers; teacher reviews answers to confirm, correct, and address gaps

Lesson Part 2: 15 to 20 minutes: teacher administers and collects end of unit test

Guided Practice: none

Independent Practice/Homework: none

Closure/Review: teachers can provide feedback about presentations and unit test at their discretion

Differentiated Instruction: teachers may modify methods as needed

**Instructional Materials and Resources:** Clean Water Curriculum CD-ROM, computer, materials as above

**END of CLEAN WATER CURRICULUM**

**Section 8 - Provision C.8 Water Quality Monitoring**

**C.8 ► Water Quality Monitoring**

State below if information is reported in a separate regional report. Municipalities can also describe below any Water Quality Monitoring activities in which they participate directly, e.g. participation in RMP workgroups, fieldwork within their jurisdictions, etc.

Summary

During FY 10-11, the Program contributed to the BASMAA Regional Monitoring Coalition (RMC). In addition, the Program contributed financially to the Regional Monitoring Program for Water Quality in the San Francisco Estuary (RMP) and was represented at RMP committees and work groups. For additional information on monitoring activities conducted by the Program, BASMAA's RMC and the RMP, see BASMAA's FY 10-11 Annual Report for Regional Pollutants of Concern Report and Monitoring Status Report for January - June 2011.

Section 9 – Provision C.9 Pesticides Toxicity Controls

**C.9.a ▶ Adopt an Integrated Pest Management (IPM) Policy or Ordinance**

Attach a copy of your individual IPM ordinance or policy. (Water Board staff requested resubmittal for FY 10-11.)	<input type="checkbox"/>	<b>Attached</b>	<input checked="" type="checkbox"/>	<b>Not attached</b> , explain below
If <b>Not attached</b> , explain:				
Both Program cities have adopted IPM policies. This provision is handled at the city level. Please see individual city reports for this information.				
Describe mechanism for adopting/formalizing your agency's IPM ordinance or policy (e.g., department head approval, integration into SOPs, staff training):				
This provision is handled at the city level. Please see individual city reports for this information.				

**C.9.b ▶ Implement IPM Policy or Ordinance**

Report implementation of IPM BMPs by showing trends in quantities and types of pesticides used, and suggest reasons for increases in use of pesticides that threaten water quality, specifically organophosphates, pyrethroids, carbaryl, and fipronil. A separate report can be attached as evidence of your implementation.

Trends in Quantities and Types of Pesticides Used <sup>47</sup>					
Pesticide Category and Specific Pesticide Used	Amount <sup>48</sup>				
	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14
<b>Organophosphates</b>					
Product or Pesticide Type A					
Product or Pesticide Type B					
<b>Pyrethroids</b>					
Product or Pesticide Type X					
Product or Pesticide Type Y					

<sup>47</sup> Includes all municipal structural and landscape pesticide usage by employees and contractors.  
<sup>48</sup> Weight or volume of the product or preferably its active ingredient, using same units for the product each year.

Permittee Name: Fairfield-Suisun Urban Runoff Management Program

Carbaryl					
Fipronil					

**C.9.c ▶ Train Municipal Employees**

Enter the number of employees that applied or used pesticides (including herbicides) within the scope of their duties this reporting year.	
Enter the number of these employees who received training on your IPM policy and IPM standard operating procedures within the last 3 years.	
Enter the percentage of municipal employees who apply pesticides who have received training in the IPM policy and IPM standard operating procedures within the last three years.	

**C.9.d ▶ Require Contractors to Implement IPM**

Did your municipality contract with any pesticide service provider in the reporting year?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
If yes, attach one of the following:				
<input type="checkbox"/>	Contract specifications that require adherence to your IPM policy and standard operating procedures, OR			
<input type="checkbox"/>	Copy(ies) of the contractors' IPM certification(s) or equivalent, OR			
<input type="checkbox"/>	Equivalent documentation.			
If <b>Not attached</b> , explain:				
This provision is handled at the city level. Please see individual city reports for this information.				

