



**CITY OF CHICO STORM WATER MANAGEMENT  
PUBLIC EDUCATION AND OUTREACH PROGRAM  
2008 – 2009**

Report Prepared by Page One with Consultant, Jennifer Oman, Oman Communications, and Dr. Diane Schmidt, Professor at California State University Chico, June 30, 2009

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## Introduction/Project Summary

The following report is documentation of the City of Chico's Storm Water Management Education and Outreach Program (SWM EOP) from October 2008 – June 2009. The 2008-2009 City of Chico's SWM EOP has built upon the work of the Chico Urban Streams Alliance, *Clean Creeks Project*, Education and Outreach Program (Chico USA EOP) 2005-2007. The Chico USA EOP was funded under a CalFed grant and developed through the initial cooperative efforts of the following organizations: City of Chico, Butte Environmental Council, Big Chico Creek Watershed Alliance, and Kennedy/Jenks Consultants. The *Clean Creeks Project* addressed urban runoff pollution issues in the area of Chico, California through conducting a public awareness multi-media campaign and one-on-one outreach to potentially polluting businesses.

Jennifer Oman, of Oman Communications, served as Consultant to the City as the Program Coordinator of the SWM EOP according to the City of Chico's Storm Water Management Plan. The appropriate City of Chico staff approved all activities and materials produced. The City of Chico SWM EOP has extended the impact of this program from the previous year under direction of Oman Communications, while adding creative and relevant methods for outreach, collaboration and public involvement. The success of the program has been demonstrated by a raised awareness in the community and an increase of participation of individuals, businesses and organizations in the local area to protect water quality (see Survey Results).

Oman Communications, dedicated to increasing levels of awareness and behaviors achieved in the prior work on this project, has extended the goals and objectives to encompass more members of the public, students in school classrooms, and businesses in the downtown area that can help prevent cigarette litter of waterways. The program has grown this year to involve youth in schools and clubs to help raise awareness of methods to prevent runoff pollution by implementing BMPs at fundraiser carwashes; and to provide outreach to local businesses through the dissemination of cigarette butt litter prevention educational materials and give-aways.

The 2008-2009 SWM EOP has met the following goals:

Goal #1: Enhance community appreciation and stewardship of Chico's local waterways through education of the general public on issues of best management practices.

Goal #2: Engage and educate the public on behaviors that will help reduce and prevent storm water runoff pollution through third-grade classroom instruction, posting of information on a website, and booth outreach at various events.

Goal #3: Encourage the public to adopt behavioral changes that will help reduce and/or prevent storm water runoff pollution through a media blast campaign involving print and broadcast ads/PSAs, booth outreach, website, calendar, classroom instruction, flyers, posters, brochures and Clean Water Business Partner-Cal Water inserts.

Goal #4: Encourage members of the public who smoke cigarettes to dispose of butts properly for the prevention of run-off pollution, by disseminating outreach materials and pocket ashtrays.

Goal #5: Promote and encourage public participation in water quality related volunteer opportunities and illegal dumping reporting through listing of community links on the website; in a widely distributed calendar; a dedicated hotline telephone line; and other types of outreach.

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## Report of Activities

### Public Presentations/Community Events

#### Booth Outreach

The Storm Water Management Education and Outreach Program (SWM EOP) Coordinator, Jennifer Oman provided program outreach at the following public events in 2009:

- 1) Soroptimist Home, Garden, Antique and Car Show –March 21-22, 2009
- 2) Thursday Night Market – May 15, 2009
- 3) Silver Dollar Fair – May 20<sup>th</sup> through 25<sup>th</sup>, 2009

Runoff pollution prevention educational materials such as the Chico Clean Creeks 2009 Calendar, Keep Chico Clean Postcards, and SWM EOP brochures for the general public, Landscape Contractors, and Carpet Cleaners were disseminated at the public events listed above. One-on-one outreach to booth passersby included information on Best Management Practices (BMPs) for prevention of runoff pollution. All print materials included the City Storm Water Logo.

The booths also included a new game of “Fish” for young and old to catch a fresh water wooden fish and answer a question regarding BMPs for prevention of run-off pollution to win a prize.

Data was collected from the public through use of a survey questionnaire, which could be completed at the booth. The 2009 survey questionnaire had 8 questions, simplified from 14 questions the previous year. Give-aways, including environmentally friendly merchandise, were used as inducements to take the survey.

Completed surveys totaled 200 this year, exceeding the number proposed by thirty surveys.



## **Public Involvement**

During the 2008-2009 SWM EOP an additional aspect of public outreach and involvement was achieved. Volunteers participated in the education and outreach activities as well as Butte College and CSU Chico student interns.

California State University at Chico (CSU Chico) students, Butte College students, and representatives from local environmental education non-profit groups assisted with public education and outreach at the booths for the three public outreach events (Home & Garden Show, Thursday Night Market, Silver Dollar Fair 2009)

CSU Chico students, Chico Unified School District (CSUD) parents and staff, and Butte College students worked as volunteers for the Spring 2009 *Clean Creeks in the Classroom* program. The following CSU Chico Departments provided extra credit for students who chose to volunteer: Chico State Recreation and Parks Department (Jon Hooper, Professor), and Chico State Health and Community Services Department (Mary Portis, Professor). Butte College Service Learning Program also facilitated student participation. The following individuals from community organizations and agencies provided educational field day stations for the *Clean Creeks in the Classroom/ Kids & Creeks* program: Department of Fish and Game (Anna Kastner), Chico State Biology Department (Joe Slusark).

Twenty-six parent volunteers joined the *Clean Creeks in the Classroom/ Kids & Creeks* field days and assisted with student supervision and logistics while serving as environmental steward role models. (Kids & Creeks is the sub-contracted organization that fulfills the field day component of the classroom instruction.) The total number of volunteers for the Classroom Instruction portion of the SWM EOP was thirty-eight.

Chloe Alexander, a senior at CORE Butte Charter School serving as Global Awareness Commissioner for the school's ASB organization, produced an educational PowerPoint on how to conduct a pollution-free car wash fundraiser event. She presented the PowerPoint to ten CORE Butte Charter School students, who participated in a pilot pollution-free car wash fundraiser after the presentation. The PowerPoint was then used to train local Boy's & Girl's Club staff as a service to the community. Chloe received school credits for her work in this area. She attended the training staff meeting at the Chico Boy's & Girl's Club as a volunteer and participated in the effort to present the method and materials to the club staff (see Appendix A).

## Collaboration/Contributions

1. CUSD Transportation Department and/or parent volunteers were responsible for transporting participating *Clean Creeks in the Classroom* (CCC) CSUD students to and from their field day destinations on time and safely.
2. Timmarie Hamill worked as an Independent Contractor during the fall 2008 period of the SWM EOP. Timmarie also works as the Citizen Monitoring Program Coordinator, which she oversees in connection with Big Chico Creek Watershed Alliance (BCCWA). She provided photos and descriptions of the monitoring program for the 2009 Chico Clean Creeks Calendar.



Timmarie Hamill provided a field station activity as part of the *Clean Creeks in the Classroom/ Kids & Creeks* classroom instruction in fall 08. An adaptation of BCCWA Monitoring Program was set up at station, including Watershed Ecology and Water Quality Assessments.

Equipment and supplies were provided as an in-kind service from BCCWA, and stream data collected by participating students was entered into the Big Chico Creek Watershed Citizen Monitoring database.

The SWM EOP website was linked to the BCCWA Citizen Monitoring program site with a dedicated webpage. The monitoring program was also featured in the SWM EOP Calendar, brochures and outreach efforts.



Flow measurements were taken during each field event, and cubic feet per second (cfs) was calculated.

The following tasks and equipment were provided by Timmarie Hamill for the 2008/2009 City of Chico Storm Water Management and Education Program:

- 1) Field event station curriculum and instruction (Adaptation of BCCWA Monitoring Program in fall 2008.)
  - Watershed Ecology: Students are provided watershed information and background knowledge of the ecological function of watersheds, and related terminology. (This curriculum is also implemented in the classroom instruction portion of the program).
  - Water Quality Assessments: Students are provided training in common protocols used to assess stream health.
  - Monitoring equipment and supplies provided by the Big Chico Creek Watershed Alliance Citizen Monitoring Program

Note: The Water Quality Field Station was not used for the spring 2009 *Clean Creeks in the Classroom/Kids & Creeks* classroom instruction based upon the need to find a more grade-appropriate curriculum for third-grade students. The reptile station, directed by a Fish & Game representative, was substituted for the Water Quality Field Station in spring 2009. The students were responsive to learning about reptile riparian zone inhabitants, and the station proved to be engaging and grade-appropriate.

3. The City of Chico SWM EOP linked to the Big Chico Creek Watershed Alliance Citizen Monitoring Program through a dedicated web page on the City's program website [www.keepchicoclean.org](http://www.keepchicoclean.org) and through outreach efforts conducted by the SWM EOP Coordinator, Jennifer Oman

4. The general public was invited to participate in the 2009 Chico Clean Creeks Calendar project by contributing their amateur photographs of Chico urban creek scenes. The photos that were donated for the educational calendar were high quality and helped to inspire public stewardship of local waterways.

5. Clean Water Business Partner, Andy Willhoit, owner of Home Prep, worked in collaboration with Oman Communications to produce the 2009 Chico Clean Creeks Calendar. Willhoit contributed salient educational content on BMPs and resource links for public referral. He oversaw the calendar production and served as a public spokesperson for the runoff pollution prevention message of the calendar.

6. Third-grade student dioramas, made as a part of the CCC program, were displayed at US Bank in fall 08 and at the City's Silver Dollar Fair SWM EOP booth in spring 2009.



7. The Chico Center of the Boy's & Girl's Club became enthusiastically involved in training all their staff members to conduct pollution-free car wash fundraisers. The training was on June 5<sup>th</sup> and the club held their first pollution-free car wash on 6/28/09.



8. After a storm water management presentation by City of Chico Senior Civil Engineer, Matt Thompson, Butte College Math, Engineering, Science Achievement students became motivated to participate with the SWM EOP. The students are planning a contest to produce car wash kits to be used during local car wash fundraisers.

## Media Campaigns

A multimedia outreach campaign was conducted and outreach materials/media included public education and outreach messages such as but not limited to:

- *What's in your gutter is in your Creek*
- *Water that flows into the gutter drains directly to our creeks*
- *Never fertilize or apply pesticides when rain is predicted*
- *Clean up after pets*
- *Never dump anything down a storm drain or gutter*
- *Wash cars at car wash or on lawn rather than in driveway*
- *Dispose of cigarette butts in pocket ashtrays or trash receptacles—never toss onto the ground.*
- *Pollution-free car washes prevent soap, chemicals and trash from being washed into storm drains.*

Building upon the results of the 2008 follow-up citywide public knowledge survey, existing outreach materials and media were adapted and new materials were developed. The 2009 messages were broadcast through nine different media channels. Posters for proper cigarette butt disposal were posted throughout the City of Chico. The message was popular and pocket ash tray dissemination was met with enthusiastic response. The general public demonstrated a welcoming attitude toward finding a solution for proper cigarette butt disposal.

In the 2009 survey, the storm drain and Internet site options were added to the list of possible sources for receiving the messages. Seventy-five percent of the respondents viewed or heard 1-3 messages. This suggests that many respondents were exposed to messages about keeping the creeks free of pollution. Some respondents checked “other” rather than the nine options listed. Most of those who checked the “other” option listed events such as Chico Clean up Day, Endangered Species Fair, or storm drain markers in their answers.

“The greatest exposure seems to have come from television, storm drain markers, and booths at public events as outreach sources.....19 to 25 percent of the respondents identified seeing or hearing messages from the radio, daily newspapers, and posters.” Schmidt, Diane E. PhD., Political Science, California State University Chico (Schmidt, 2009 Convenience Survey Report)

A newspaper advertisement with a focus on proper cigarette butt disposal was developed. The ad contained a general storm water quality message, the program website url and contact information. The ad was placed in the *Synthesis* on May 11<sup>th</sup> and May 18<sup>th</sup> 2009, and in the *Orion*, a CSU Chico newspaper, on May 20<sup>th</sup> 2009. In addition to regular distribution, the May 20<sup>th</sup> *Orion* issue was mailed to all incoming CSU Chico freshman. A press release was printed in the *Synthesis* to coincide with the ad placement. The public message contained information on BMPs for prevention of runoff pollution of local waterways.

The screenshot shows the Chico Enterprise Record website interface. At the top, there's a navigation bar with links like 'Home', 'News', 'Sports', etc. The main content area features several news articles under the 'Loval Briefs' section. A prominent advertisement for Intel Innovation is visible on the left, and a large blue arrow points to a 'Clean Creeks 2009 calendar' advertisement in the center. On the right, there are sections for 'Related Topics', 'Most Viewed', and 'Most Emailed' items, along with a 'ChicoER Top Listings' sidebar and a 'Accept Credit and Debit Cards' advertisement from Intuit.

**Loval Briefs**  
Chico Enterprise-Record  
Posted: 02/21/2009 12:00:00 AM PST

**Crossing guard reportedly beats elderly woman with stop sign**  
WILLOWS — A woman who attacked her mother-in-law with a handheld stop sign, then allegedly pushed her into the street, was arrested Thursday for assault with a deadly weapon.  
Police said Julie Price, 44, was on her way to her job as a crossing guard when she became involved in a verbal dispute with Gay Ramsey, 77, at the corner of Villa and Laurel streets.  
Price reportedly called police herself after she assaulted the woman.  
Ramsey was taken to Glenn Medical Center and treated for a broken hand and a confusion to her head.  
Price was booked into the Glenn County Jail in Willows on suspicion of assault with a deadly weapon and elder abuse.  
Her bail was set at \$42,000.

**Man just cleared of attempted murder arrested again**  
ORLAND — An 18-year-old man arrested last week on suspicion of shooting into an occupied home in Orland, then cleared as an attempted murder suspect, was back in custody hours after release when he tried to elude police.  
Orland officers said Joseph Hector Chirino, of Orland, was in a vehicle they tried to stop on East Walker Street about 9:30 p.m. Thursday.  
The driver continued on at high speed, but stopped near South Street, where all four occupants of the vehicle jumped out and fled.  
Three of the suspects escaped, but officers and Glenn County deputies located Chirino and took him into custody.  
He was booked into the Glenn County Jail in Willows, where he is being held without bail for a probation violation, and also faces a charge of evading a peace officer.

**Clean Creeks 2009 calendar available at several locations**  
CHICO — The free 2009 Clean Creeks Calendar, focusing on creeks in Chico and clean water, is available at several locations around Chico, including the Chico library, East First and Sherman avenues; the Chico Area Recreation and Park District, 545 Vallobrosa Ave.; and at city hall, 411 Main St.  
A free copy can be downloaded from [www.KeepChicoClean.org](http://www.KeepChicoClean.org).  
The calendar includes pictures of Big Chico Creek, Little Chico Creek, Butte Creek and Sycamore Creek, and encourages residents to curb pollution.  
The calendar was designed and coordinated by the city's Storm Water Management Program, Jennifer Oman Communications, StormWaterOutreach.com and Clean Water Business Partner Andy Wilhoit.

**Granite tiles honor veterans, raise money for memorial**  
OROVILLE — The Veterans Memorial Park taking shape in Oroville is selling engraved granite tiles to raise money for construction of the park.  
The park, which will honor veterans from throughout all of Butte County, is to be build on several recently cleared lots on Montgomery Street, adjacent to the Memorial Hall and overlooking the Feather River.  
For \$80, anyone wishing to honor an American serviceman or servicewoman can have four lines of type engraved on a 12-by-8-inch tile

(see Appendix C for other samples of Newspaper Ads and Public Service Announcements)

The Contractor used three City supplied TV Public Service Announcements (PSAs) developed under the Chico USA EOP, and modified under a previous contract. Oman Communications coordinated more than 186 thirty-second broadcasts on the Fox 20 TV network. The PSAs contain educational information on the use of BMPs to protect water quality. Broadcasts totaled in excess of 65 English language prime time “spots”, 65 non-prime time English language “spots”, 28 Spanish language “spots”, and 28 non-prime time Spanish language “spots”.

The Contractor used the City supplied radio PSA developed under the Chico USA EOP and modified under a previous contract. The English and Spanish versions of the 60-second PSA contain educational information on the use of BMPs to protect water quality. The Contractor coordinated a total of 852 radio spots that were broadcast on KPAY, KMIX, KHSL, and KHHZ. The English version of the PSA was played no less than 20 times daily over a continuous two-week period, from April 13<sup>th</sup> - 26<sup>th</sup> 2009.

During the same two-week period the Spanish Language version was played a minimum of 12 times.

PSAs were approved prior to being broadcast. All ancillary materials were approved prior to being printed. All printed materials contained the City SWM EOP logo.

2,500 Chico Clean Creek 2009 Calendars were printed and distributed to the general public. See Outreach section for details.



### **Storm Water Classroom Presentations**

The SWM EOP Classroom Outreach component of the program, *Clean Creeks in the Classroom* (CCC) served third-grade classrooms in the area and consisted of three one-hour presentations to each classroom on three different class days, and one four-hour field day per classroom. Lessons and activities were designed to correlate to California Third-Grade State Science Standards. Lessons included:

- Activities that promoted watershed awareness and hands-on experience.
- Learning objectives that were easily translated into runoff pollution prevention behaviors.
- Classroom instruction that was linked to existing resource management efforts to enhance opportunities for youth to apply what they are learning and participate in on-going community events.
- Instructions that encouraged collaboration and informed stewardship.
- Opportunities for students to interact directly with their peers in an outdoor setting where knowledge gained in the classroom could be implemented through hands-on activities.

The Clean Creeks in the Classroom curriculum may be viewed in Appendix B.

Letters introducing the curriculum to parents of students in the classrooms served were translated to Spanish. English and Spanish versions were provided to classroom teachers.

