

SAN DIEGO COUNTY REGIONAL CO-PERMITTEES  
EDUCATION AND RESIDENTIAL SOURCES (ERS) WORKGROUP

2015 SAN DIEGO COUNTY REGIONAL  
STORMWATER SURVEY

*Findings from Public Opinion Research*

2015

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# SAN DIEGO COUNTY REGIONAL GROUP COUNTYWIDE STUDY

## METHODOLOGY

### PURPOSE

The County of San Diego, Department of Public Works, Watershed Protection Program, asked Action Research to conduct a telephone survey of adult residents living in San Diego County. The survey was conducted on behalf of the San Diego Regional Co-Permittee's Educational and Residential Services (ERS) Workgroup, a coalition of cities, the County, and other co-permittees that are charged with preventing and reducing stormwater pollution in San Diego County.

The 2015 survey was preceded by similar surveys conducted in June 2009 and May 2011. The current survey focused on awareness of the issue of stormwater pollution and behaviors that help to prevent pollution. The results of this study will be used to assess the effectiveness of the group's stormwater pollution education efforts and also provide a foundation for future outreach efforts.

### PROCEDURE

A total of 800 interviews with adult residents across San Diego County were conducted, via telephone, between May 7 and May 25, 2015. The study used a random-digit-dial (RDD) methodology, in which a random list of all active residential and wireless telephone numbers in San Diego County served as the sample. Of the 800 interviews, 40% were completed with residents on wireless telephones, and 5% were completed in Spanish.

The margin of error for countywide results is plus or minus 3.4% at a 95% confidence level. That is, if this survey were to be repeated exactly as it was originally conducted, then 95 out of 100 times the responses from the sample (expressed as proportions) would be within 3.4% of the actual population proportions.

Survey results are presented in aggregate and also broken out by subgroups of adult residents (e.g., by gender or race) only if the differences are both statistically significant and meaningful for program evaluation and planning purposes. Where appropriate, we compared results from this survey with those from the surveys conducted for the San Diego Regional Co-Permittees in 2009 and 2011, which included many similar questions.

## SURVEY DESIGN

The survey was designed to assess the following topics:

- Knowledge about watersheds and the storm drain system;
- General knowledge of sources of pollution in storm drains;
- Yard waste and landscaping behaviors;
- Clean-up methods for driveways or off-street parking areas;
- Litter awareness and clean-up behavior;
- Perceptions about the personal impacts of stormwater pollution;
- Self-reported behavior changes to reduce pollution;
- Awareness about Think Blue; and
- Awareness of and preference for various communication and reporting channels.

## PARTICIPANT CHARACTERISTICS

**Gender.** The participants of this study were split almost equally between men and women (51% male and 49% female).

**Age.** Participants ranged in age from 18 to 98. The average age was 52 years.

**Education.** Nearly half of all participants (48%) had a college degree and an additional 20% reported having attended at least some college. Of those with college degrees, 13% had an Associate Degree, 24% had Bachelor's Degree, and 11% had a Post Graduate Degree. Seven percent of participants (7%) reported having a Professional Degree and 19% had only high school diplomas. Only 3% had less than a high school education. An additional 4% declined to state their level of education.

**Race and Ethnicity.** Twenty-four percent (24%) of participants reported that they were of Hispanic or Latino decent. When asked to define their race, answers were as follows: 2% were Native American, 4% were Black or African-American, 6% were Asian or Asian-American, 60% were White or Caucasian, and 7% stated they were of mixed ethnicity. A total of 15% gave answers outside these categories, and 6% declined to answer.