**C.9.e ▶ Track and Participate in Relevant Regulatory Processes**

Summarize participation efforts, information submitted, and how regulatory actions were affected <b>OR</b> reference a regional report that summarizes regional participation efforts, information submitted, and how regulatory actions were affected.
Summary:
During FY 10-11, the Program participated in regulatory processes related to pesticides through contributions to BASMAA and CASQA. For additional information, see the Regional Pollutants of Concern Report for FY2010-2011 submitted by BASMAA on behalf of all MRP Permittees.

Permittee Name: Fairfield-Suisun Urban Runoff Management Program

<b>C.9.f ▶ Interface with County Agricultural Commissioners</b>			
Did your municipal staff observe any improper pesticide usage or evidence of improper usage (e.g., pesticides in storm drain systems, along street curbs, or in receiving waters) during this fiscal year?	<input type="checkbox"/>	<b>Yes</b>	<input checked="" type="checkbox"/> <b>No</b>
If yes, provide a summary of improper pesticide usage reported to the County Agricultural Commissioner and follow-up actions taken to correct any violations. A separate report can be attached as your summary.			
<b>C.9.h.ii ▶ Public Outreach: Point of Purchase</b>			
Provide a summary of public outreach at point of purchase, and any measurable awareness and behavior changes resulting from outreach (here or in a separate report); <b>OR</b> reference a report of a regional effort for public outreach in which your agency participates.			
<p>Summary:</p> <p>Point-of-purchase outreach occurred at the following stores in the Fairfield-Suisun area:</p> <p>Orchard Supply Hardware 1500 Oliver Road Fairfield Ca. 94534 707-427-8665</p> <p>Home Depot Fairfield 2121 Cadeneasso Drive Fairfield, Ca. 94533 707-426-9600</p> <p>Ace Hardware Suisun 252 Sunset Ave. Suisun City Ca 94585 707-428-4223</p> <p>See attached Program report from consultant Annie Joseph regarding Our Water Our World, including other outreach efforts regarding pesticide reduction or the use of less toxic products to pesticides. For additional information on regional efforts, see the attached Regional Pollutants of Concern Report for FY2010-2011 submitted by BASMAA on behalf of all MRP Permittees.</p>			

**Fairfield Suisun Sewer District OWOW Report 2010/2011**  
**Annie Joseph**  
**Ann Joseph Consulting**

**Solano County Master Gardener Outreach:** I trained the new class of Master Gardeners on Water Quality and Pesticides on **February 4, 2011**. There were 21 new class members and I concentrated on the runoff from pyrethroid pesticides and the residues that can end up in wastewater in addition to Suisun Marsh. I also discussed proper disposal of pesticides.

In addition to the new class of Master Gardeners in attendance were key seasoned Master Gardeners who attended the class. I also discussed the concerns with nutrient runoff from customers fertilizing lawns with synthetic fertilizers. Kevin joined up for the meeting and was able to address the group and talk about FFSSD. These Master Gardeners carry this message to tablings they do at OSH and the local Farmers Markets in the area.

**Osh Fairfield:**

I conducted a training of the store staff that works in garden on **June 15<sup>th</sup>**. Five staff members were trained and were very happy to receive the information. Most were new to gardening. All are part time as the store is trying to conserve on labor costs. They were happy to have the shelf talkers and Fact Sheets to guide them if they did not know the questions. I was able to get a power point presentation set up in the conference room so we had no interruptions. I will do another training this fall. Photos were taken and sent to Kevin.

I visited and restocked the three local OWOW stores 6 times this year. The stores are Suisun Valley Ace, Orchard Supply Hardware and Home Depot. The stores have had a rough year with the economy and this has translated to a flow of new employees through the stores especially Osh and Home Depot. Ace has trimmed down staff hours but not hired new staff. When I visit the stores I try to contact the garden staff and touch bases about the latest pest and disease in addition to refreshing shelf talkers and fact sheet replenishment.

**I conducted an outreach at a No Tax Day on May 15<sup>th</sup> at Osh.** I contacted 68 customers and handed out fact sheets, free samples of Sluggo, 45 Pests Bugging You wallet guides and 50 of the 10 Most Wanted Bug Brochures. I focused on slugs and snails, rose care, and rodent management. I sent photos to Kevin.