A total of fifteen third-grade classrooms participated in the CCC Program:

Eight third-grade classes were served in the fall 2008

- four classes at Parkview Elementary School
- three classes at Chico Country Day School
- one class at Neal Dow School

Seven classes were served in the spring 2009

- two classes at Rosedale School
- three classes at Chapman School
- one class at Hooker Oak school
- one class at Four Winds Charter School

One extra class at Hooker Oak School attended the Hooker Oak field day event, although they had not participated in the in-class curriculum instruction portion of the program.

A total of 382 third-grade students were served for a total of 42 hours of CCC classroom instruction during the 08-09 school year. The field trip portion of the 08-09 program consisted of eight field trips, with two classrooms attending each field trip, to Five Mile Recreation area. *Kids & Creeks* staff, student and parent volunteers implemented classroom visits and field days. Program Coordinator, Jennifer Oman trained the staff and volunteers, and provided classroom/field day instruction when needed. The staff included two credentialed teachers and two college faculty members.



Students become familiar with aquatic life from the creek during a Field Day Activity.



Students become familiar with local reptiles inhabiting the area around the creek at the Field Day Reptile Station.

## **Clean Water Business Partnership Program**

Since 2006, when the Chico USA EOP initiated the Clean Water Business Partnership Program (CWBP) the program has grown from eight to twenty-five Clean Water Business Partners. During the 2008- 2009 year, the program grew with the addition of four new partners. The current comprehensive list is attached (see Appendix D).

Oman Communications maintained the current City of Chico Clean Water business Partnership (CWBP) Program by providing brochures for educational outreach to partners' customers; the 2009 CWBP logo; and 2009 Chico Clean Creeks Calendars to new CWBP's. Free advertising was provided to 2009 CWBPs on the CalWater insert, the calendar, and the storm water web site [www.keepchicoclean.org](http://www.keepchicoclean.org).

A California Water Service Company (Cal Water) insert promoting the CWBP Program was mailed to customers during the June 2009 billing cycle. The insert included all current CWBPs and a general clean water message. Twenty-seven thousand inserts were mailed. The Contractor coordinated the mailing with California Water Service. Content was approved by the City of Chico prior to printing. A sample of the insert is attached (see Appendix D).

Local businesses participating in the program are:

### **Carpet Cleaners**

Chico Carpet Cleaning  
Clean King by DeHart  
Cleanrite Buildrite  
Dean's Upholstery & Carpet Care  
Lincoln Cleaning & Restoration  
Service Master Select  
SJS Carpet Cleaning  
Sunrise Carpet Cleaners

### **Landscape Contractors**

Dugan's Landscape  
East Meets West Landscaping  
Ewing Irrigation  
Gaia Creations Ecological Landscaping  
Greenscape  
KCL Custom Landscapes  
Lawns-R-Us  
Lifescapes  
Performance Design & Landscape  
Sierra Landscape & Maintenance Inc.

### **General Contractors**

Home Prep

### **Painting Contractors**

Kasey Swaim Painting

### **Vehicle Maintenance Contractors**

Russ' Auto Detailing

Recruitment of new Clean Water Business Partners involved calling potential CWBP's to query and invite them to participate in program. Surveys and pledges were reviewed with potential new partners. Contacts and data were tracked. Onsite visitations and phone interviews were performed to discuss and answer questions regarding the CWBP program.

## **Outreach**

Outreach included (see samples in Appendix A):

**TV Commercials** – Three runoff pollution prevention 30-second commercials: One addresses related landscaping pollution causes, such as fertilizers and pesticides. The other addresses auto fluids, and the third address general pollutants, such as litter, pet waste, car washing (soap, etc.). The commercials are broadcast in Spanish and English.

**Radio Commercial** – One radio 60-second commercial that addresses general pollutants, such as litter, cigarette butts, pet waste, car washing (soap, etc.). It is broadcast in Spanish and English.

**Daily/weekly newspaper ads** – 1. In past years the ad with the general runoff pollution prevention message has been printed (with image of car wash wastewater draining into the gutter). 2. This year a new ad that specifically targets the cigarette butt issue was printed. The ad reads: “Keep your butt out of the gutter.” This ad also includes the general message, “Water that flows into the gutters drains directly to the creeks.”

**Daily/weekly newspaper articles** – Press coverage is generated to encompass articles that cover various topics (e.g. calendar project – which includes the general messages such as, “Water that flows into the gutters drains directly to the creeks” and “If it isn’t rainwater, it doesn’t belong in the gutter.”)

**Posters** – 5 posters – Three of the posters contain the general messages with image of car wash wastewater draining into the gutter, image of oil spill on 1-Mile Big Chico Creek swimming area, and image of landscaping tools and toad in the back of work truck. One of the posters targets the cigarette butte issue and reads, “Keep your butt out of the gutter,” and “Water that flows into the gutters drains directly to the creeks.” The fifth poster was developed under the 08-09 contract and targets the car wash issue.

**Murals** – One mural is remaining in downtown Chico. It conveys the general message, “Thank you for keeping Chico’s clean! Water in the gutters drains directly to the creeks.”

**Booth at a public event** – All outreach messages are conveyed at the booth, with the main message, “Water that flows into the gutters drains directly to the creeks.”

**Information from Third-Grade Classroom Outreach** - All messages are conveyed in the classroom presentations, with the main message of, “Water that flows into the gutters drains directly to the creeks.” The students receive calendars and detailed information regarding potential pollutants, litter, cigarette butts, pet waste, car washing (soap, etc.), fertilizers and pesticides.

**Chico Clean Creeks Calendar** – The outreach information is comprehensive and includes inspirational images of beautiful local urban creek scenes. Creek Watch Hotline information is listed in the calendar. The calendar refers readers to additional

information sources for those who choose to educate themselves further. It also provides information on all of the City storm water management programs, such as the Clean Water Business Partnership Program and the Clean Creeks in the Classroom Program.

**Internet website** [www.keepchicoclean.org](http://www.keepchicoclean.org) - The website is comprehensive and includes images of all of the outreach programs, outreach materials downloads, TV and radio commercials in Quick Time files, Clean Water Business Partnership Program surveys and pledges, Creek Watch Hotline information for reporting illegal dumping, links to the Butte County Storm Water Management Program online. The website includes links to other sites that provide additional information for those who choose to get involved and educate themselves further, such as the link to the Big Chico Creek Watershed Alliance Citizen Monitoring Program and the UC Davis Integrated Pest Management website.

**Storm Drain Markers** – The markers convey the simple message, “No Dumping – Drains to Creek.” Program logos and outreach messages integrate the marker for message emphasis, and to facilitate the connection of the educational message to the physical location of the storm drains.

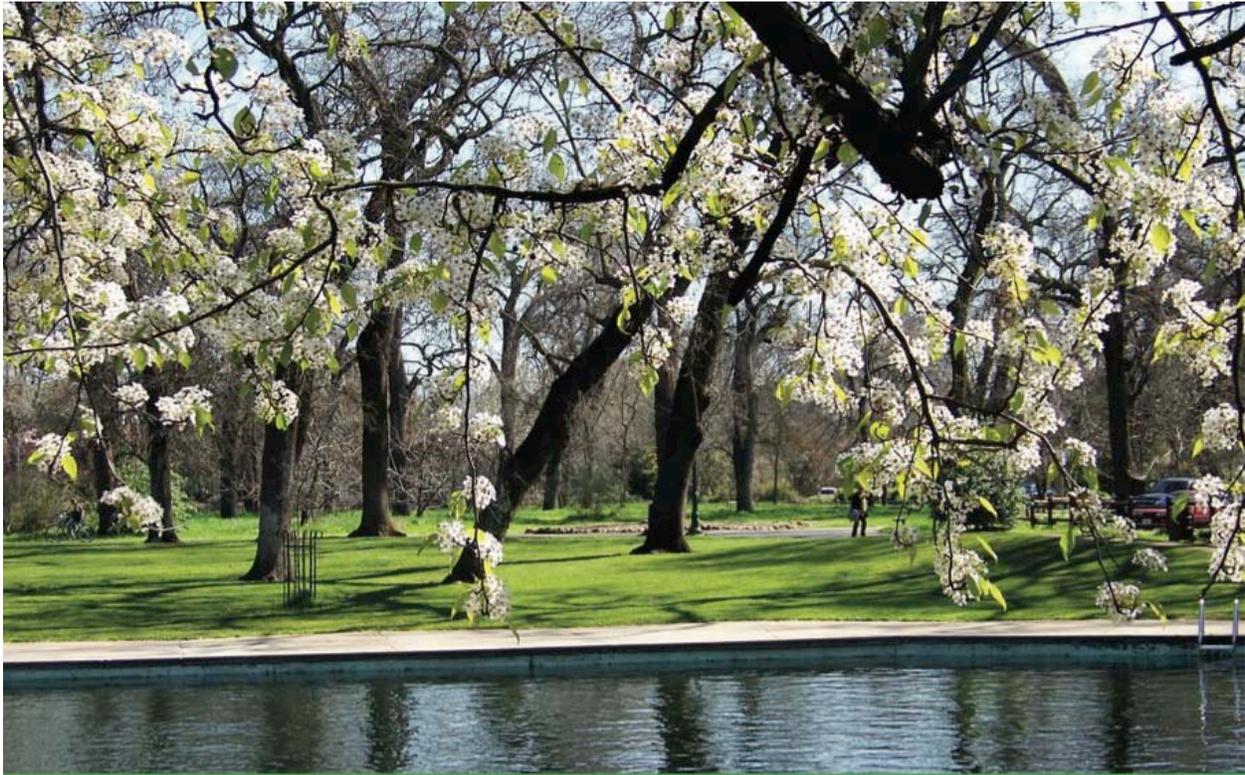
**Outreach Activities:**

Downtown Chico bars, restaurants, and coffee shops were targeted with promotional material on cigarette butt and street litter runoff pollution prevention. Pocket ashtrays were disseminated to potentially high-impact bars and coffee shops in the downtown area, and one-on-one outreach was provided to business owners and managers. The dissemination of the pocket ashtrays was announced in the runoff pollution prevention PSA, which appeared in the weekly *Synthesis* newspaper for two weeks in May 2009.

Clubs and schools were targeted to raise awareness and provide solutions for potential runoff pollution resulting from car wash fundraisers. Sorority, youth and high school student groups were provided with runoff pollution prevention information and alternatives to current car washing practices. PowerPoint presentations were given on 5/15, 6/5 and 6/26/09 to high school and Boy's & Girl's Club charity car wash groups. The Program Coordinator, Jennifer Oman, provided field assistance for the groups to set-up environmentally friendly car wash sites on 5/15 and 6/28/09.

Hands-on educational runoff pollution prevention activities were provided at the CUSD Chico Science Fair in March 2009. Jennifer Oman, Program Coordinator, provided Enviroscape model interactive demonstrations to school groups attending the fair, reaching an additional 120+ CUSD students.

## Calendar and Brochure/Post Card/ Poster Dissemination



April 2009

Top photo by Sharon Nilsson (One Mile)

Thumbnail by Larry Leigh (spawning Salmon)

### Calendars

(see sample Calendar Appendix A)

2,500 Calendars were printed. Copies were distributed as follows:

Home & Garden Show - 600

Butte County Library - 400

CARD - 300

City of Chico employees - 500

City of Chico Park Department volunteers - 25

Clean Creeks in the Classroom staff and volunteers - 20

Butte College students and Biology Instructors - 115

Big Chico Creek Watershed Alliance volunteers - 100

Local businesses for general public - 45

Third-grade students and teachers participating in Clean Creeks in the Classroom Program - 250

CORE Butte Charter School high school students working on the Car Wash fundraiser issue - 25

Ten calendars to each of the following CWBPs - Total 120

- Floral Native Nursery
- Geffray's Gardens
- Chico Carpet Cleaning
- Sunrise Carpet
- Lincoln Cleaning
- Friends of Butte Creek
- CleanRite BuildRite
- Dugan's Landscaping
- Ewing Irrigation
- KCL Custom Landscapes
- Performance Design & Landscape
- Russ's Auto Detailing & Windshield Repair

### **Post Cards**

(see sample Post Card Appendix A)

2500 postcards were printed and 1,650 have been disseminated. The remaining 850 will be distributed from the Library and the CARD Center to clientele throughout July and August 2009.

- Library - 100
- Silver Dollar Fair - 1,000
- Boys & Girls Club - 50
- Local businesses - 400
- Butte College students - 100

### **Posters**

(see sample Poster Appendix A)

62 posters were printed and distributed:

Downtown Chico stores, shops, restaurants, bars.

2-3 blocks within the vicinity of 5th Street & Ivy Street.

Various stores, restaurants, bars near intersection of East Ave & Cohasset.

Panhellenic Sorority Meeting 5/4/09

## **Pocket Ashtrays**

(see sample Pocket Ashtray Appendix A)

A press release printed in the Synthesis weekly notified the public to watch for the pocket ashtrays at local bars and coffee shops in May 2009. (see Press Release Appendix A). 245 Pocket Ashtrays were disseminated to the following downtown Chico locations and sorority group meeting in May 2009: (5 were kept for documentation purposes)

1. Panhellenic meeting 5/4/09 - 20 pocket ashtrays (and 10 Keep Your Butt Out of the Gutter posters for display in sorority houses)
2. Thursday Night Market and Silver Dollar Fair booths - Only 5 were distributed due to concern over whether people were 18 and over and also most people would not disclose whether or not they were smokers.
3. U-Bar - 30
4. Lost on Main - 25
5. Duffy's - 30
6. 33 Steaks, Booze & Jazz - 20
7. The Naked Lounge Coffee Shop - 20
8. The Banshee - 25
9. La Salles - 40
10. The Town Lounge – 30

### **Pocket Ashtray Research and Networking:**

- Researched smokeless ashtrays & contacted Phillip Morris to inquire about funding provision of tobacco product receptacles. They declined to assist.
- Contacted the American Lung Association of Chico and found they were very interested in partnering to keep cigarette butts out of streets and gutters. Supportive of idea to collaborate with artist community for creation of atheistically pleasing cigarette receptacles for business, especially in areas of high use or sales of cigarette products (bars, restaurants, convenience stores).
- Contacted Behavioral Health in Chico to discuss client involvement in programs to educate and increase visibility in community regarding cigarette butt pollution prevention.

## Pollution-Free Car Washes

A pilot outreach for pollution-free car washes was conducted in 08-09 as part of the SWM EOP. Ten high school students from CORE Butte Charter initiated the outreach and an educational PowerPoint was produced.



CSUD Summer  
School Pollution-  
free Car Wash  
Fundraiser  
presentation  
June 26<sup>th</sup> 2009

CSU Chico Intern, Kimberly Chrisman assisted Jennifer Oman to provide a presentation on Friday, June 26<sup>th</sup> to two CUSD classes, approximately 50 students. These were high school-aged students attending Marsh Junior High for a summer session. Students were introduced to the website, TV commercial, PowerPoint on car wash fundraisers, and the Enviroscope model. Students were given brochures and postcards. The emphasis was on pollution-free car washes as the students are of age to drive, and due to the possibility that they may help with car wash fundraisers in the future. They were receptive to the messages.

June 26<sup>th</sup> 2009

CUSD Summer School Science- Student quotes taken from presentation notes

Elizabeth Anderson: "Wash your car on the lawn, because then it goes on the grass. Use a sprayer on the hose to save water."

Selinna Kapu: "Putting stuff in the gutter doesn't help you nor the water."

Andrew Ide: "Stuff like oil and soap can go into gutters and ruin the wildlife and habitat by making the water hazardous."

The Chico Boy's and Girl's Club scheduled a training for their entire staff to raise awareness and develop resources to hold pollution-free car wash fundraisers in the future. The training occurred on June 5, 2009. The club held their first pollution-free car wash on June 28, 2009 at the Shell station on the corner of Nord Avenue and West Sacramento Street.

Boys and Girls club setting up the storm drain cover and dam for the first pollution-free car wash in Chico, June 28, 2009



In addition, areas for car washes that would reduce runoff pollution were sought. These areas are suggested for future car wash fundraiser sites:

- Empty lot north west corner hwy 32 & 1<sup>st</sup> St.
- Empty lot north west corner hwy 32 & 5<sup>th</sup> St.
- Area along East Ave, south side of street just west of Esplanade (near OSH).

**Storm Water Web Site [www.keepchicoclean.org](http://www.keepchicoclean.org)**

A website was maintained on the existing City of Chico's Storm Water Management Education and Outreach Website. The web site was improved and updated with current events, CWBP's, and educational material. All postings to the web site were approved by the City prior to posting.

The website received a total of 7,078 visits throughout the year. It was highly utilized by the public and proved to be a successful method for disseminating information on Best Management Practices in keeping the creeks clean, for access to the Creek Watch Hotline, contact information for Clean Water Business partners, and access to the Big Chico Creek Watershed Alliance Citizen Monitoring Program.

### **Creek Watch Hotline**

The existing Creek Watch Hotline was maintained at Butte Environmental Council (BEC). The Hotline was a dedicated phone line and kept up to date with current phone numbers for individuals or department currently on the hotline. The number was listed on the web site.

The public is urged to report dumping, or other types of pollution to the creek witnessed.

### **Creek Watch Hotline Calls**

October 2008	9 calls
November 2008	14 calls
December 2008	5 calls
January 2009	6 calls
February 2009	9 calls
March 2009	14 calls
April 2009	19 calls
May 2009	17 calls**
June 2009	2 calls (as of June 17 <sup>th</sup> )

(\*\*Note from Butte Environmental Council office-- messages were erased on June 4<sup>th</sup>, but machine indicated that the tape was full—so more callers could have attempted to leave messages) Two more calls have been recorded since then.