**County Residence.** Participants were asked how long they had lived in San Diego County and whether the area they lived in was urban, suburban, or rural. Length of residency in San Diego County ranged from 1 to 87 years (*Mean* = 29 years). Half of the participants (50%) stated they

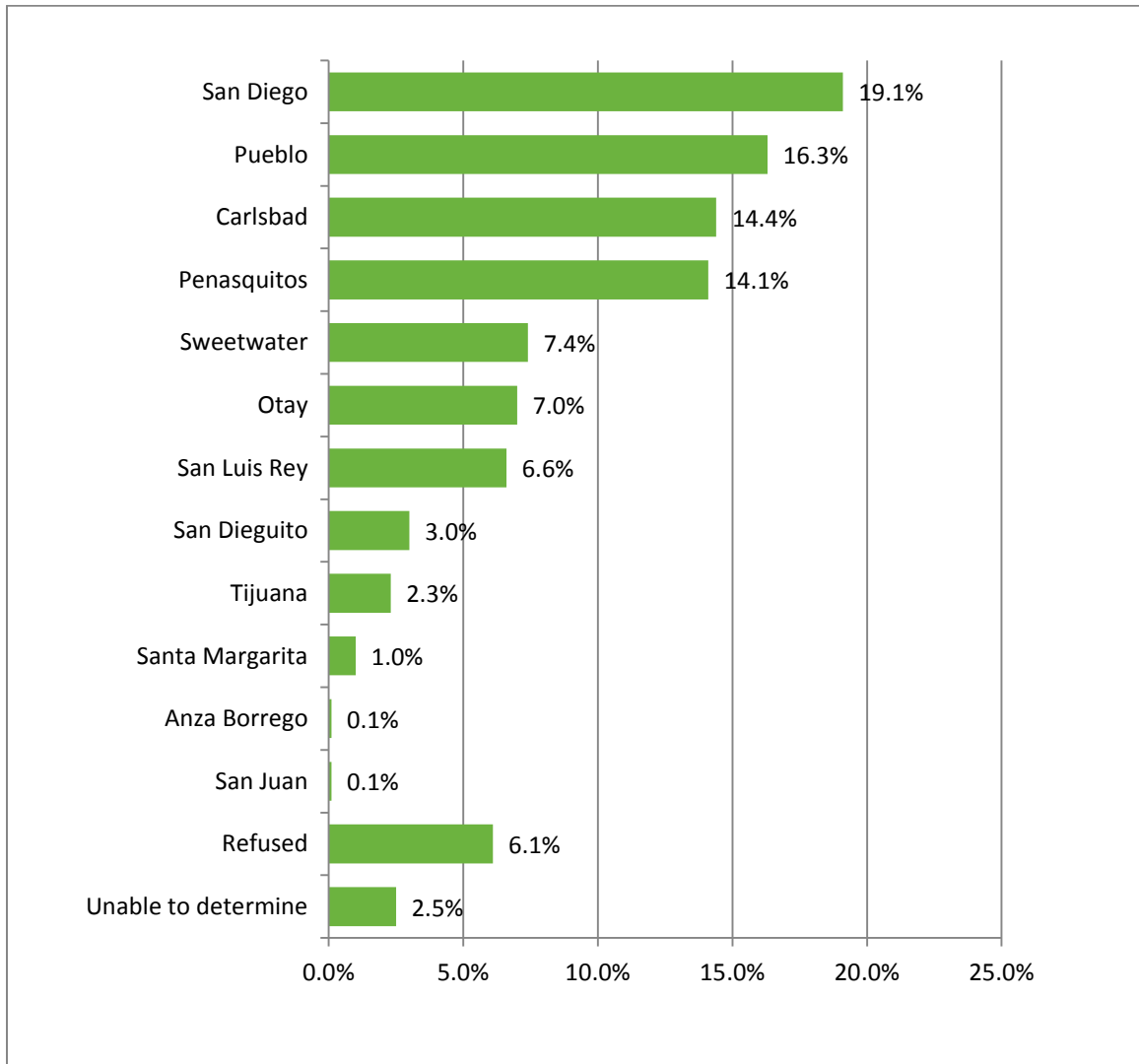
lived in a suburban neighborhood, 32% lived in an urban area, and 11% said where they lived was rural. Seven percent declined to answer.