I conducted an **outreach at Home Depot on June 5, 2011** and sent photos to Kevin. I contacted about 65 customers over the four hour 10-2pm outreach. Customers are very receptive and really want to be more green and are interested in less toxic options. I was also able to mentor staff during the outreach.

I gave away 35 pests bugging you guides, 12 grow it guides, 48 Don't Plant a Pest brochures on invasive species, 60 of the 10 most wanted bug guides along with OWOW fact sheets.

Depot has done well with the fact sheets this year and the key garden employee Linda has held classes for customers on Green Gardening and uses all of our materials. There is a new manager who is interested in having another formal training for her employees so we will set one up for fall.

**On June 25<sup>th</sup> OSH manager Steve Wilkin requested I come for their 25% off sale.** I set up a table near the patio furniture area and contacted 57 customers. I helped people with fungal problems on their roses and vegetables and talked to them about disposing of their old pesticides and fertilizers at the HHW facilities. Photos were sent to Kevin.

As with last year the costs for **Bay Friendly Landscaping** has held back our participation to hold a class in Solano County so I solicited gardeners in our area to join in the training that was offered in Napa in 2011. This coming year in 2012 there may be an opportunity to partner with Napa County Water Agency to include Solano County gardeners and do something closer to our area.

I spoke at a class at Solano College on **July 28<sup>th</sup> 2010 on Sustainable Landscaping.** Instructor and head of the Horticulture Department, Ken Williams requested I come and discuss sustainable landscape practices and the OWOW message and Bay Friendly Gardening practices. There were 30 attendees.

Ken and I have also recently discussed contacting local landscape maintenance folks and meeting with them to discuss bmp's. We will be working on that this fall.

I have renewed discussions with **ECO-WISE Certified PCO** program director Bill Quarels. He has recently taken over the program from Ted Shappas. We have scheduled to speak with Kevin, myself, and Jennifer Kaiser from Vallejo Sanitation and Flood District regarding an outreach to our local pest control operators in Solano County.

Osh sales of pesticides were down this year overall due to the economy and late rains that reduced pesticide sales so we were not able to show increases.

**C.9.h.vi ► Public Outreach: Pest Control Operators**

Provide a summary of public outreach to pest control operators and landscapers and reduced pesticide use (here or in a separate report); **OR** reference a report of a regional effort for outreach to pest control operators and landscapers in which your agency participates.

Summary:

See the C.9 Pesticides Toxicity Control section of BASMAA's FY 10-11 Regional Pollutants of Concern Report for a summary of the Program's participation in and contributions towards regional public outreach to pest control operators and landscapers to reduce pesticide use. The Program will be encouraging regional effort during FY 2011-2012 to focus on PCOs. The Program works closely with Annie Joseph to better understand the real issues associated with pesticide applications. It is through this relationship that the Program understands that a concerted effort should be directed toward the PCOs.

Section 10 - Provision C.10 Trash Load Reduction

**C.10.a.i ► Short-Term Trash Loading Reduction Plan**

*(For FY 10-11 Annual Report only)* Provide description of actions/tasks initiated/conducted/completed in developing a Short-Term Trash Loading Reduction Plan (due February 1, 2012).

Description:

The Program has been working on the Regional efforts for the development of the Model Short-Term Trash Loading Reduction Plan. See section C.10 in the Regional Pollutants of Concern Report for FY2010-2011 submitted by BASMAA on behalf of all MRP Permittees.

**C.10.a.ii ► Baseline Trash Load and Trash Load Reduction Tracking Method**

*(For FY 10-11 Annual Report only)* Provide description of actions/tasks initiated/conducted/completed to gather trash loading data and in developing a Baseline Trash Load and Trash Load Reduction Tracking Method (due February 1, 2012).

Description:

The Program has been working on regional efforts for the development of the baseline trash load and trash load reduction tracking method. See section C.10 in the Regional Pollutants of Concern Report for FY2010-2011 submitted by BASMAA on behalf of all MRP Permittees. The Program is working individually on developing GIS layers on street sweeping, median household income and land use. These layers will be combined together to generate a baseline trash load. Details of this calculation will be submitted on February 1, 2012.