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**Data Collection/Survey Results**

**CONVENIENCE SURVEY 2009 REPORT:  
IMPACT OF STORMWATER MANAGEMENT  
EDUCATION AND OUTREACH PROGRAMS**

**By  
Dr. Diane E. Schmidt  
For  
Oman Communications  
and  
City of Chico, CA  
June 19, 2009**

## EXECUTIVE SUMMARY

The City of Chico contracted for a brief convenience survey on water pollution to provide mechanism for monitoring the veracity of previous and continuing outreach activities. The 2008 survey had 14 questions and the 2009 survey had 8 questions. The 2009, was administered at three locations to receive feedback on program effectiveness: The annual *Home, Garden & Antique Show* (seven hours on March 21, 2009), Downtown Chico's *Thursday Night Market* event (four hours on May 15, 2009) and at the *Silver Dollar Fair* event (five and half days from May 22-26, 2009). The purpose of the convenience survey was to provide a snapshot of whether educational outreach messages administered in 2006 and continuing in 2009 are still continuing to promote the program goal. The program goal for educational outreach efforts was to promote best management practices (BMPs) for prevention of urban runoff pollution. The objectives included:

- Improving awareness of runoff pollution issues.
- Increasing knowledge about pollution prevention.
- Fostering behavior changes consistent with BMPs.
- Modifying or creating supportive attitudes for water quality protection.

The results of the survey indicate that the goal of the outreach program continues to be met and the objectives continue to be achieved. Exposure to past and present outreach activities is associated with knowledge and awareness of runoff issues and causes of creek pollution. In addition, knowledge of where runoff from yards, gutters, street, and roads ends up is associated with exposure to educational outreach activities. Further, self-reported changes in handling of yard, household, and garden waste and materials is also associated with exposure to educational outreach activities. In particular, television commercial, booths at public events, and the storm drain markers are especially related to knowledge, awareness, and positive changes in respondent engagement in targeted best management practices. In sum, past and present educational outreach activities promoting best management practices for handling chemicals and waste from the household, yard, and garden have been highly effective in increasing awareness, knowledge, and use of these best practices.

## INTRODUCTION

The City of Chico contracted in 2008 and 2009 for a brief convenience survey on water pollution to provide snapshot mechanism for monitoring the veracity of previous and continuing outreach activities. The 2008 survey had 14 questions and the 2009 survey had 8 questions. The 2008 survey was administered in two locations to receive feedback on program effectiveness: Chico's *Thursday Night Market* event (four hours on May 15, 2009) and at the *Silver Dollar Fair* event (five and half days from May 22-26, 2009). The 2009 survey was administered at three locations: The annual *Home, Garden & Antique Show* (seven hours on March 21, 2009), Chico's *Thursday Night Market* event (four hours on May 14, 2009) and at the *Silver Dollar Fair* event (five and half days from May 20-25, 2009). The survey was offered to event attendees who passed by or stopped at the City of Chico *Storm Water Management Education and Outreach Program* (SWM EOP) booth staffed by Jennifer Oman, SWM EOP Coordinator. Give-aways including environmentally-friendly merchandise and a raffle were used as inducements to take the survey.

## BACKGROUND

The purpose of the convenience survey was to provide a snapshot of whether educational outreach messages administered in 2006 and continuing in fall 2008-spring 2009 are still continuing to promote the program goal. The program goal for the previous educational outreach efforts was to promote best management practices (BMPs) for prevention of urban runoff pollution. The objectives included:

- Improving awareness of runoff pollution issues.
- Increasing knowledge about pollution prevention.
- Fostering behavior changes consistent with BMPs.
- Modifying or creating supportive attitudes for water quality protection.

As part of the Chico Urban Streams Alliance (CUSA) two *Public Knowledge of Water Quality Surveys* (2005 and 2007) were administered to a cross-section of Chico residents and an *Education and Outreach Program 2006* (EOP) was designed to address urban run-off issues. Based on goals set by the coalition of Chico USA, the focus of the questions and the EOP were to address:

### ***POLLUTION RUNOFF FROM***

Fertilizers  
Pesticides  
Herbicides  
Cleaners  
Animal waste

### ***IMPROPER BEHAVIOR SUCH AS***

Discarded cigarettes  
Dumping trash in creek  
Motor oil not recycled  
Green waste in creek

The EOP involved the following activities over the 2006-2009 time periods (see Appendix E-A for full descriptions):

- Radio and television advertising.
- Posters and public murals.
- Internet site postings.
- Public events booths with give-away materials.
- Storm drain markers.
- BMP calendars.
- *Clean Creeks in the Classroom* program
- *Clean Water Business Partnership Program*

While the murals, storm drain markers, posters, and brochures are displayed in public spaces throughout the year, and the website is available online at all times, Oman Communications plans and implements a concentrated period of outreach annually in the spring. The calendar dissemination is the "kick-off" to the outreach effort (January through March - culminating at the *Home & Garden Show*), followed by a "blast" of messages via the radio and TV commercial broadcasts in April and May; the booth outreach at the *Home & Garden Show*, *Thursday Night Market*, and the *Silver Dollar Fair*; *Clean Creeks in the Classroom* program implementation in 3rd Grade classrooms March-May (the program is also implemented in the fall); and newspaper ads in May (2 newspapers are selected annually).

## 2009 CONVENIENCE SURVEY

While the previous surveys in 2005 and 2007 were conducted on random samples of Chico residents by telephone interviews, the 2008 and 2009 surveys were conducted with event attendees using a paper survey. Just as in 2008, for the 2009 survey respondents were self-selected and filled out the survey in the presence of Ms. Oman. Each respondent received, in return, a booth give-away prize in return for completing the survey.

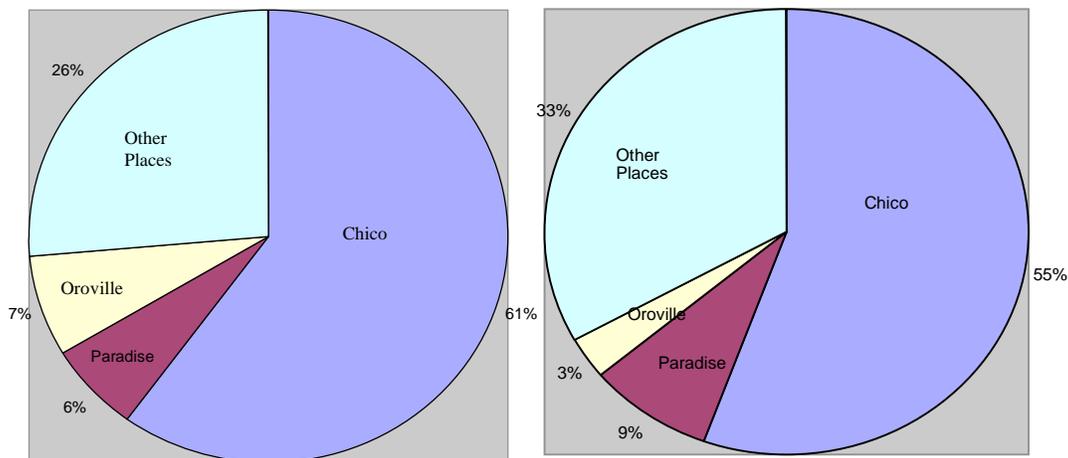
The 2008 and 2009 Convenience Surveys are almost identical with a few exceptions. The total number of surveys completed in 2009 is 200, with most questions answered and very few missing or no answers. Most of the survey questions were derived from the survey in 2007 and included questions regarding awareness or knowledge of water drainage, runoff, and dumping issues, as well as questions about exposure to educational messages and behavioral changes related to viewing the messages.

Although the 2009 survey results cannot be compared with the results from the 2005 or 2007 surveys because the data were not collected in the same way, the results from the 2008 and 2009 surveys can be compared. To shorten the survey and improve clarity, a number of redundant questions in the 2008 survey were deleted for the 2009 survey to create a one-page survey instrument. In addition, the question in 2008 about the storm drain markers was an independent question (q11) and in the 2009 survey, the storm drain marker question was integrated with a list of educational message sources in question 6. An additional option regarding the Internet site was also added to the list of sources for outreach education messages (see Appendix E-B for a copy of the 2009 survey. Appendix E- C has an annotated Codebook for 2008 and 2009 data as they were merged for this project). Finally, the question concerning changes in activities to prevent pollution as a result of the outreach messages was reorganized in the 2009 survey to reflect the difference between what respondents do now to prevent pollution and what they no longer do. The available responses are basically the same; the order in which the respondents view them is different.

### Snapshot of Respondents

The survey included only one demographic question which was the zip code of the respondent. As the Figure 1a shows, in 2008, 61 percent of the survey respondents are Chico residents, 13 percent are Paradise and Oroville residents, and the rest are from other places. As Figure 1b shows, in 2009, 55 percent of the survey respondents are Chico residents, 12 percent are Paradise and Oroville residents and the rest are from other places. This shows that the results are based on predominately Chico resident opinions and the distribution of respondents between the two surveys is somewhat similar although there are more respondents from outside of Chico in 2009 than there were in 2008. To assure that the data were not skewed differently because of the slight reduction of Chico residents, the data were compared between the full and the Chico only data. There was no considerable difference in the distribution of responses.

Figure 1a: 2008 Zip Code Distribution of Respondents      Figure 1b: 2009 Zip Code Distribution of Respondents



## Educational Messages

Both the 2008 and 2009 survey included one question to identify which respondents have been exposed to past or present educational outreach messages, and in what format they were exposed to these messages. Respondents were asked:

*(2008 q10) (2009 q6) Which of the following messages about keeping our gutters and local creeks free from pollution (such as litter, auto fluids, pet waste, fertilizer, and/or pesticides) did you hear or see recently? (Check all that apply)*

In this question for both the 2008 and 2009, respondents had 9 different media options to choose from and could list other messages viewed or seen. In the 2009 survey, the storm drain and Internet site options were added to the list. Most of those who checked the “other” option listed events such as Chico Clean up Day, Endangered Species Fair, or storm drain markers in their answers, in addition to identifying similar items to those listed. Using just the 9 media options found in both the 2008 and 2009 surveys, Figure 2 shows that 75 percent of the respondents viewed or heard 1-3 messages. This suggests that many respondents were exposed to multiple messages about keeping the creeks free of pollution. Although there was a slight increase in the percentage of those who did not see the messages, which is understandable given that the percentage of Other (non-Chico) respondents increased as well. It is encouraging that there is a persistent core of messages (1-3 educational sources) that respondents remember viewing or hearing.

Figure 2: Educational Messages Viewed or Seen

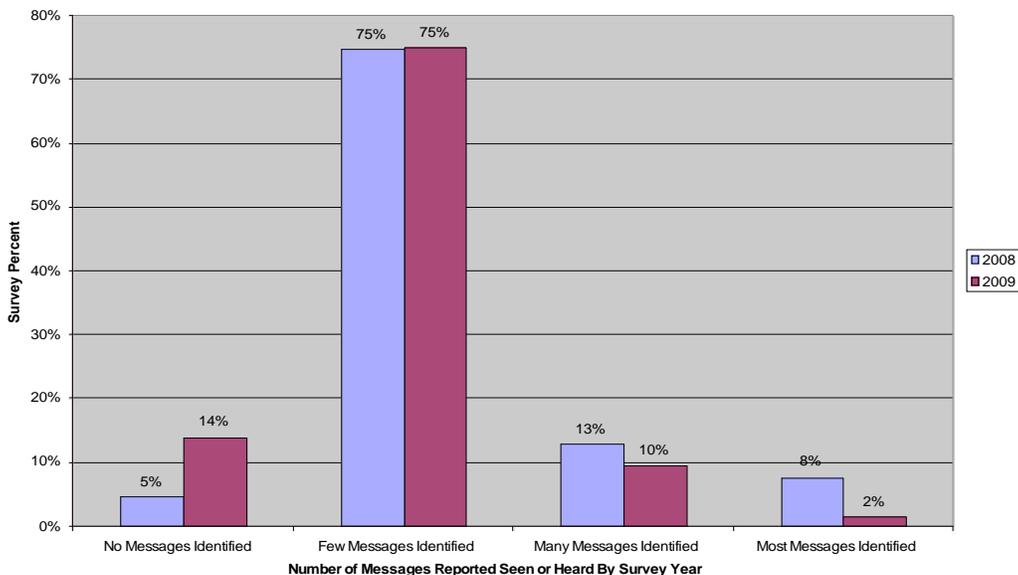
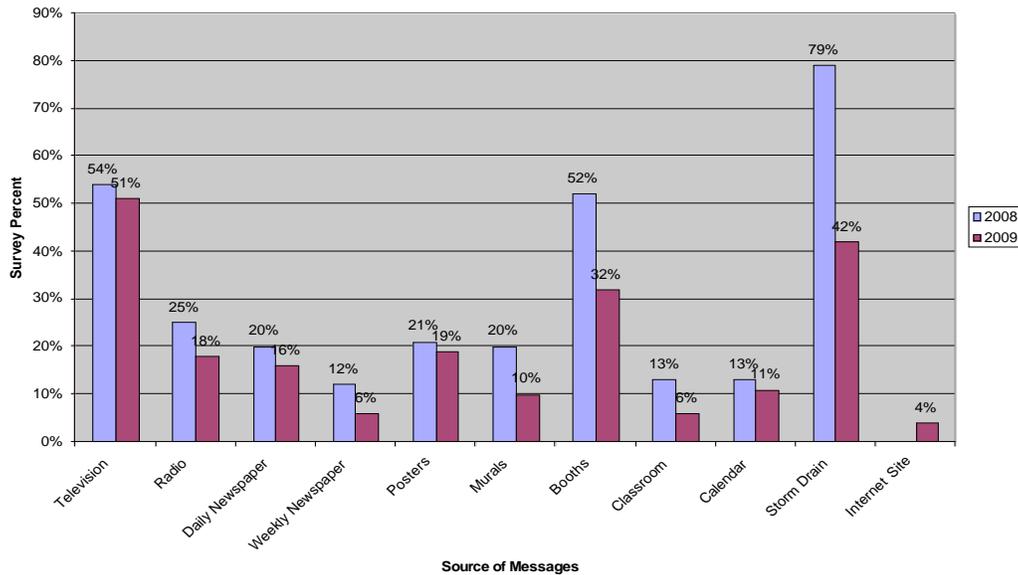


Figure 3 shows the percentage of respondents who checked off each of the items on the list for each survey. The greatest exposure seems to have come from television, storm drain markers, and booths at public events as outreach sources. As Figure 3 shows, 51-54 percent of the respondents identified having seen or heard messages from television. Finally, 19 to 25 percent of the respondents identified seeing or hearing messages from the radio, daily newspapers, and posters.

Figure 3: Percentage of Respondents Reported Seeing or Hearing Messages By Source

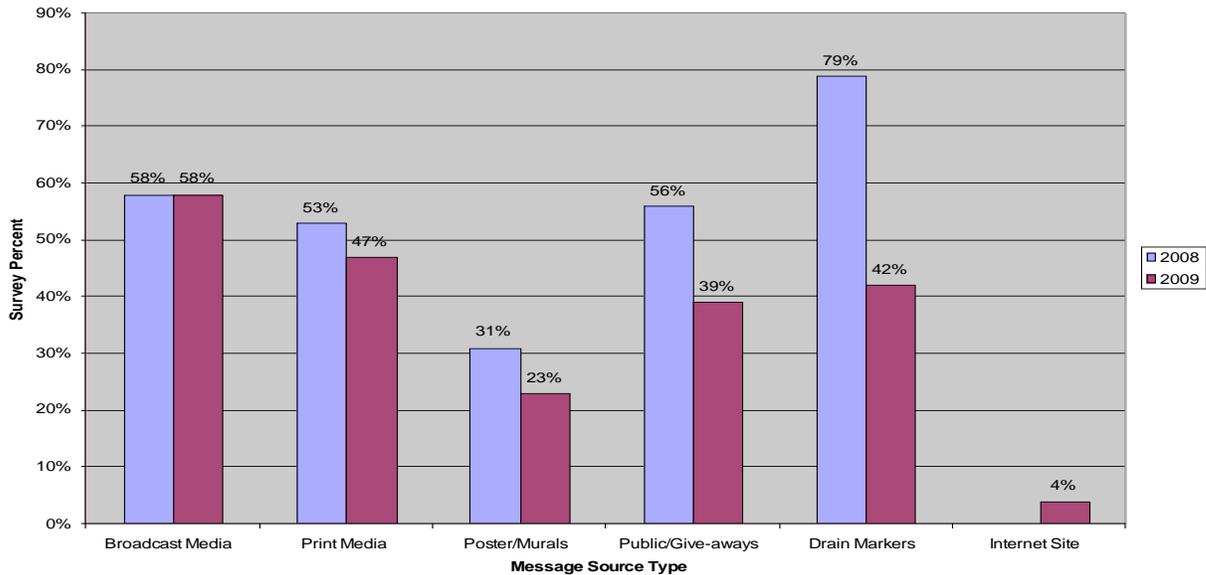


Although the percentage of respondents that reported having seen or heard messages at booths or saw the storm drain markers dropped in every category from 2008, booths at public events and the storm drain markers are still important components of the educational outreach plan. The drop from 2008 to 2009 in the percentage of respondents identifying that they had seen or heard the messages may be a result of the question wording. Although the question wording stayed the same, the question asks the respondent to identify messages they had heard or seen *recently*. The word *recently* was perfectly appropriate for the 2008 survey when most each type of the messages were fairly new to the community. By 2009, the murals, posters, and storm drain markers, for example, would not necessarily be messages the respondent saw recently, but may have been seen within the last two years. Only the messages in Broadcast media, Print Media, and the Public Events have been routinely *recent* in characteristics. Ironically, many respondents (78 percent in 2009) did not choose *Booth at a public event* even though they all (100 percent) were administered the survey in a booth at a public event! The word *recently* is ambiguous enough as to suggest that some respondents may have seen or heard the messages, but did not indicate such because they did not do so *recently*. Perhaps the question should be changed so that respondents identify those messages they saw *recently*, with recently defined as within the past year, and then asked if they *ever* saw the messages. This is perhaps control for those respondents who thoughtfully distinguish between present and past in their interpretation of the question.

Alternatively, the drop in the percentage of respondents identifying storm drain markers as source may be result of change in how the question about storm drain markers was asked. In 2008, the respondents were asked specifically about the storm drain markers, whereas in 2009, it was at the end of an 11 item list. Nevertheless, the percentage of those respondents identifying storm drain markers as a source of information is still an impressive 42 percent.