**Home Ownership.** Participants were asked whether they owned or rented their primary residence. Over half of the participants (59%) stated they owned their home; 39% were renters, and two percent declined to answer.

**Visits to Local Waterbodies.** Almost three-fourths of respondents (71%) reported that they had made a visit to a beach in San Diego County during the past year, and 39% stated that they had visited a lake or river within the county.

**Watershed of Residence.** Residents were asked to provide the nearest cross-streets, or the closest park or school, to their residence for the purpose of determining the watershed they resided in. All watersheds in the county were represented as shown in Figure 1.

FIGURE 1: PROPORTION OF RESPONDENTS RESIDING IN SAN DIEGO COUNTY WATERSHEDS





## DETAILED FINDINGS

### OVERVIEW OF REPORT

This report presents the survey results as follows:

- **Watersheds and Storm Drains.** We begin with an assessment of the public's familiarity with watersheds and the storm drain system. Residents were asked if they lived in a watershed, if they had ever heard the term *storm drain*, and whether water entering the storm drain system goes to a treatment plant or not.
- **Awareness of Pollutants.** Next, we assess the public's general level of knowledge of sources of pollution in storm drains.
- **Yard and Garden Care.** The next section presents the results of questions directed at residents who reported having a yard or garden. These participants were asked if they maintained their yard themselves or used a gardening service, and whether they have automatic sprinklers. Those with yards or gardens were also asked about the usage of fertilizers and pesticides.
- **Driveway and Parking Area Clean-Up.** Next, we assess the methods used by residents to clean their driveways or off-street parking areas.
- **Litter.** In the next section, we find out how often San Diego County residents see litter in their neighborhood, and if they do see it, whether or not they pick it up.
- **Concern about Pollution.** We then assess the effects of knowledge of storm water pollution on behavior. We begin this section by presenting our findings about how much the public feels that stormwater pollution affects themselves and their families, and whether concern over pollution kept them from local waterways.
- **Behavior Changes to Prevent Pollution.** We then look at how many residents made behavior changes to reduce pollution, and what they think they can do to prevent pollution.
- **Think Blue Awareness.** Finally, we find out much the public has heard about Think Blue, whether they have visited a website or called a telephone hotline, and what method they feel they would use to report the polluting behaviors of others.

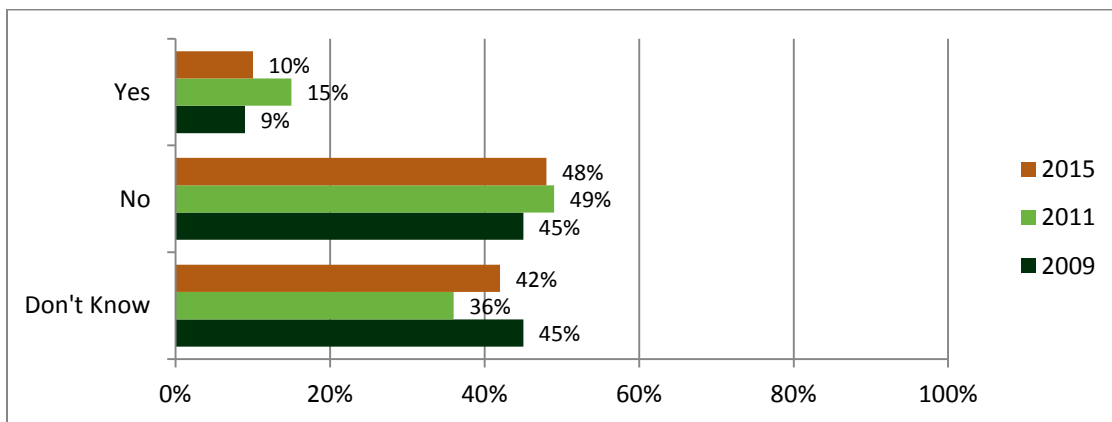
## WATERSHEDS AND STORM DRAINS

San Diego County is made up of multiple watersheds which cover all residential areas in the County. This section of the survey was designed to determine the percentage of San Diego County residents who know that they live in a watershed, and to find out how knowledgeable the public is about storm drains and the activities and materials that contribute to stormwater pollution.