**C.10.a.iii ► Minimum Full Trash Capture**

*(For FY 10-11 Annual Report and Each Annual Report Thereafter)* Provide description of actions/tasks initiated/conducted/completed in implementing Minimum Full Trash Capture Devices (due July 1, 2014) within individual jurisdictions. Include information on Full Trash Capture Devices installed under Bay-area Wide Trash Capture Demonstration Project administered by San Francisco Estuary Partnership.

Description:

The Program will be working to install a jointly owned large trash capture device (CDS). Currently the device being proposed will be placed in a location that will capture 250 acres of a combined land use of commercial and residential properties. A contributing area of 250 acres is

**FY 2010-2011 Annual Report**

**C.10 – Trash Load Reduction**

**Permittee Name: Fairfield-Suisun Urban Runoff Management Program**

approximately 82 acres larger than is required for both cities in attachment J of the MRP. Permission has been granted from the Regional Board to proceed with a joint trash capture device.

The device will be placed in the city of Suisun City just upstream from their hotspot area, while the contributing area is all within the city of Fairfield. The parcel is owned by the city of Fairfield but located in Suisun City. Program members have met on several occasions with distributors from Contec, the manufacture of the CDS units. On a recent visit to a local city to inspect a CDS unit, concerns were raised about the CDS unit's collapsible weir. The Program will be going with a fixed weir that can be adjusted. It is anticipated at this time that the Program will make the November 2012 date for installation.

**C.10.b.iii ► Trash Hot Spot Assessment**

*(For FY 10-11 Annual Report and Each Annual Report Thereafter)* Provide volume of material removed from each Trash Hot Spot cleanup, and the dominant types of trash (e.g., glass, plastics, paper) removed and their sources to the extent possible.

Fill out the following table or attach a summary of the following information.

Trash Hot Spot	Cleanup Date	Volume of Material Removed	Dominant Type of Trash	Trash Sources (where possible)
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This provision is handled at the city level. Please see individual city reports for this information.

**C.10.d ► Summary of Trash Load Reduction Actions**

Provide summary of new trash load reduction actions or increased levels of implementation of existing actions that were implemented after adoption of the MRP (control measures and best management practices) including the types of actions and levels of implementation, and the total trash loads and dominant types of trash removed from each type of action.

Suggested trash load reduction actions to track and report may include:

- Anti-litter Campaigns
- Anti-litter/Dumping Enforcement Activities
- Curbside Recycling Programs
- Education and Outreach Efforts
- Free Trash Pickup/Dropoff Days
- County HHW Program Activities
- Improved Trash Bin Management
- Inspection/Maintenance of Storm Drain Outfalls
- Litter Pickup and Control
- Removal of Homeless Encampments
- Solid Waste Recycling Efforts
- Source Controls/Bans/Prohibitions
- Storm Drain Operation and Maintenance
- Storm Drain Signage/Marking
- Street Sweeping Activities
- Trash Removal from Receptacles
- Volunteer Creek Cleanups

Type of Trash Load Reduction Action	Date of First Implementation	Level of Implementation (specify if level was increased after MRP adoption)	Total Trash Load Removed by Action	Dominant Types of Trash Removed by Action
Antilitter Campaign messages on 95.3 FM KUIC	July 2010	New	Trash loads removed were not tracked for this fiscal year.	Litter intentionally deposited by residents in the radio vicinity of FM 95.3 KUIC out of Vacaville.
Educational Outreach Efforts	July of 2005	focus on trash has increased	Trash loads removed were not tracked for this fiscal year.	Litter intentionally deposited by students throughout the Fairfield and Suisun Unified School District.
Volunteer Creek Cleanups	September of 2000	increase in the number of events, from one to four	8,325 lbs**  ** this number was generated primarily through volunteer estimates	Homeless encampments, roadway deposition, pedestrian trash deposition (fast foods, convenience foods, grocery bags, grocery carts, blankets, clothes, bottles and cups)

Section 11 - Provision C.11 Mercury Controls

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

List below or attach lists of efforts to 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).