Further, as seen in Figure 4, using data combined by type of media, messages seen through broadcast media were checked by 58 percent of the respondents. The percentage of respondents identifying print media ranged from 47-53. Public events were the sources for 39 to 56 percent of the respondents, and 23-31 percent of the respondents viewed or heard the messages through viewing posters or murals. Among the sources of outreach messages viewed or seen, broadcast media, print media, public events, and storm drain markers are the predominant media accessed by most of the respondents.

Figure 4: Percentage of Respondents Viewing or Seeing Messages By Message Type



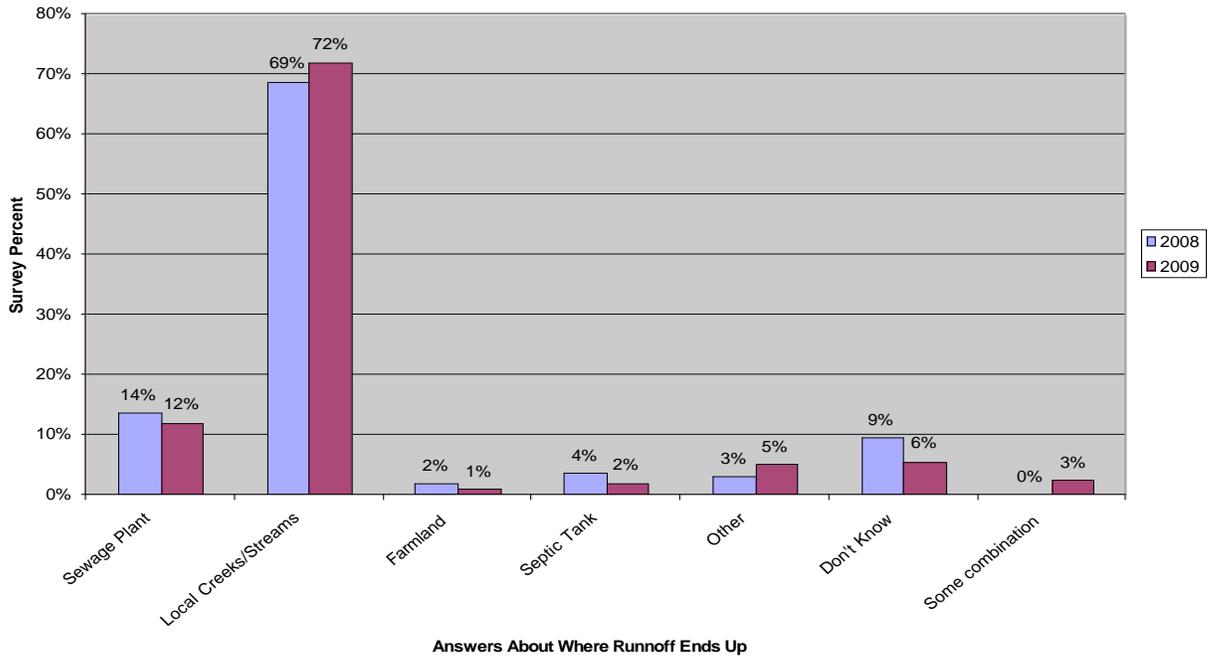
#### Awareness and Knowledge of Water Drainage and Runoff

Both surveys included two questions about the respondent's awareness and knowledge about where water drainage ends up in the community. The survey results suggest that most of the respondents correctly identified the difference between where runoff and waste water ends up. This is not surprising given the depth and breath of outreach messages in the past and current programs.

**Runoff water.** Respondents were asked (*q1*) *In your opinion, where does most of the runoff water from your yard, gutter, street, or road end up?* Figure 5 shows the distribution of respondent opinion about where runoff water ends up. The survey shows an increase from 69 to 72 percent of the respondents correctly identified that the runoff ends up in the local creeks and streams. Less than 10 percent did not know where the runoff water went, and a few answered that it went into the ground water or some other combination of local creeks and other places<sup>1</sup>.

<sup>1</sup> Some of the respondents failed to understand that they were to choose one response and they basically answered the question as though it said "check all that apply." We created a separate variable for those types of answers.

**Figure 5: Respondent Knowledge of Where Runoff Ends Up**



More specifically and interestingly, as seen in Figure 6a, of those respondents who correctly identified that the runoff ends up in the creek, 60 percent of the respondents in 2009 report having seen a few messages (one to three message sources), which is up from 52 percent in 2008. Storm drain markers and the Internet site responses were not included in this comparative because the Storm Drain Marker and Internet site responses were not in the summary data for 2008.

**Figure 6: Knowledge of Where Runoff Ends Up By Number of Outreach Messages Identified (Does not include Storm Drain Markers and Internet)**

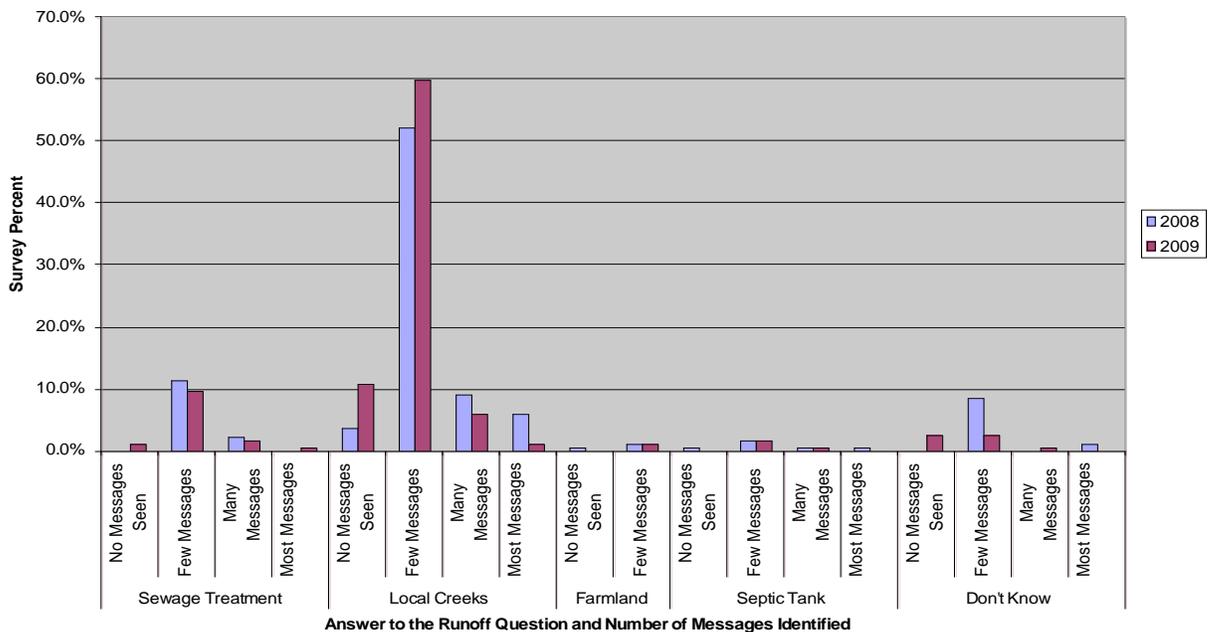
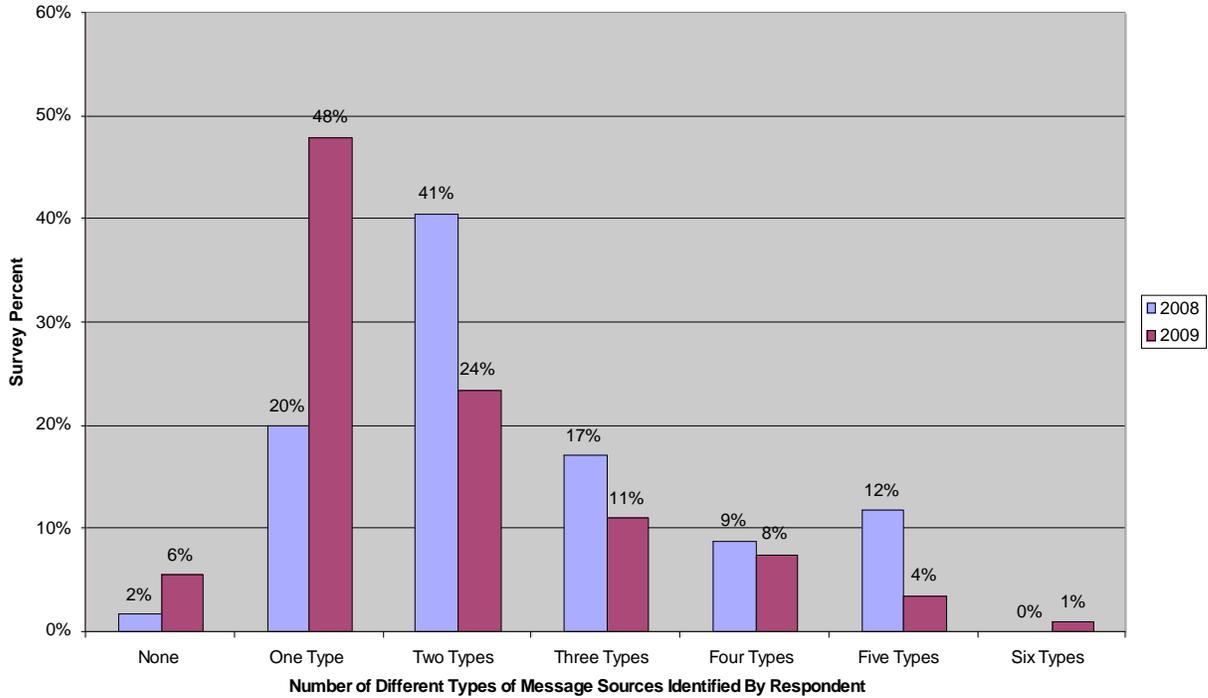


Figure 7 provides additional information about respondents by examining the type of media

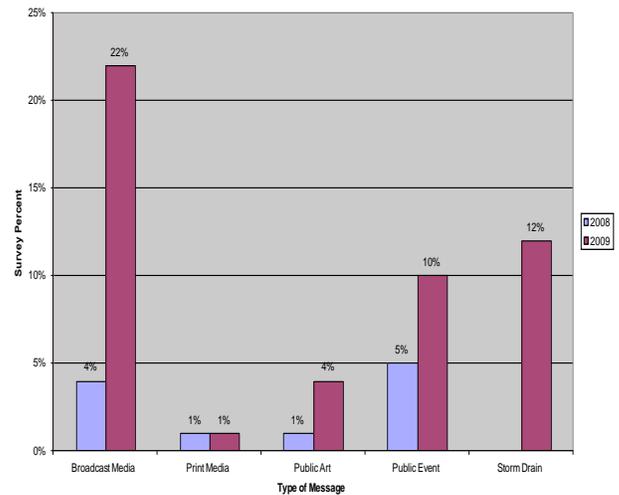
identified as the source of recent information about pollution. Close to 50 percent of the 2009 respondents identified one type of source, which is up from 20 percent in 2008.

**Figure 7: Number of Different Types of Message Source Identified (Broadcast, Print, Public Art, Events, Drain Markers, and Internet Site)**

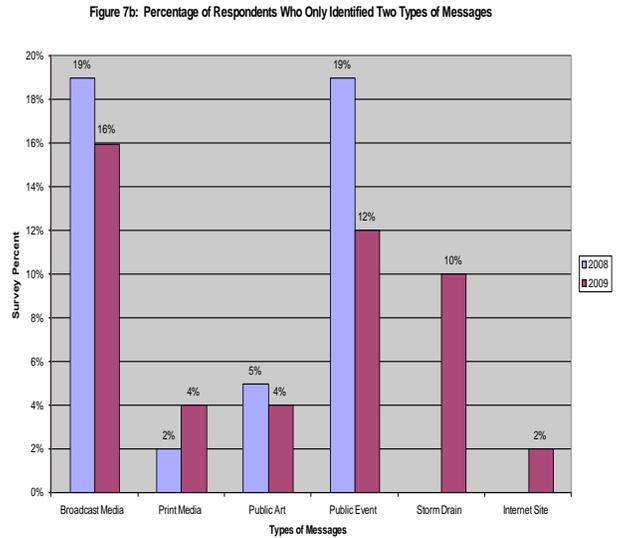
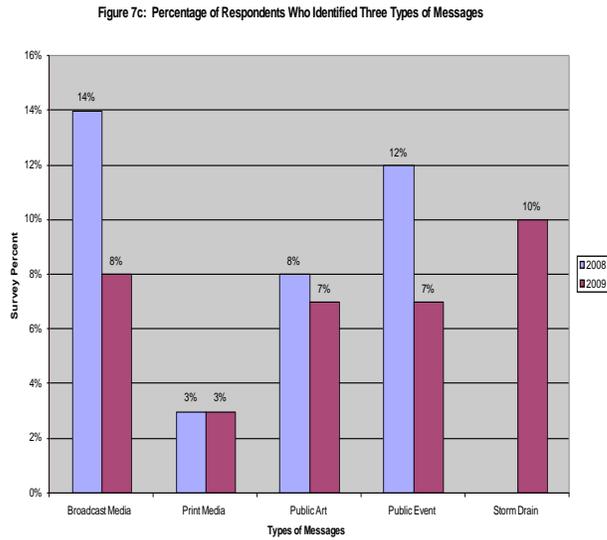


Figures 7a-7c, break down the types of messages into the three most frequently mentioned types<sup>2</sup>. These figures show that Broadcast Media is the predominant source of messages for those respondents who identified one to three types of media. After Broadcast media, Public Events and Storm Markers are the most prevalent sources mentioned. Notably, in Figure 7a, the percentage of respondents identifying Broadcast Media as the only source increased substantially from 4 percent in 2008 to 22 percent in 2009.

**Figure 7a: Percentage of Respondents Who Only Identified One Type of Message**

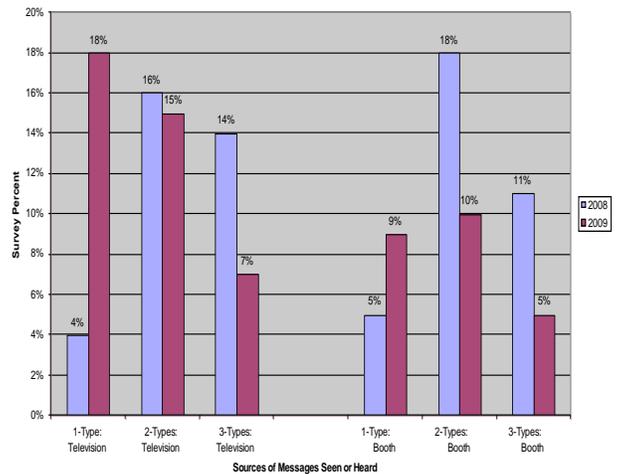


<sup>2</sup> The Internet Site was not chosen by those respondents identifying One Type or Three Types. Only 7 respondents selected the choice of Internet Site as a source of their information about pollution.



**Figure 7d: Percentage of Respondents Who Saw or Heard Messages on Television or From a Booth at a Public Event and Who Only Identified One, Two, or Three Sources**

More specifically Figure 7d shows that it is information from Television and Public Event Booths that dominate the memories of the respondents. Of those respondents that identified Television alone as the source, the percentage of respondents increased from 4 percent in 2008 to 18 percent in 2009. Of those respondents who identified Booths at Public Events as a single source of information, the percentage of respondents increased from 5 percent in 2008 to 9 percent in 2009. Clearly the media “blasts” prior to administering the survey in 2009 at the Public Event Booth appears to have had an important and durable impact on the recall of respondents about sources viewed or seen about pollution.



Now, how do these results relate to respondent knowledge about where water run-off ends up? Taking the results from analyses of Figures 7a-7d, Figure 8 shows a cross-tabulation between number of different types of messages viewed or heard by the respondent. Of those respondents who correctly identified local creeks as the place where run-off ends up, 36 percent or over a third of the respondents also identified one outreach source for information about pollution.

**Figure 8: Knowledge of Where Runoff Ends Up  
By Number of Different Types of Message Source  
(Broadcast, Print, Public Art, Events, Drain Markers, and/or Internet Site)**

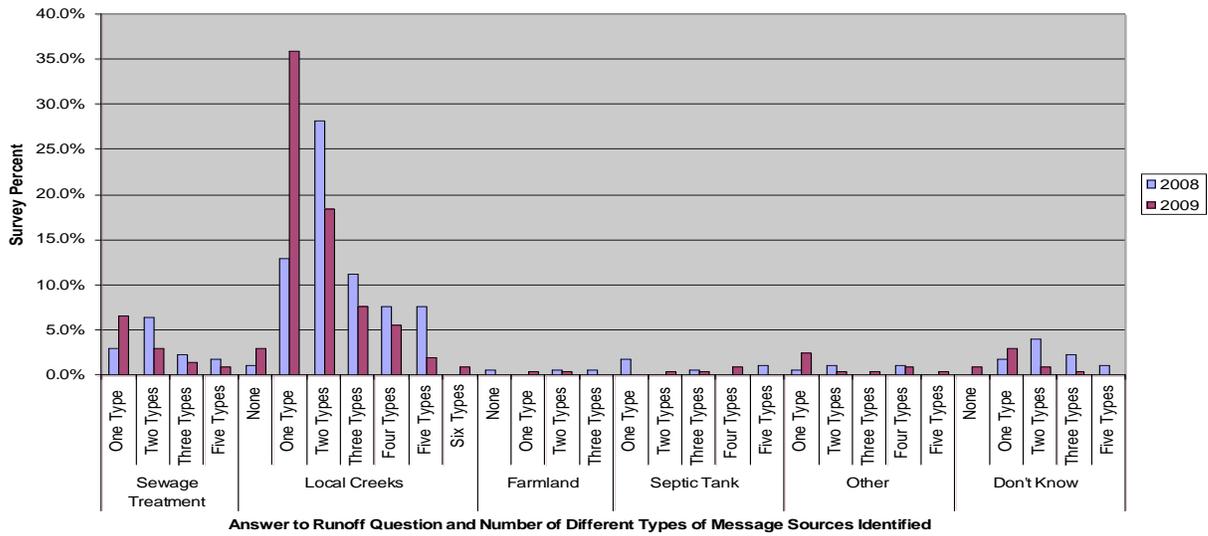
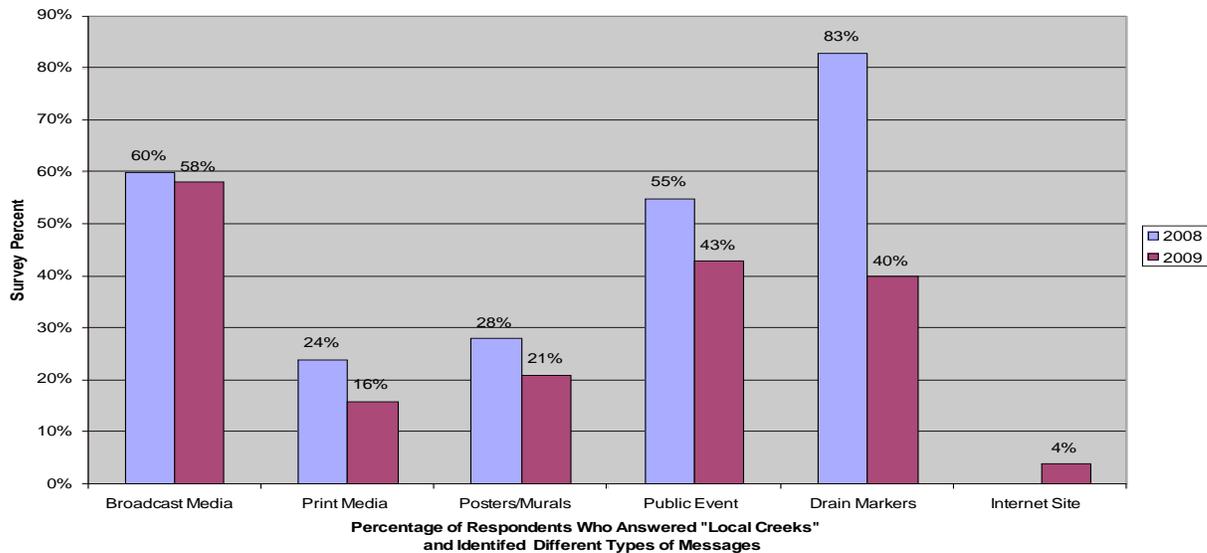


Figure 9 shows this same relationship from another perspective. Clearly respondents who answered that local creeks are where run-off ends up also identify Broadcast Media and Public Events as outreach sources of information about pollution of local creeks.

**Figure 9: Percentage of Respondents Answering "Local Creeks"  
By Type of Outreach Message**



In sum, the data in Figures 6-9 are strong indicators of the veracity and durability of the effect of Broadcast Media and Public Events for increasing awareness and knowledge of runoff issues, and in particular, the data suggest that Television commercials and Booths at Public Events are the driving forces for creating a knowledge base within the community.

**Waste water.** Respondents were asked (q2) *In your opinion, where does most of the waste water from flushed toilets, kitchen sink, and bathtub drainage end up?* Figure 10 shows the distribution of the respondent opinion about where waste water ends up. The survey shows that over 76 percent of the respondents in each survey correctly identified that waste water goes into the sewage treatment or septic tank, while slightly over 20 percent incorrectly identified that the waste water went into the streams, creeks,

or farmlands.

**Figure 10: Respondent Knowledge of Where Waste Water Ends Up**

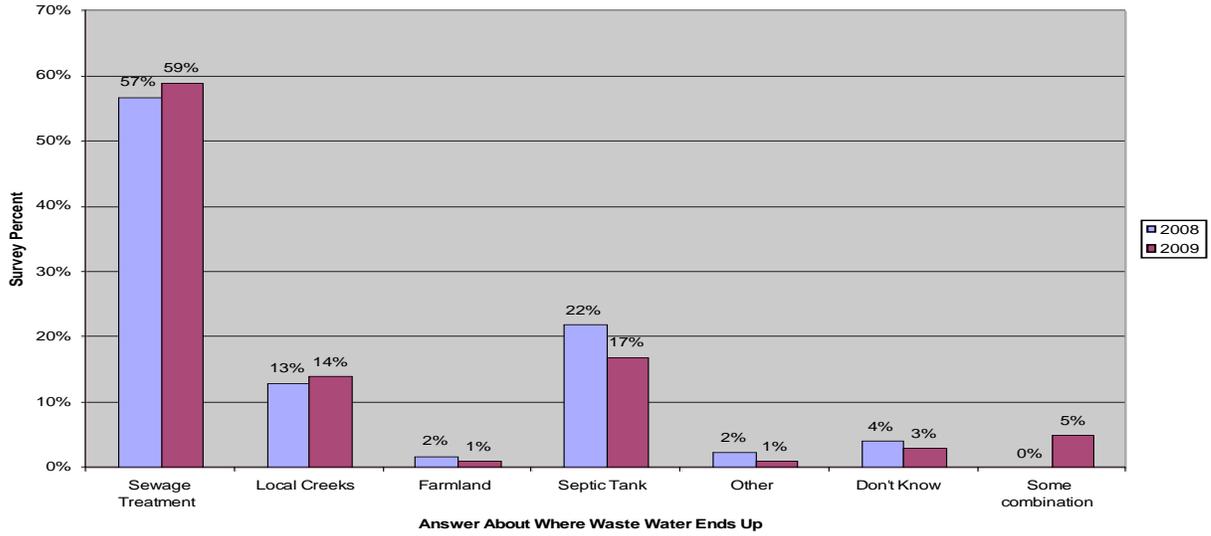


Figure 11 shows a closer examination of the relationship between knowledge of where waste water ends up and messages seen or heard. Over 60 percent of the respondents in 2009 correctly identified Sewage Treatment Plant and Septic Tanks as the place where waste water ends up who also identified seeing or hearing a few messages (1-3 reported).

**Figure 11: Respondent Knowledge of Where Waste Water Ends Up By Number of Messages Identified**

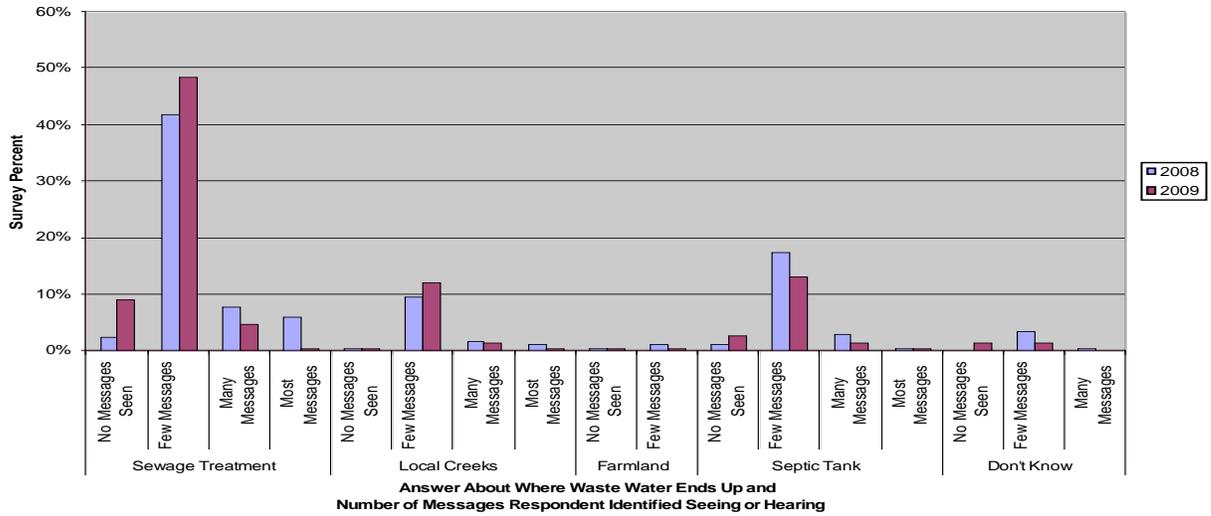
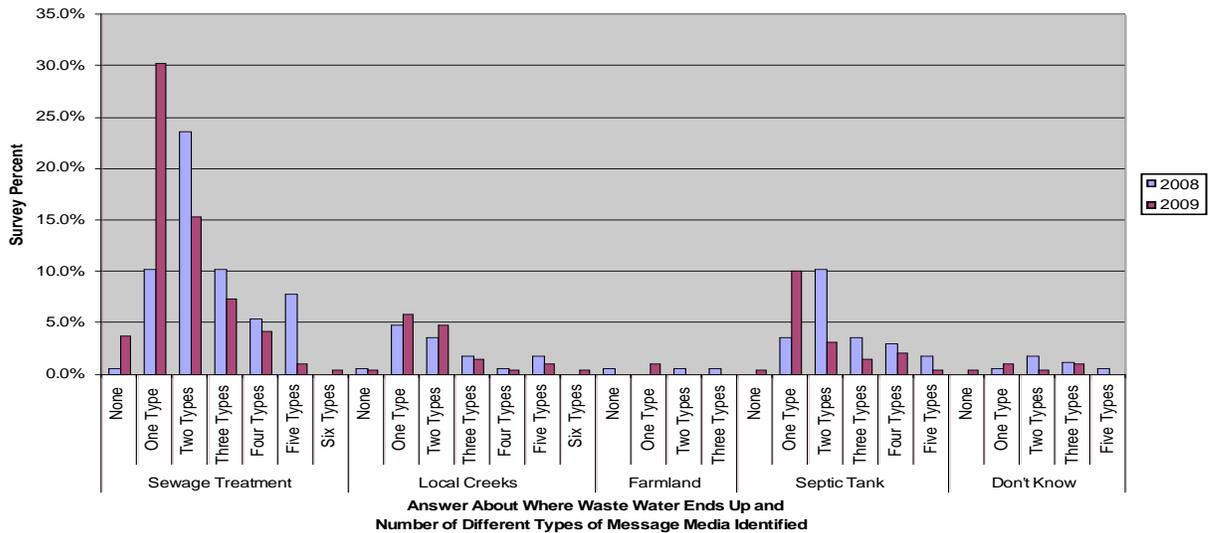


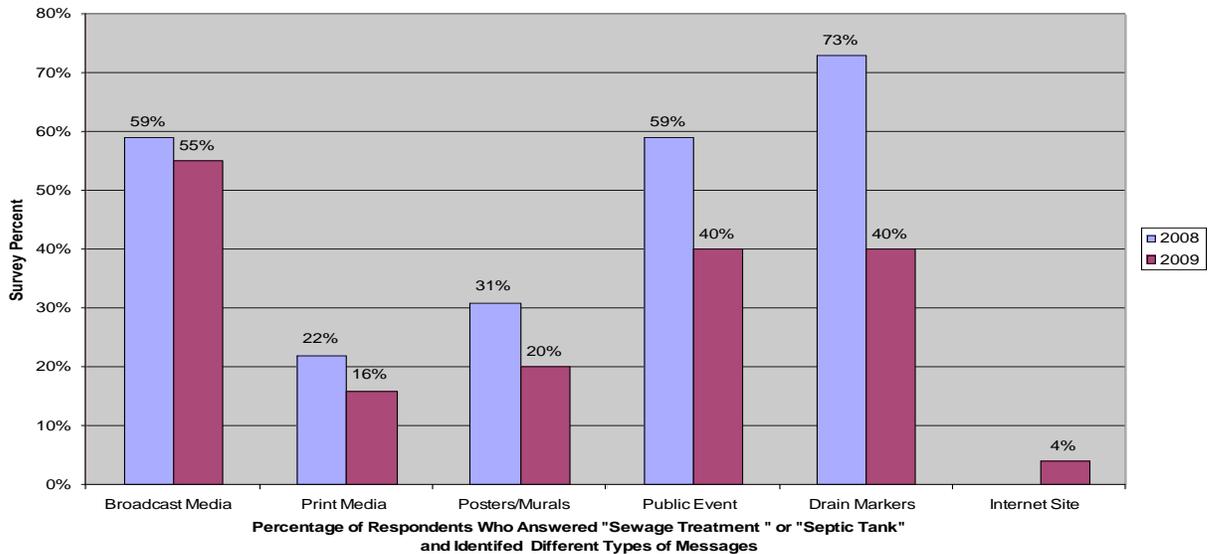
Figure 12 shows that of the different types of messages that respondents reported having seen, like the results concerning run-off, those respondents that correctly identified Sewage Treatment Plant and Septic Tanks also reported seeing a single type of outreach media. Over 40 percent of these respondents identified having one seen one type of message.

**Figure 12: Respondent Knowledge of Where Waste Water Ends Up  
By Number of Different Types of Messages Identified  
(Broadcast Media, Print Media, Public Art, Public Events, Drain Markers, and Internet Site)**



Finally, Figure 13 further refines the relationship between respondent knowledge of where waste water ends up and messages seen or heard. Of those respondents who correctly identified Sewage Treatment Plant or Septic Tank, over 50 percent continue to refer to Broadcast Media, and at least 40 percent identify either Public Events or Storm Drain Markers, as the sources of their information about water pollution.

**Figure 13: Percentage of Respondents Answering "Sewage Treatment" or "Septic Tank" By Type of Outreach Message**



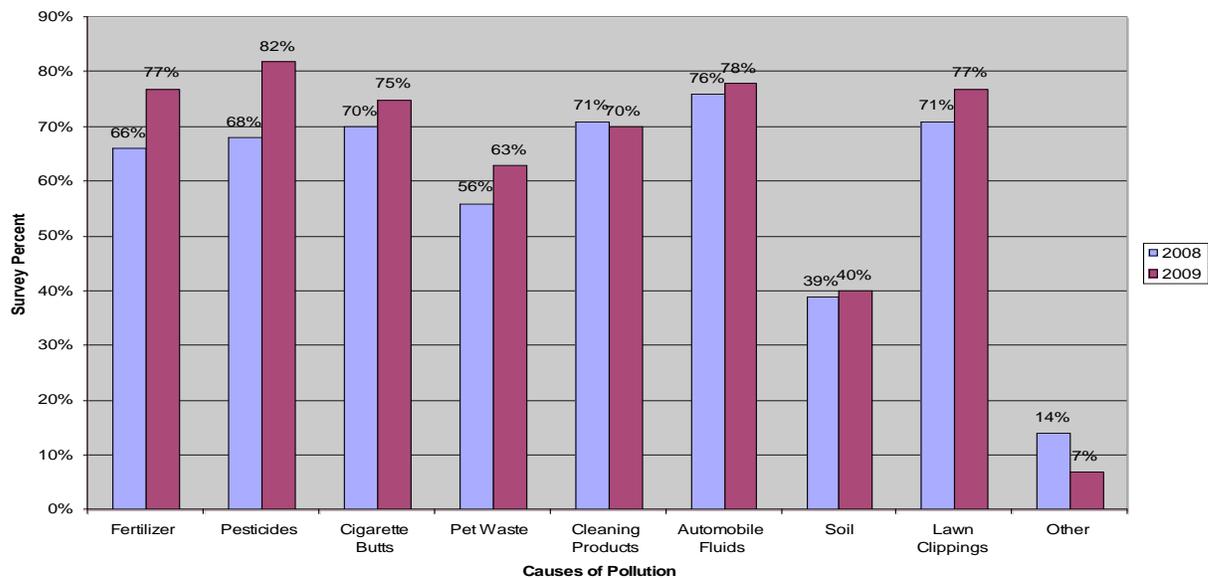
In sum, the data in Figures 10-13 provide additional evidence of the veracity and durability of the effect of Broadcast Media, Public Events, and Storm Drain Markers for increasing awareness and knowledge of waste water issues. These data validate the results in Figures 5-9 indicating that Broadcast Media and Public Events are important public outreach education tools, and particularly Television and Booths at Public Events as steadfast and effective components of an educational outreach program.

## Awareness and Knowledge of Causes of Creek Pollution

The survey included questions that ask respondents to identify pollutants from a list as well as their opinions about particular items on the list. Various media outreach messages particularly targeted pollution from fertilizer, pesticides, cigarette butts, pet waste, cleaning products, automobile fluids, soil, and green waste. TV commercials focused on either pollution from pesticides and fertilizers, or automobile fluids, or general pollutants such as litter, pet waste, cleaning products (i.e. car washing). Radio commercials targeted general pollutants. These broadcast media messages were direct and used concrete language identifying the offending behavior or products. Alternatively, the newspaper ads, posters, murals, and booth events focused on more artistic, abstract, and creative messages about the harmful effects of pollutants. The survey results indicate both knowledge and awareness of materials known as pollutants, particularly those pollutants directly mentioned in the broadcast media messages. The results suggest a much larger percentage were knowledgeable or aware of pollutants which were repeatedly targeted in the outreach activities. Some of the less targeted items, such as soil and green wastes, had a smaller percentage of respondents who either recognized or thought of these items as pollutants for creeks and streams.

**Identification of causes of creek pollution.** Respondents were asked (q3) *Which of the following do you think causes pollution of our local creeks?* The respondents were then given a list of pollutants and asked to choose all those responses they thought causes pollution of local creeks. A summary of the results, as shown in Figure 14, indicates a large increase from 2008 to 2009 in the percentage of respondents that correctly identified pollutants in almost every response choice.