Quarterly, Suisun City publishes their *Discovery* newsletter. This newsletter is mailed to all households in Suisun City and informs residents about the proper methods for disposal of all Household Hazardous Waste, including items containing mercury.

The city of Fairfield has a flyer with information about household hazardous waste materials and disposal. The flyer contains information about where Fairfield residents can take household hazardous waste materials without cost. The city also has a flyer with information about Universal Waste. The informational flier includes the definition of Universal Waste and why these items are banned from normal solid waste disposal. Flyers such as these are given out at city sponsored events such as Earth Day.

The city of Fairfield also works with Solano Garbage Company (HHW Contractor) on radio announcements. Solano Garbage Company has done commercials on our local radio station, KUIK 95.3, reminding residents to do the right thing with household hazardous waste and Universal Waste. Fairfield's website also has information on household hazardous waste materials, Universal Waste and the proper way to dispose of these waste materials.

The Program also sponsored environmental awareness messages on KUIK radio station 95.3 in Vacaville. Included in those messages is the proper disposal of products containing mercury and other metals. Fluorescent bulbs are preferred for their energy savings, but because they contain mercury they require special disposal. When you upgrade to electronic thermostats and thermometers safely dispose of your old ones that contain mercury.

**C.11.a.ii ► Mercury Collection**

Provide an estimate of the mass of mercury collected through these efforts, or provide a reference to a report containing this estimate.

Amount collected:

Not all mercury load reduction actions were tracked using "loads removed" methods this fiscal year. In the FY 09-10 BASMAA Regional POC Annual Report, an initial Mercury and PCB Load Reduction Tracking Method was presented (see Provision C.11.g). Based on Water Board staff comments, a revised method is presented in the FY 2010-2011 BASMAA Regional POC Report. Based on this methodology, loads removed via the collection/recycling of mercury-containing products will be documented beginning in FY 11-12.

- C.11.b ▶ Monitor Methylmercury**
- C.11.c ▶ Pilot Projects to Investigate and Abate Mercury Sources in Drainages**
- C.11.d ▶ Pilot Projects to Evaluate and Enhance Municipal Sediment Removal and Management Practices**
- C.11.e ▶ Conduct Pilot Projects to Evaluate On-Site Stormwater Treatment via Retrofit**
- C.11.f ▶ Diversion of Dry Weather and First Flush Flows to POTWs**
- C.11.g ▶ Monitor Stormwater Mercury Pollutant Loads and Loads Reduced**
- C.11.h ▶ Fate and Transport Study of Mercury In Urban Runoff**
- C.11.i ▶ Development of a Risk Reduction Program Implemented Throughout the Region**
- C.11.j ▶ Develop Allocation Sharing Scheme with Caltrans**

State below if information is reported in a separate regional report. Municipalities that participate directly in regional activities to can provide descriptions below.

Summary

A summary of Program and regional accomplishments for these sub-provisions are included within the C.11 Mercury Controls section of the BASMAA Regional POC Report for FY 10-11.

Section 12 - Provision C.12 PCBs Controls

**C.12.a.i.iii ► Municipal Inspectors Training**

*(For FY 09-10 Annual Report only)* List below or attach description of results of training municipal industrial inspectors to identify, in the course of their existing inspections, PCBs or PCB-containing equipment.

Description:

In FY 09-10, inspector training materials were developed by BASMAA and provided in the FY 09-10 BASMAA Regional POC Report. A description of efforts to train municipal industrial inspectors was provided in FY 09-10 Program Annual Reports.

**C.12.a.ii.iii ► Ongoing Training**

*(For FY 10-11 Annual Report and Each Annual Report Thereafter)* List below or attach description of ongoing training development and inspections for PCB identification, including documentation and referral to appropriate regulatory agencies (e.g. county health departments, Department of Toxic Substances Control, California Department of Public Health, and the Water Board) as necessary.