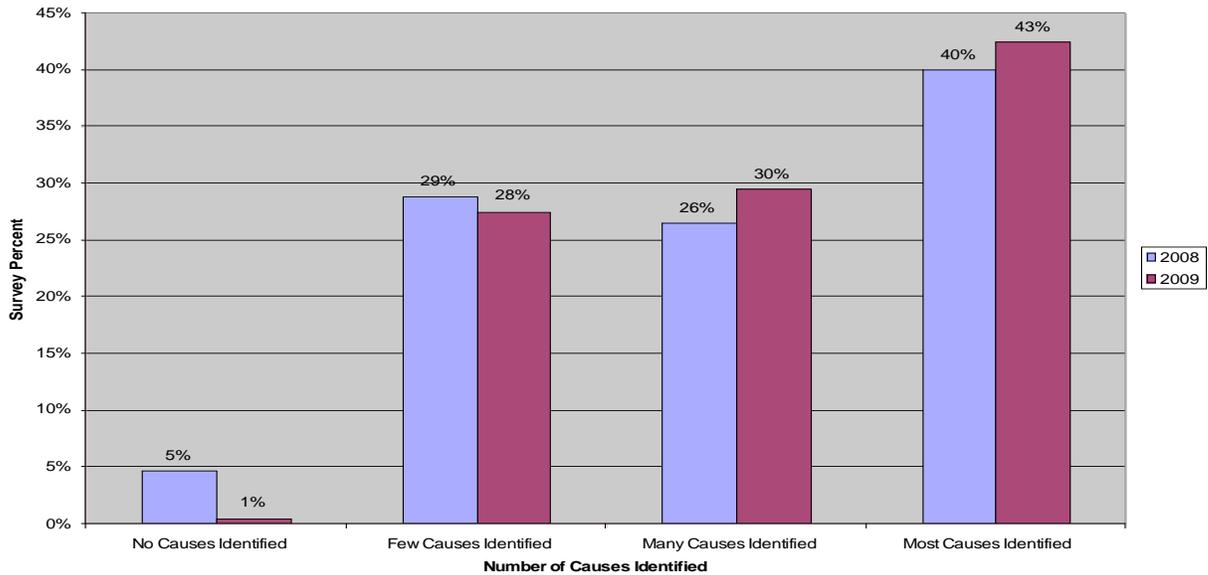
**Figure 14: Percentage of Respondents Correctly Identifying Causes of Creek Pollution**



Each of these response choices were expressly targeted in the broadcast media messages and indirectly targeted in the public art, public events, and BMP handouts. Over three-fourths (77 percent) of the respondents correctly identified fertilizer, pesticides, cigarette butts, automobile fluids and lawn clippings as pollutants. Almost two-thirds of the respondents identified pet waste as a pollutant. Over 70 percent of the respondents continued to identify cleaning products and 40 percent identified soil as causes of creek pollution.

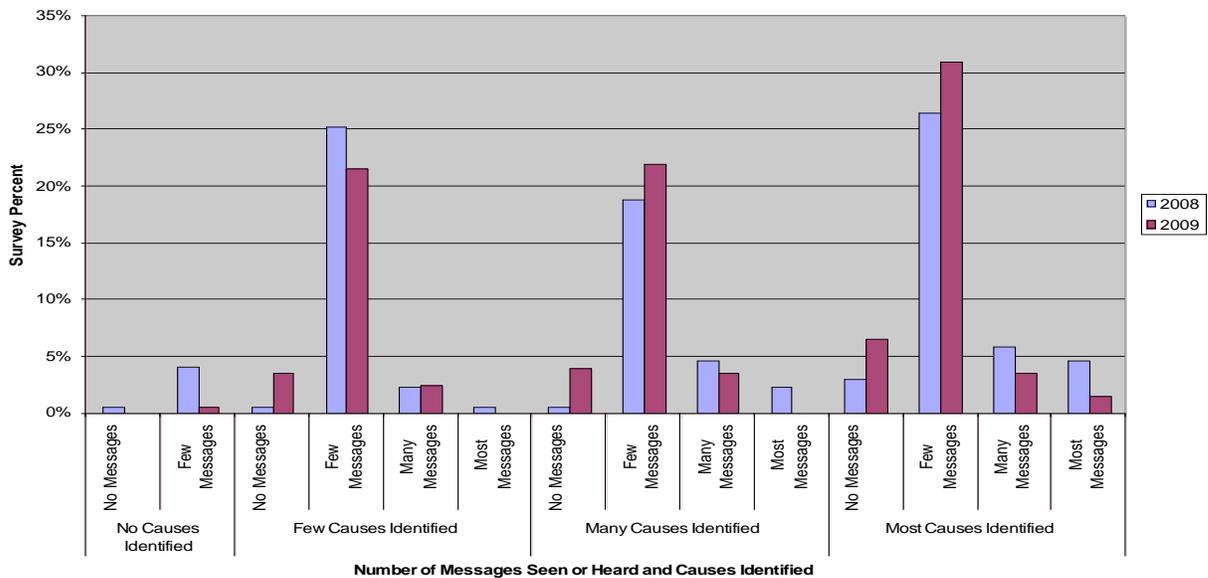
Another way to view respondent knowledge of pollutants is to examine the number of items correctly identified in q3. Figure 15 shows a notable drop, from 5 percent to 1 percent, of the respondents that were *unable* to identify any of the items from the list as pollutants. Almost all the respondents were able to identify at least a few items, whereas 43 percent of the respondents were able to identify most if not all of the items as pollutants. Both the categories of Many (4-6 causes) and Most (7-9 causes) showed increases from 2008 to 2009. This suggests that the respondents in the 2009 survey were more knowledgeable about causes of creek pollution than those in the 2008 survey.

**Figure 15: Number of Causes of Creek Pollution Identified Correctly**



**Educational messages and knowledge of causes.** One way to indirectly examine the impact of exposure to outreach messages is to check the relationship between knowledge and exposure. Using cross tabulation, Figure 16 shows the relationship between q3 (knowledge) and q10 (2008) and q6 (2009) (messages). Among the 2009 respondents who reported seeing or hearing a few messages (1-3 reported), also can identify a few causes (22 percent), many causes (22 percent), and most causes (31 percent). There is a notable increase in the percentage in respondents who can identify many and most causes in 2009. Given that all these causes of creek pollution were direct and indirect targets of a variety of outreach messages, particularly of the television and radio media “blasts” just prior to administering the survey, the results suggest that the outreach messages have been and continue to be important educational and knowledge building tools in the community.

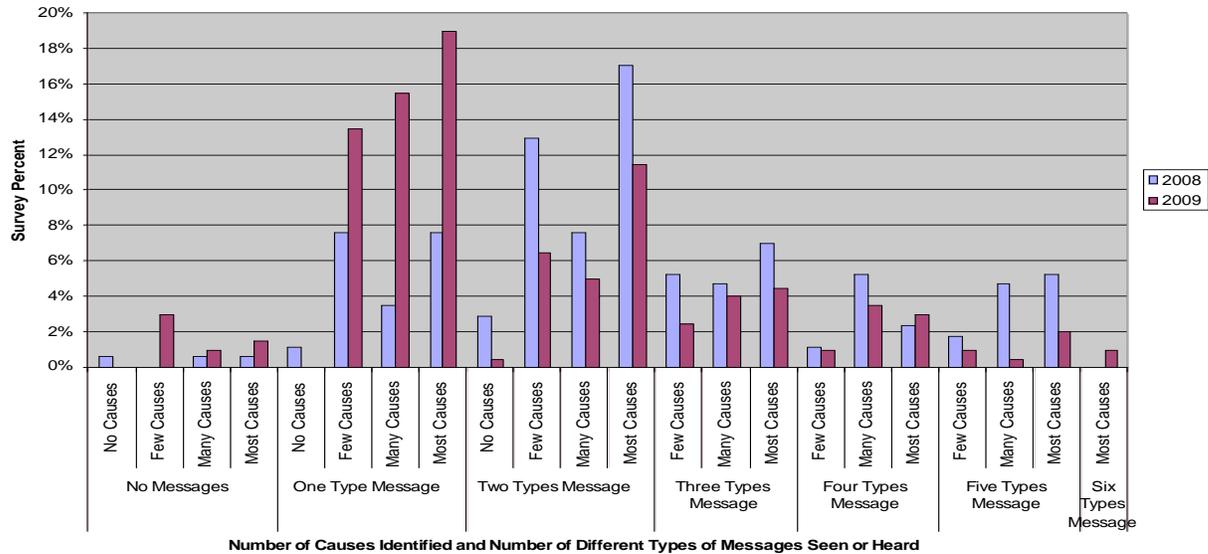
**Figure 16: Exposure to Messages and Knowledge of Creek Pollution Causes**



Finally, because it appears that just a few messages have had a very efficient and effective impacts on respond knowledge of creek pollution, Figure 17 show the cross-tabular relationship between how many

types of messages respondents reported having seen or heard and how many causes they were able to correctly identify.

**Figure 17: Percentage of Respondents Identifying Causes By Number of Different Message Types Seen or Heard**



As suggested earlier, one type of message, usually television, booths at public events, and the storm drain markers, is associated with high levels of respondent knowledge about run-off and creek pollution. The data shows that one type of message is associated with 2009 respondents' who know a few causes (14 percent), many causes (16 percent), and most causes (19 percent). Markedly, the percentage of respondents who reported hearing or seeing the messages recently and who cannot identify any causes is nearly nonexistent in the 2009 survey. Without a doubt, the outreach messages are creating a meaningful and durable knowledge base within the community.

### Direct and Indirect Measure of Behavior Changes

The primary goal of the previous and current outreach programs was to promote best management practices (BMP) for preventing urban runoff, particularly by changing behavior through educating the public so that their behavioral choices are consistent with these practices. The survey included three questions which directly or indirectly identify respondent behaviors that exhibit best management practices. These questions include:

*(q4) Do you consider the weather forecast before applying or having someone apply pesticides and fertilizers to your lawn, garden, or outside plants?*

*2008 (q5) Where do you wash your motor vehicle, lawn mower, camper, and/or RV? (Check all that apply)*

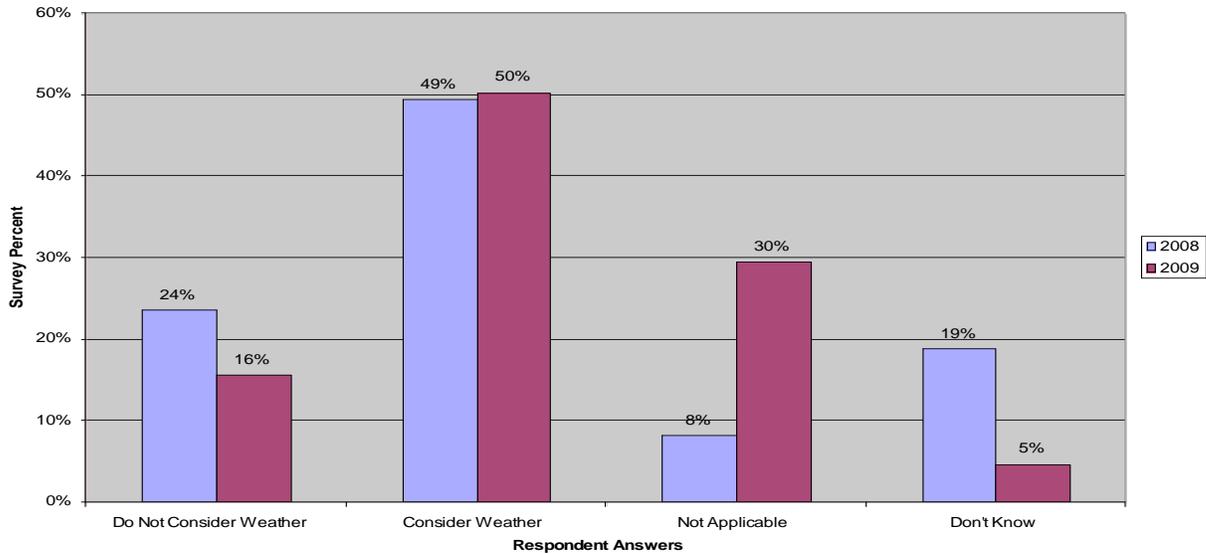
*2009 (q5) Where do you wash your motor vehicle, lawn mower, camper, and/or RV **most of the time**?*

*(2008 q13) (2009 q7) Which of the following activities have you changed as a result of local messages about protecting our creeks and streams from water pollution within the past year? (Check all that apply)*

**Checking the weather.** Proper use of pesticides and fertilizers has been the target of Broadcast Media outreach and of some public event outreach messages. One direct measure of whether behavior is consistent with BMPs is if the respondent checks the weather before applying lawn and garden care chemicals to minimize potential pollution through runoff due to rain (q4). As Figure 18 shows, half (50

percent) of all 2009 respondents of the respondents acknowledge that they checked the weather forecast before applying plant chemicals.

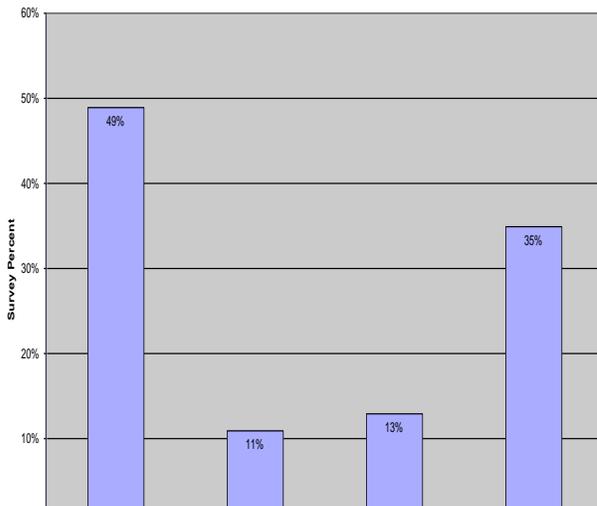
**Figure 18: Percentage of Respondents Who consider the Weather Before Applying Chemicals**



Only 16 percent of the 2009 respondents do not check the weather, which is down from 24 percent in 2008. Interestingly, the percentage of respondents who answered *Not Applicable* increased appreciably; this may be an indicator of a shift in housing choices, given that only home dwellers have lawns and gardens. Also of note, is the large decline in those respondents answering *Don't Know*, from 19 percent to 5 percent in 2009. This indicates that more respondents are demonstrating BMPs regarding use of fertilizers and pesticides in 2008 than 2009, and more are knowledgeable about the need to do so.

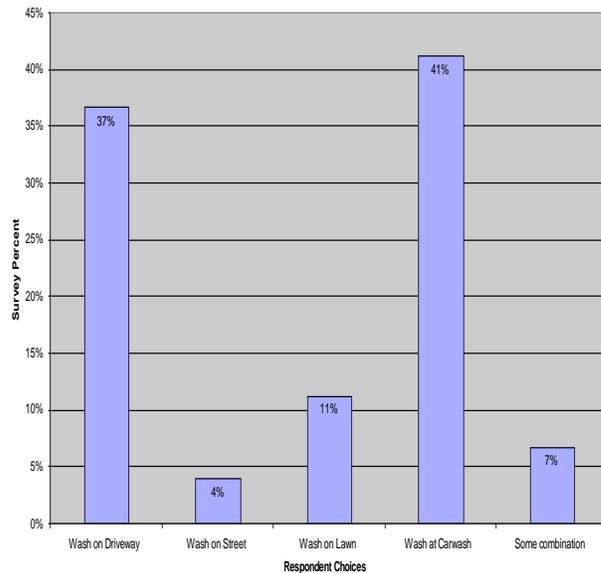
**Washing vehicles.** Run-off pollution from car washing (soap as a pollutant) has been the focus of a variety of high profile outreach messages, including Broadcast Media, Print Media, Public Art (posters and murals), and Public Events (especially the booths). Another direct measure of the effectiveness of these outreach messages in achieving BMPs is whether respondents are avoiding washing their vehicles where runoff could end up in the creeks through the gutters, as measured through q5 responses. As noted earlier, q5 was asked differently in 2008 with *Check all that apply* but in 2009 respondents were asked to choose one method they use *most of the time*. As seen in Figure 19a many 2008 respondents used the street (11 percent) or driveway (49 percent) to wash their vehicles; 35 percent of the respondents reported using a carwash, and only 13 percent reported using the lawn. In 2009 (Figure 19b), 37 percent of respondents reported using the driveway but only 4 percent use the street to wash their cars.

**Figure 19a: 2008 Where Respondents Wash Their Vehicles**



While the survey data from 2008 and 2009 cannot be compared due to question wording differences, there appears to be a larger percentage of respondents who use carwashes (41 percent). Although respondents were not asked to provide additional methods, many treated the question as though it was a *Check all that apply* format.

Figure 19b: 2009 Where Respondents Wash Their Vehicles



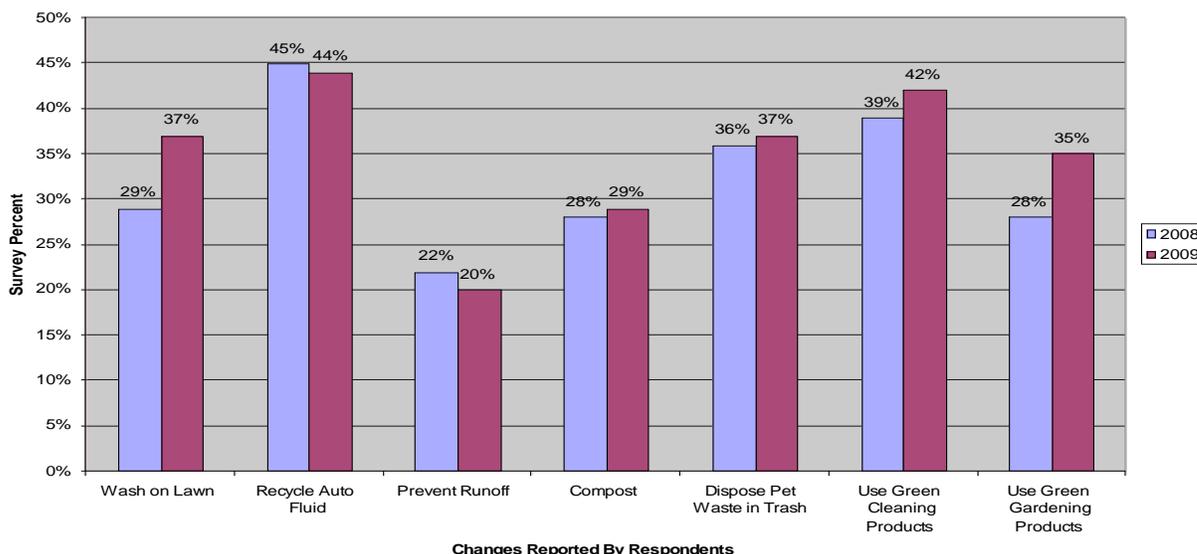
The reason the question was changed from 2008 was to force respondents into identifying which method they use the most. Clearly, many respondents use a combination of methods. Given the focus of the outreach messages on using the lawn and carwashes as best management practices, it is expected that the percentage of exclusive use of these places would be higher; it was neither in 2008 nor 2009. Perhaps the question should be divided into two parts where the first part asks respondents where they wash their vehicles most of the time, and then the second part asks respondents to report where else they wash their vehicles.

**Identified changes in behavior.** Questions q13 in 2008 and q7 in 2009 require the respondent to identify changes in their practices occurring after they viewed or heard messages. In 2008, prior to answering the q13, respondents were asked if they have made changes in activities after view any message about local water pollution and 49 percent of the respondents answered *yes*. In 2009, respondents were given the question in the negative as a choice toward the end after a 13 item list of activities that were changed in q7. The choice to check or not *I did not make any changes*; only **10 percent of the survey respondents said they did not make any changes**, which implies that 90 percent of the respondents in 2009 made changes. While these two questions are clearly not comparable because of question placement and question wording differences, it is suggestive that most respondents made changes in their activities after hearing or seeing messages about causes of local creek pollution.

Questions 13 (in 2008) and question 7 (in 2009) ask respondents to identify changes in activities or practices they made after hearing or seeing local messages about creek pollution from a provided list; they were asked to check all that apply to them. In 2008, the list was somewhat random, and not grouped into any particular categories or order. Both new practices and curtailed bad practices were listed together. To determine the difference between new positive behaviors and negative behaviors no longer practiced, in 2009 the list of activities were reorganized along **Now I do** (new practices) and **Now I do not** (behaviors no longer practiced). The descriptions of the activities stayed the same for the most part, with a few grammatical changes in a few of the items in the list. One descriptive word change, from *environmentally-friendly* to *green*, was made to more closely mirror popular culture terminology.

As seen in Figure 20a, increases in the percentage of respondents reporting that they now use BMPs as a result of local messages about water pollution are exhibited in all but one activity. In 2009, a greater percentage of the respondents indicate that they wash vehicles on the lawn, prevent run-off, compost, dispose of pet waste in the trash, and use green gardening or cleaning products.

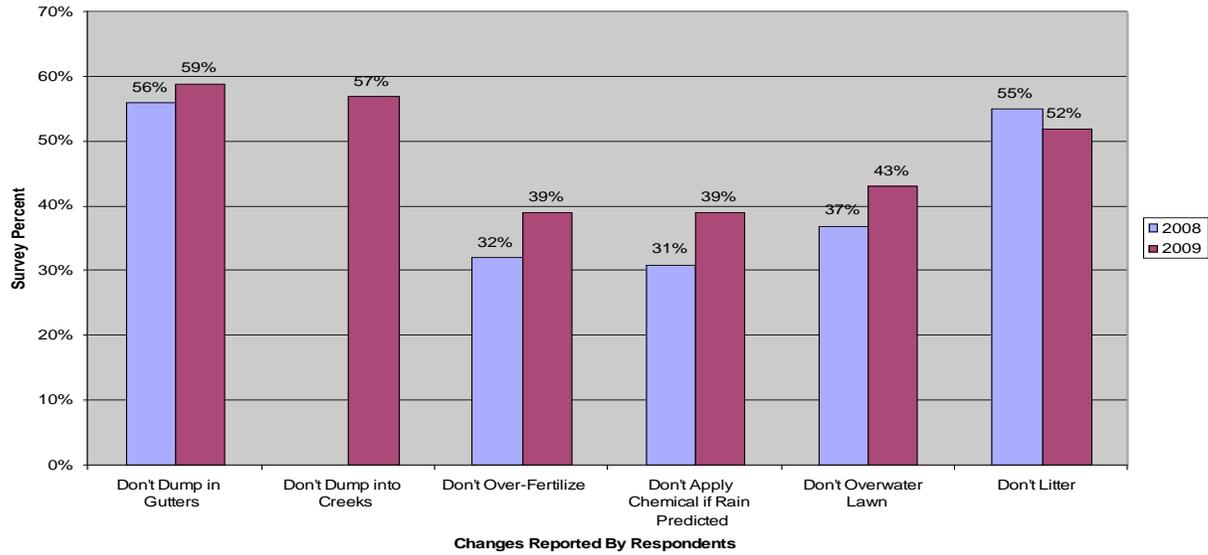
**Figure 20a: Self-Reported Changes As Result of Educational Messages:  
Activities Respondent Does Now As A Result of Outreach Messages**



The greatest increases are found in the percentage of respondents who now wash their vehicles on the lawn (37 percent) and those who now use green gardening products (35 percent). This is particularly encouraging because fertilizers, pesticides, and vehicle washing were primary targets of most of the outreach messages. Clearly, the past and present outreach messages have resulted in self-reported changes in how respondents handle household, yard, and auto care pollutants which could result in runoff pollution of local creeks and streams.

Likewise, respondents also self-reported that they have also changed practices that cause pollution. A greater percentage of 2009 respondents (ranging from 39 percent to 59 percent) report that they *Do Not*, as a result of local messages about pollution, dump in gutters, over-fertilize, apply chemical if rain is predicted, or over-water lawns. The response *Dump anything into creeks or streams* was not in the 2008 survey. A lower percentage in 2009 report that they *Don't Litter* but that is somewhat understandable, given that admonitions against littering are well-founded within American culture and many respondents may have already chosen not to litter prior to hearing or seeing outreach messages about littering.

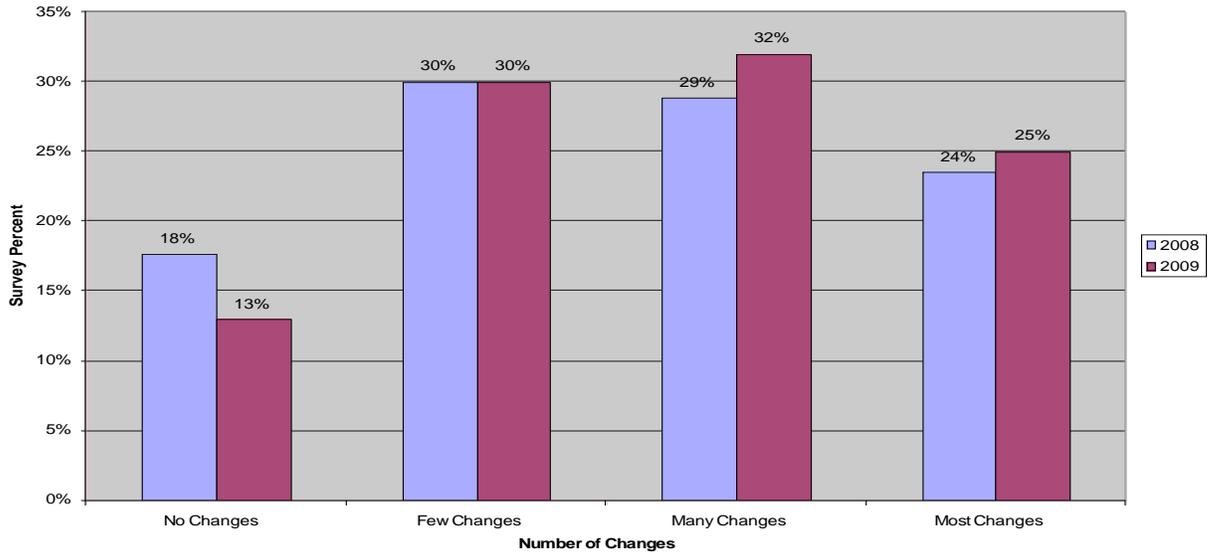
**Figure 20b: Self-Reported Changes As Result of Educational Messages:  
Activities Respondent Does Not Do Now As A Result of Outreach Messages**



It might be expected that the percentage of the respondents who acknowledge changing to good habits or breaking old habits should be higher; and indeed it could be. One problem that is not immediately apparent but could be depressing the percentage of those who embrace BMPs is that the question does not distinguish between those who have the opportunity to change their activities, and those who do not. More specifically, respondents who do not own vehicles, have a lawn, have a pet, have a garden, or smoke would only be able to choose changes involving green cleaning products, dumping (gutters or creeks), and littering with trash. Alternatively, the question does not provide an opportunity for those who already engage in BMPs to indicate that they already use these practices. This situation provides such a respondent the choice of not marking these or saying they do these activities now when in fact, they already did them prior to hearing or seeing messages. The question clarity might be improved by providing the options of *Not Apply* and *Already Do* or *Never Did* (respectively) so that the survey responses can be clearly identified for respondent changes when such changes can be made.

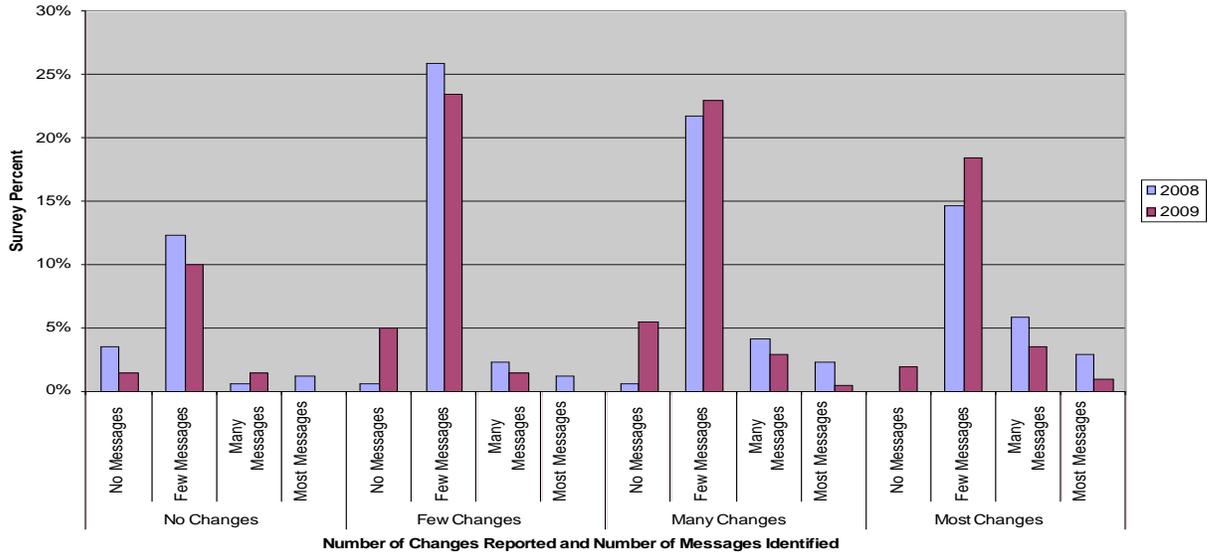
Further examination of the data suggests that more respondents in 2009 claim to have made at least one change as a result of local pollution messages than in 2008. Figure 21 shows that in 2009 only 13 percent of the respondents report no changes, while 30 percent report 1-3 changes, 32 percent report 4-7 changes, and 25 percent report 8-13 changes in the direction of the outreach messages. These data show that 87 percent of the respondents report changes in the direction of the outreach messages regarding BMPs for prevention of pollution.

**Figure 21: Percentage of Respondents Reporting Changes After Seeing or Hearing Messages**



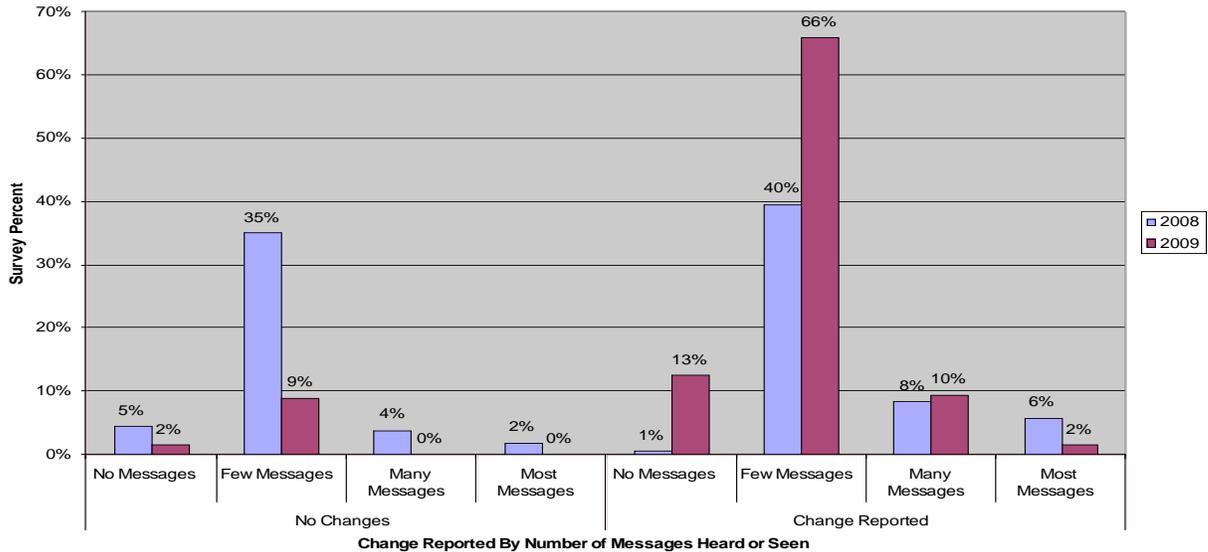
In a final examination of the veracity of the self-identified changes, Figures 22-24 shows the strong relationship between exposure to outreach messages (2008 q10) (2009 q6) and self-reported changes as a result of viewing those messages (2008 q13) (2009 q7). Figure 22 shows that 24 percent of those making 1-3 changes, 23 percent of those making 4-6 changes, and 19 percent of those making 8-13 changes also identified 1-3 messages in 2009. The percentage of respondents making *Many* and *Most* changes increased in 2009 from just a *Few* messages, while the percentage of those reporting no changes declined notably.

**Figure 22: Percentage of Respondents By Number of Messages Identified and Number of Changes Reported**



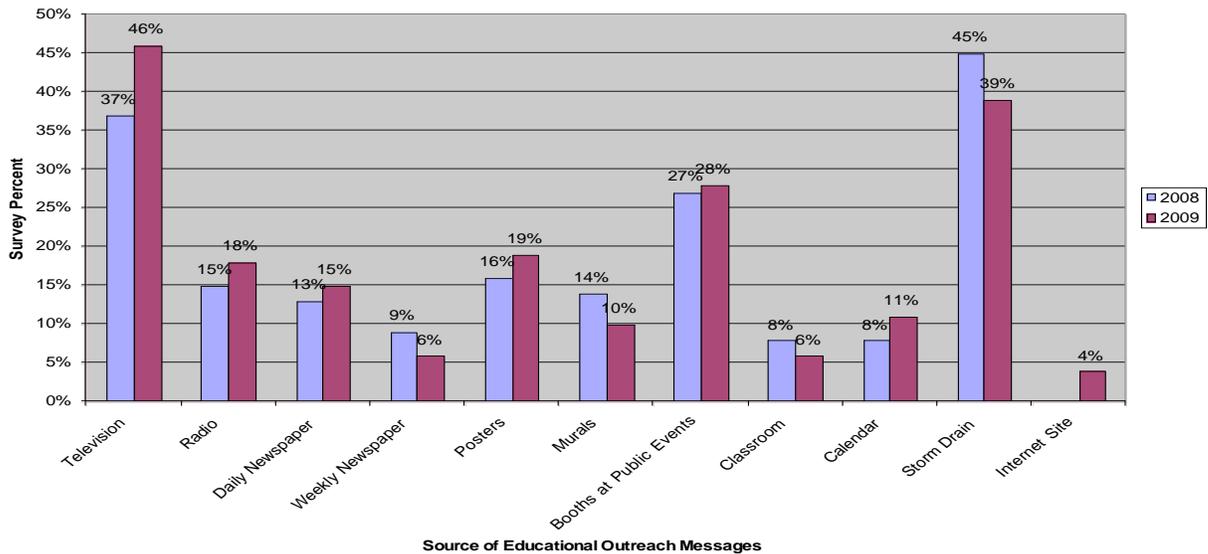
More specifically, according to the results in Figure 23, the percentage of respondents reporting making any changes at all increased from 40 percent in 2008 to 66 percent in 2009 for those respondents who identified having seen or heard only a few messages about protecting local creeks and streams.

**Figure 23: Percentage of Respondents Reporting Change in Behavior After Hearing or Seeing Messages**



More specifically and interestingly, among the types of messages heard or seen recently that are related to self-reported changes in behavior, the results in Figure 24 shows increases in the percentage of respondents reporting having made at least one change and who also reported having recently seen or heard outreach messages on television, radio, daily newspapers, posters, public events, and calendars. Nearly half of these respondents said they saw or heard television commercials, while 28 percent identified booths at public events.

**Figure 24: Percentage of Respondents Who Reported Change By Source of Messages Reported Seen or Heard Recently**



The storm drain markers, while showing a slight decrease (probably due to question placement as discussed earlier), still exhibit a strong presence, 39 percent. Ironically, despite that no ads were placed in daily newspapers, it seems that local news coverage of the outreach activities at public events is associated with those respondents who self-reported making positive changes to BMPs. Interestingly, while ads were placed in the weekly newspapers, the messages accessed on the Internet site (4 percent) are almost as strongly related as the messages in the weekly newspapers (6 percent) to those respondents who identified

at least one change.

As noted earlier, the percentage of respondents having seen or heard any of the outreach messages may be depressed due to the inclusion of the word *recently* in the question. The question about changes made (q7) does not constrain respondents to their interpretation what is defined as *recent*; the question only limits the respondent to *within the past year*. Still, even that limitation may depress responses to murals and storm drain markers, which were placed in the community almost three years ago. As such, even given the possibility that the data may be a bit depressed due to time context ambiguities, the data in Figure 24 strongly supports the assertion that educational outreach activities are associated with not only increased public knowledge (Figures 14-17), but also with positive behavioral changes embracing the BMPs promoted by these messages, particularly those involving television commercials and booths at public events.