Description:

The Fairfield Suisun Urban Runoff Program Commercial Industrial Annual Refresher Training was conducted on February 10, 2011. Topics included: new stormwater ordinances adopted by both cities in the Program; high-priority facilities needed to be inspected this fiscal year; enforcement levels associated with illegal discharges.

In FY 09-10, inspector training was provided to County Health inspectors on the recognition and control of POCs, including PCBs, during their normal industrial commercial inspections.

- C.12.b ▶ Conduct Pilot Projects to Evaluate Managing PCB-Containing Materials and Wastes during Building Demolition and Renovation Activities**
- C.12.c ▶ Pilot Projects to Investigate and Abate On-land Locations with Elevated PCB Concentrations**
- C.12.d ▶ Conduct Pilot Projects to Evaluate and Enhance Municipal Sediment Removal and Management Practices**
- C.12.e ▶ Conduct Pilot Projects to Evaluate On-Site Stormwater Treatment via Retrofit**
- C.12.f ▶ Diversion of Dry Weather and First Flush Flows to POTWs**
- C.12.g ▶ Monitor Stormwater PCB Pollutant Loads and Loads Reduced**
- C.12.h ▶ Fate and Transport Study of PCBs In Urban Runoff**
- C.12.i ▶ Development of a Risk Reduction Program Implemented Throughout the Region**

State below if information is reported in a separate regional report. Municipalities that participate directly in regional activities to can provide descriptions below.

Summary

A summary of the Program and regional accomplishments for these sub-provisions are included within the C.12 PCB Controls section of FY 10-11 BASMAA Regional POC Report Annual Report.

Section 13 - Provision C.13 Copper Controls

**C.13.a.i and iii ► Legal Authority: Architectural Copper**

(For FY 10-11 Annual Report only) Do you have adequate legal authority to prohibit 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?

X	Yes		No
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If **No**, explain and provide schedule for obtaining authority within 1 year:

**C.13.b.i and iii ► Legal Authority: Pools, Spas, and Fountains**

(For FY10-11 Annual Report only) Do you have adequate legal authority to prohibit discharges to storm drains from pools, spas, and fountains that contain copper-based chemicals?

X	Yes		No
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If **No**, explain and provide schedule for obtaining authority within 1 year:

**C.13.c ► Vehicle Brake Pads**

Reported in a separate regional report.

A summary of the Program's participation with the Brake Pad Partnership (BPP) is included within the C.13 Copper Controls section of FY 10-11 BASMAA Regional POC Report Annual Report.

**C.13.d.iii ► Industrial Sources Copper Reduction Results**

Based upon inspection activities conducted under Provision C.4, highlight copper reduction results achieved among the facilities identified as potential users or sources of copper, facilities inspected, and BMPs addressed.

Summary

The prioritized list of commercial facilities in section C.4 include facilities with a higher potential for discharging copper. These facilities include commercial car washers, corporation yards and automotive facilities. Training was provided to industrial and commercial inspectors, from Solano County's Department of Resource Management, to recognize and act accordingly to sources and discharges of copper during their inspections.

Also at higher risk for discharge of copper in stormwater runoff are metal finishing facilities, electroplating and semi conductor manufacturing. Processes at these facilities include copper chloride etchers, ammonia etchers and acid plating baths. The inspectors were shown that metal

finishing and electroplating processes contributed, through roof deposition, greater amounts of copper and nickel to stormwater runoff. Inspectors were told to look for chemical deposition around vents and other roof surfaces to determine if there is a potential source of copper. If discoloration or deposits are seen, the implementation of BMPs shall be required.

During the past fiscal year, opportunities did not occur during the course of inspections to reduce the discharge of copper from commercial facilities by modifying BMPs. Inspectors will continue to seek out opportunities for copper reduction.

**C.13.e ► Studies to Reduce Copper Pollutant Impact Uncertainties**

Report on progress of studies being conducted countywide or regionally to reduce copper pollutant impact uncertainties. State below if information is reported in a separate regional report.

Summary

A summary of the regional efforts to develop studies to reduce copper pollutant impact uncertainties is included within the C.13 Copper Controls section of the BASMAA Regional POC Report for FY 10-11.

**Section 14 - Provision C.14 PBDE, Legacy Pesticides and Selenium Controls**

**C.14.a ► Control Programs for PBDEs, Legacy Pesticides and Selenium Controls**

Report on progress of studies being conducted countywide or regionally to characterize the distribution and pathways of PBDEs, legacy pesticides, and selenium. State below if information is reported in a separate regional report.

Summary

A summary of the regional efforts related to the Control Program for PBDEs, Legacy Pesticides and Selenium is included within the C.14 PBDE, Legacy Pesticides and Selenium section of BASMAA Regional POC Report FY 10-11 Annual Report.

Section 15 - Provision C.15 Exempted and Conditionally Exempted Discharges

**C.15.b.iii.(1), C.15.b.iii.(2) ► Planned and Unplanned Discharges of Potable Water**

Is your agency a water purveyor?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
If <b>No</b> , skip to C.15.b.vi.(2):				
If <b>Yes</b> , Complete the attached reporting tables or attach your own table with the same information. Provide any clarifying comments below.				
Comments:				

**C.15.b.vi.(2) ► Irrigation Water, Landscape Irrigation, and Lawn or Garden Watering**

Provide implementation summaries of the required BMPs to promote measures that minimize runoff and pollutant loading from excess irrigation. Generally the categories are:

- Promote conservation programs
- Promote outreach for less toxic pest control and landscape management
- Promote use of drought tolerant and native vegetation
- Promote outreach messages to encourage appropriate watering/irrigation practices
- Implement Illicit Discharge Enforcement Response Plan for ongoing, large volume landscape irrigation runoff.

Summary:

See Program's annual report, section C.7. This portion of the annual report shows the Program's efforts towards the promotion of the School Water Education Program (SWEP). One of the primary focuses of this program is water conservation. SWEP provides free water education resources to teach water awareness and conservation to students, teachers and parents in our service areas of Fairfield, Suisun City and Travis Air Force Base. The in-class education programs as well as the resource materials and assembly programs are multi-discipline and aligned to the content standards for California public schools. The programs encourage students and adults to develop a healthy attitude of personal responsibility towards our environment and develop skills needed to contribute meaningfully to decision-making process on issues involving our resources and particularly conserving our most precious resource, water.

See above in section C.9 of the Program's annual report. This portion of the annual report shows the Program's efforts towards the promotion of less toxic pest control and landscape management. from consultant Annie Joseph regarding Our Water Our World, including other outreach efforts regarding pesticide reduction or the use of less toxic products to pesticides. For additional information on regional efforts, see the attached Regional Pollutants of Concern Report for FY2010-2011 submitted by BASMAA on behalf of all MRP Permittees.

**Permittee Name: Fairfield-Suisun Urban Runoff Management Program**

Quarterly, Suisun City publishes their *Discovery* newsletter. This newsletter is mailed to all households in Suisun City, and informs residents about the proper methods for disposal of all Household Hazardous Waste, including items containing mercury

In addition, in January 5, 2010, the Suisun City Council adopted a new water efficient landscaping ordinance. The goal of this ordinance is to promote the conservation and efficient use of water and to prevent the waste of this valuable resource and use water efficiently without waste by setting a maximum applied water allowance as an upper limit for water use and reduce water use to the lowest practical amount. This ordinance, effective January 1, 2010 applied to all new construction and rehabilitated landscapes for public agency projects and private development projects with a landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check or design review.

The City of Fairfield also put the State Water Efficient Landscape Ordinance into effect in January 2010. The ordinance focuses on new development design to be highly water efficient and minimize run-off. It applies to large developments and large re-landscaping in the city. Fairfield also has an aggressive program to visit and correct high water use properties. Running a county-wide program to audit single family homes, we have marketed to the top water users in Solano County. This program completes between 500 to 1500 audits a year. Approximately 55% of these visits were overwatering landscaping, resulting in run-off from the properties. Another 25% have irrigation leaks. This program estimates a savings of 44,000 gallons per day in Fairfield and Suisun. County-wide efforts have saved 140,000 gallons per day, mostly from excessive irrigation and leaks that affect storm drain discharges.