## CONCLUSION

The purpose of the 2009 Storm Water Management Public Knowledge Survey was to provide an indicator of the veracity and durability of current and past educational outreach efforts for promoting best management practices for the prevention of urban runoff pollution. Although the results cannot be compared to 2005 and 2007 cross-sectional survey results, analysis of the 2008 and 2009 convenience survey results validates the conclusion from those studies that the educational outreach program has been highly efficient and effective in increasing the Chico community's knowledge base and support for best management practices for reducing and preventing urban run-off pollution of local waterways. A comparative of the 2008 and 2009 survey data suggest the educational outreach program has been and continues to be highly effective in improving awareness, increasing knowledge, and changing behavior consistent with best management practices for preventing pollution of waterways through the storm drain system from household, yard, and garden runoff. In particular, the data indicate a strong relationship between knowledge of causes of local creek pollution and exposure to past or current outreach activities. The 2009 survey results strongly support the effectiveness of timely outreach message placement, particularly through television commercials and booths at public events, as mediums for not only enhancing public knowledge about the causes of local waterway pollution, but also for stimulating changes in behavior that embrace best management practices for handling materials that contribute to water pollution through urban run-off.

While the survey provides an indication of the veracity of the outreach results, there are a few ways it can be improved for future monitoring. First, questions regarding issues particular to housing with yards, to owning pets, to having vehicles, parenting status, etc should include a response option of *Not applicable, Do not have (yard, etc)*. This should help distinguish between respondents who have the opportunity to utilize BMPs and those for whom the issues are irrelevant. Second, questions about outreach messages should give respondents a clear time period as well as an opportunity to acknowledge seeing or hearing the messages outside the time period. Given that some of the public art (murals and posters) and Storm Drain Markers have been fixtures within the community for over three years, it is reasonable that some outreach messages may have had an impact prior to the current year's outreach program activities. Giving the respondent an opportunity to recognize current and past outreach messages allows for an examination of the longevity of those messages within the community. Third, q5 on where vehicles are washed should probably be a two-part question, where the respondents are asked what method they use most and then the respondents are asked if there is another method they use in addition. That will provide the opportunity for determining what methods are predominate, while satisfying the respondent's need for full disclosure of all the methods they use.

Finally, the modifications from 2008 to the 2009 survey format reduced the survey from two pages to one page by eliminating questions that could be confusing or perceived as redundant. This made the survey implementation easier; however, to create the suggested clarity in the question responses, such changes may lengthen the survey. Lengthening the survey not only increases the time it takes to fill-out the survey (thereby reducing its attractiveness to potential respondents) but also doubles the paper used to produce the survey. One way to solve both problems is to create a paperless survey through the use of e-surveys or web survey on laptops. Using a survey software program, such as *Survey Monkey*, set-up on two mini-laptops secured to the booth table, respondents could take the survey on the computers, eliminating the paper copy as well as solving the length problem (they will not see the length). To ensure an accessible survey tool, a number of paper copies can be held in reserve for individuals who are not interested in taking the survey using the computer, or for possible computer glitches that can and do occur with all computers

and software programs at one time or another.

As complementary these benefits, using survey software can provide variety secondary benefits to enhance the quality of the data collected. First, using an e-survey will reduce recording errors due to respondents selecting more than one response when only one is expected. In addition to being more environmentally friendly, the e-survey will also reduce data entry errors which often occur in hand-entered data. If desired, an e-survey can also be used to expand the survey field from public events such as fairs and shows, to those who visit the website or experience the messages in other media forums. For fair or show attendees too busy to stop and take the survey, the survey can be sent electronically to a PDA, iPhone, or email address. Further, the survey could be launched at different times and the public could be encouraged in outreach messages to take the survey. Most web or e-survey software contains a confirmation response; to induce potential respondents to take the survey, coupon give-aways from local commercial vendors could be provided upon completion of the survey in that confirmation response. Finally, the web or e-survey can be produced in several languages; notably it is necessary to have the survey in English, but having the survey available in Spanish will diversify the respondents and be more reflective of the Chico population.

In sum, the 2009 survey, confirms the veracity and durability of the educational outreach activities by showing clear and convincing evidence that the activities impact knowledge, awareness, and behavior of those respondents exposed to these messages. The data also indicate a strong relationship between exposure to past or current outreach activities and self-reported changes in handling of household, yard, and garden waste. In particular, highly visual outreach activities, particularly television commercials, booths at public events, and storm drain markers are independently associated with knowledge and awareness of runoff issues.

(see Appendices for Convenience Survey 2009 Report: IMPACT OF  
STORMWATER MANAGEMENT EDUCATION AND OUTREACH PROGRAMS  
by Dr. Diane E. Schmidt in Appendix E)

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## **Evaluation**

The 2009 convenience survey indicates that the SWM EOP messages are reaching growing numbers of the public. Only 10 percent of people filling out the survey indicated they did not make a change in behavior for best management practices in keeping Chico's creeks clean. The changes that 90% of the respondents made were reported as due to messages received from the media campaigns of the program.

The purpose of the 2009 Storm Water Management Public Knowledge Survey was to provide an indicator of the veracity and durability of current and past educational outreach efforts for promoting best management practices for the prevention of urban runoff pollution. Analysis of the 2008 and 2009 convenience survey results validates the conclusion from those studies that the educational outreach program has been highly efficient and effective in increasing the Chico community's knowledge base and support for best management practices (BMPs) for reducing and preventing urban run-off pollution of local waterways (2009 Convenience SWM EOP Survey Report, Schmidt).

A comparative of the 2008 and 2009 survey data suggest the educational outreach program has been and continues to be highly effective in improving awareness, increasing knowledge, and changing behavior consistent with BMPs for preventing pollution of waterways through the storm drain system from household, yard, and garden runoff. In particular, the data indicate a strong relationship between knowledge of causes of local creek pollution and exposure to past or current outreach activities. The 2009 survey results strongly support the effectiveness of timely outreach message placement, particularly through television commercials and booths at public events, as mediums for not only enhancing public knowledge about the causes of local waterway pollution, but also for stimulating changes in behavior that BMPs for handling materials that contribute to water pollution through urban run-off (Schmidt, 2009 Convenience SWM EOP Survey Report).

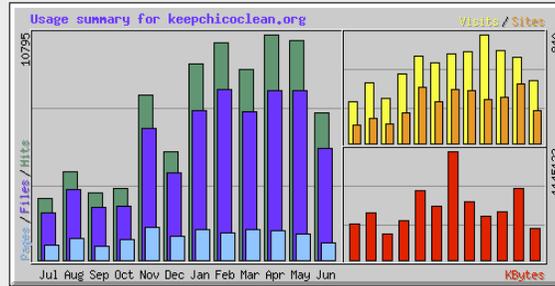
Storm Drain Markers have been fixtures within the community for over four years, it is reasonable that some outreach messages may have had an impact prior to the current year's outreach program activities. The 2009 survey, confirms the validity and durability of the educational outreach activities by showing clear and convincing evidence that the activities impact knowledge, awareness, and behavior of those respondents exposed to these messages. The data also indicate a strong relationship between exposure to past or current outreach activities and self-reported changes in handling of household, yard, and garden waste. In particular, highly visual outreach activities such as television commercials, booths at public events, and storm drain markers are independently associated with knowledge and awareness of runoff issues (Schmidt, 2009 Convenience SWM EOP Survey Report).

Other methods of program evaluation have been employed in addition to survey results. Website traffic for [www.keepchicoclean.org](http://www.keepchicoclean.org) has been tracked and evaluated in correlation with media blast messages.

## SWM EOP Website

### Usage Statistics for keepchicoclean.org

Summary Period: Last 12 Months  
Generated 19-Jun-2009 04:55 PDT



Summary by Month										
Month	Daily Avg						Monthly Totals			
	Hits	Files	Pages	Visits	Sites	KBytes	Visits	Pages	Files	Hits
<a href="#">Jun 2009</a>	372	280	42	25	254	333414	487	811	5323	7070
<a href="#">May 2009</a>	338	262	40	21	462	755252	666	1247	8133	10504
<a href="#">Apr 2009</a>	359	269	46	23	354	508284	716	1383	8093	10795
<a href="#">Mar 2009</a>	293	229	47	27	340	459769	840	1462	7116	9109
<a href="#">Feb 2009</a>	371	292	45	25	405	617932	708	1281	8181	10403
<a href="#">Jan 2009</a>	302	230	48	22	413	1145122	692	1488	7152	9386
<a href="#">Dec 2008</a>	168	134	36	20	324	563644	625	1135	4175	5208
<a href="#">Nov 2008</a>	263	209	52	22	436	735744	671	1588	6280	7918
<a href="#">Oct 2008</a>	111	83	32	17	240	411655	536	1000	2602	3452
<a href="#">Sep 2008</a>	106	84	22	11	153	279097	347	681	2538	3194
<a href="#">Aug 2008</a>	136	108	33	15	193	496862	471	1037	3355	4232
<a href="#">Jul 2008</a>	94	72	22	10	141	379935	319	701	2240	2942
<b>Totals</b>						<b>6686710</b>	<b>7078</b>	<b>13814</b>	<b>65188</b>	<b>84213</b>

Generated by: Webalizer Version 2.01

The program website was updated monthly and highly used by the public. The trend over the course of the 2008-2009 program was a steady increase of use by an average of 34 users monthly, with peak utilization in March and April, coinciding with the media blast outreach messages and the booths at local events.

Staff and Volunteers in the SWM EOP observed the trend of a growing awareness of storm water management practices. More people at booths, in classrooms, and on the website are aware that storm water drains directly to the creek. The majority of students and adults in the general public answer with correct responses on which substances should not be allowed to run into the gutter and into the creek. Members of the public enthusiastically embrace the pocket ashtrays and recite the slogan from the storm drain markers.

### *Clean Creeks in the Classroom*

Among the evaluation tools used for the Clean Creeks in the Classrooms are: Pre-Post brainstorming with students, application of knowledge by students, observation of staff and volunteers, feedback from students and teachers.

Staff and Volunteers observe that students gain:

- Awareness of their own local watershed
- Knowledge of common pollutants that enter waterways through storm drain system
- First-hand knowledge of how a healthy riparian zone helps maintain clean and healthy water ways locally
- Vocabulary of watershed terms and run-off pollution prevention terms
- Ability to identify BMPs, or behaviors, that they as individuals and their family members can adopt to prevent pollution in local storm water drainage system.
- Self-identity that includes “steward” of local waterways

Classroom and Field Day Evaluation Measurements:

- Pre-post brainstorming sessions
- Creation of songs and chants incorporating new knowledge
- Creation of watershed dioramas, which are then publicly displayed
- Listing or naming behaviors that are BMP's;
- Students identify themselves as stewards (stewardship cheer).

A strong indicator of student and classroom success for the 2008-2009 school year was the teacher and student feed back. Of the nine teachers who participated with the CCC program in spring 2009, all rated top scores for overall satisfaction in an informal evaluation via email. The highest rated categories are as follows:

- Organization, logistics and ease for teachers
- Standard based lesson plans that met teacher's needs
- Transportation and overall timeliness of program
- Student participation, engagement and safety
- Creativity, fun and leadership

There were requests by all schools to return next season with expanded offerings. Two new schools and five teachers contacted the SWM EOP Coordinator to request the program for 2010 school year, based on recommendations from teachers involved this year.

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## Recommendations

1. A recommendation that two new areas of focus be added to the Scope of Consultant Services based on new efforts in the program this past year: Public Involvement and Collaboration and Contributions. Activities in these new areas piloted this past year have enhanced the program. (see sections Public Involvement and Collaboration/Contributions in current Evaluation Report).

### Public Involvement Recommendations:

- Involve members of the public in the media outreach, classroom instruction, and charity car wash fundraiser group outreach components of the SWM EOP.
- Foster student-to-student outreach.
- Involve college and university interns and volunteers in the SWM EOP.
- Further develop collaboration and community contributions
- Link to existing resource management efforts by promoting local water quality awareness and riparian restoration efforts.
- Provide presentations at local Sustainability forums upon invitation.

2. In the category of Presentations and Public Events it is recommended to develop new engaging and interactive educational outreach tools for the City's SWM EOP booth, to be utilized at the required events.

3. SWM EOP Clean Creeks in the Classroom curriculum has been a successful method of education and outreach to the public. By condensing the program from three classroom visits to two visits, more third-grade classes can be reached. It is recommended that the program be extended to a minimum of four Chico Public Schools for coordinating and gaining access to a minimum of sixteen third-grade classrooms (approximately 400 students) with a minimum of two classroom visits per classroom for a total of 32 classroom visits per school year (two semesters per contract).

4. It is also recommended that the Coordinator explore the possibility of collaborating with similar classroom runoff pollution prevention programs in other cities throughout the county.

5. The transportation provided for the Field Day instruction in the spring 2009 was a minimal cost, and proved to be crucial for the program's successful extension to lower socio-economic public school demographic areas. It is recommended that this program addition be continued.

6. The replacement of the Water Quality Testing field day station with the Reptile Station in the spring 2009 proved to be successful. The Water Quality field station was not used in the spring 2009 based upon the need to find a more

grade-appropriate curriculum for third-grade students. For third-grade students, the opportunity to have direct contact with riparian zone wildlife was more engaging and the runoff pollution prevention message became more meaningful. The water quality station is excellent for higher grade levels, and should the Clean Creeks in the Classroom Program provide outreach to higher grade levels in the future, this station is recommended to be included.



The reptile station gave the students an opportunity to connect with and understand the needs of larger life forms in the creek habitat, and the BMPs that can protect and preserve the environment for these creatures.

7. It is recommended that an evaluation form be developed for participating classroom teachers to fill out upon completion of the program for their class. Upon approval of the evaluation form by City staff, the teacher responses could be collected and used for feedback on program improvements. In addition, responses could be incorporated into the annual program evaluation report.

8. It is recommended that an evaluation form be developed for the CWBP program for current CWBPs to fill out at the end of the fiscal year. Upon approval by City staff, the evaluation form could be disseminated to current CWBPs and feedback on the program could be used as an evaluation tool, and to make improvements.

9. It is recommended that the program target club and school charity car wash fundraiser groups with outreach, and provide groups with runoff pollution prevention information and alternatives to current car washing practices. It is recommended that public involvement is fostered in this targeted outreach effort and that innovative solutions for each school/club/youth organization are encouraged.

10. It is recommended that an environmentally friendly car wash video be developed for presentation to charity car wash groups, and housed on the program website [www.keepchicoclean.org](http://www.keepchicoclean.org),

11. The consultant recommends that Creek Watch Hotline call patterns be tracked more thoroughly.

## 12. 2010 Survey and Data Collection

It is suggested that SWM EOP create a paperless survey through the use of e-surveys or web survey on laptops. Using a survey software program, such as *Survey Monkey*, set-up on two mini-laptops secured to the booth table, respondents could take the survey on the computers, eliminating the paper copy as well as solving the length problem (they will not see the length). To ensure an accessible survey tool, a number of paper copies can be held in reserve for individuals who are not interested in taking the survey using the computer, or for possible computer glitches that can and do occur with all computers and software programs at one time or another.

As complementary these benefits, using survey software can provide variety secondary benefits to enhance the quality of the data collected. First, using an e-survey will reduce recording errors due to respondents selecting more than one response when only one is expected. In addition to being more environmentally friendly, the e-survey will also reduce data entry errors which often occur in hand-entered data. If desired, an e-survey can also be used to expand the survey field from public events such as fairs and shows, to those who visit the website or experience the messages in other media forums. For fair or show attendees too busy to stop and take the survey, the survey can be sent electronically to a PDA, iPhone, or email address. Further, the survey could be launched at different times and the public could be encouraged in outreach messages to take the survey. Most web or e-survey software contains a confirmation response; to induce potential respondents to take the survey, coupon give-aways from local commercial vendors could be provided upon completion of the survey in that confirmation response. Finally, the web or e-survey can be produced in several languages; notably it is necessary to have the survey in English, but having the survey available in Spanish will diversify the respondents and be more reflective of the Chico population.

The following revisions are suggested by Dr. Diane Schmidt for the survey tool:

- a. Boxes are needed instead of the “bubble” symbol, and we might want to “bold” the boxes.
- b. Bolding the word “Most” wherever it is stated in the survey is suggested because people are getting confused and choosing multiple answers when they should choose one answer.
- c. Question 6 --The word “recently” must be omitted in future surveys. The addition of the word “recently” in the 2009 survey affected the responses of survey takers regarding whether they had seen or heard outreach messages. Less people responded that they had seen or heard outreach messages because we asked if they had seen or heard them “recently”. Since knowledge level and behavior changes increased, for the 2010 survey, the question might be, “Have you ever seen or heard any

- messages about keeping our gutters and local creeks free from pollution (such as litter, auto fluids, pet waste, fertilizer, and/or pesticides?)”
- d. We may even want to add a follow-up question that asks, “Have you seen or heard any messages within the last year about keeping our gutters and local creeks free from pollution?”
  - e. Question 5 needs change– “Where do you wash your motor vehicle, lawn mower, camper, and/or RV **most of the time?**” The present question results in multiple answers and we are seeking only one answer.
  - f. Question 7 – Suggest the revision of the arrangement of the possible answers to the question, “Which of the following activities have you changed as a result of local messages about protecting our creeks and streams from water pollution within the past year?” Currently there are two columns that offer answers under the headings “Now I do” and “Now I do not”. The question needs to address three columns of selections for each possible answer under both of the heading sections that offer the options of: Yes, No, Not applicable, Never did.

**Appendix A**  
**Media Outreach Materials**

**Appendix B**  
**Classroom Instruction/Curriculum and Schedules**

**Appendix C**  
**Newspaper Ads and Public Service Announcements**

**Appendix D**  
**Clean Water Business Partners/Cal Water Insert Samples**

**Appendix E**  
**Appendices from**  
**Convenience Survey 2009 Report:**  
**IMPACT OF STORMWATER MANAGEMENT EDUCATION**  
**AND OUTREACH PROGRAMS by Dr. Diane E. Schmidt**

**(Full report included in the Data Collection/Survey Results section)**