### WATERSHED KNOWLEDGE

Residents were asked, “as far as you know, do you live in a watershed or not?” Only one in one-hundred (10%) of respondents knew they did, while almost half (48%) incorrectly answered that they did not live in a watershed. Forty-two percent (42%) stated they were unsure. The percentage of respondents who knew they lived in a watershed declined from the finding in 2011 but was comparable to the findings from 2009. See Figure 2.

FIGURE 2: KNOWLEDGE OF LIVING IN A WATERSHED



Note: 2015 N=800, 2011 N=801, 2009 N=808

**Gender.** Men were more likely than women were to know they lived in a watershed, 14% compared to 5% for men and women respectively. The largest difference between men and women is that women were more likely to report that they were unsure.

**Age.** Among the different age groups, those 60 years and older were almost twice as likely as those younger than 60 years to know they lived in a watershed. See Table 1.

TABLE 1: KNOWLEDGE OF LIVING IN A WATERSHED BY GENDER AND AGE

	Gender		Age		
	Men	Women	18-39	40-59	60 & Over
Yes	14%	5%	8%	6%	14%
No	51%	46%	55%	53%	38%
Not Sure	35%	49%	37%	41%	48%

**Race.** As shown in Table 2, White or Caucasian residents were far more likely to know that they live in a watershed than those of other races.

TABLE 2: KNOWLEDGE OF LIVING IN A WATERSHED BY RACE

	White or Caucasian	Black or African-American	Mixed Ethnicity	Something Else	Asian or Asian-American	Native American
Yes	13%	6%	6%	5%	2%	0%
No	42%	55%	59%	58%	51%	69%
Not Sure	45%	39%	35%	37%	47%	31%

Questions in this section of the survey were designed to determine how familiar San Diego County residents are with storm drains and what happens to water that flows into them. In addition, respondents were asked to name one or two major sources of stormwater pollution.

#### KNOWLEDGE OF THE TERM STORM DRAIN

Participants were asked if they had heard the term *storm drain* before. The majority (86%) had heard the term, 13% had not, and 1% were not sure.

#### KNOWLEDGE THAT STORM WATER IS NOT TREATED

Residents were asked, “when water goes into the storm drains in your area, does it go to a sewage treatment plant before it is released, or is it released into local waterways or the ocean without treatment?” The majority (65%) answered that they were not sure, and 10% incorrectly reported that stormwater goes to a treatment plant. Only 25% of participants correctly answered that stormwater reaches local waterways and the ocean without treatment. This is a sharp decline from the findings in both the 2009 and the 2011 studies.

**Gender.** Men were more likely to correctly report that storm water is not treated (31%) compared to women (20%). However, much of this is accounted for by a higher incidence of women reporting that they are uncertain.

TABLE 3: KNOWLEDGE ABOUT STORM WATER TREATMENT BY GENDER

	All Residents			Men			Women		
	2015	2011	2009	2015	2011	2009	2015	2011	2009
Not treated	<b>25%</b>	43%	37%	<b>31%</b>	47%	40%	<b>20%</b>	40%	33%
Treated	<b>10%</b>	12%	9%	<b>11%</b>	12%	10%	<b>8%</b>	12%	8%
Not Sure	<b>65%</b>	45%	54%	<b>58%</b>	41%	49%	<b>72%</b>	47%	59%

**Education.** Residents who were college graduates were slightly more likely to know that stormwater is not treated than residents not possessing a college degree. However, the percentage of residents in both groups correctly answering this question declined dramatically from the study done in 2011, as shown in Table 4.

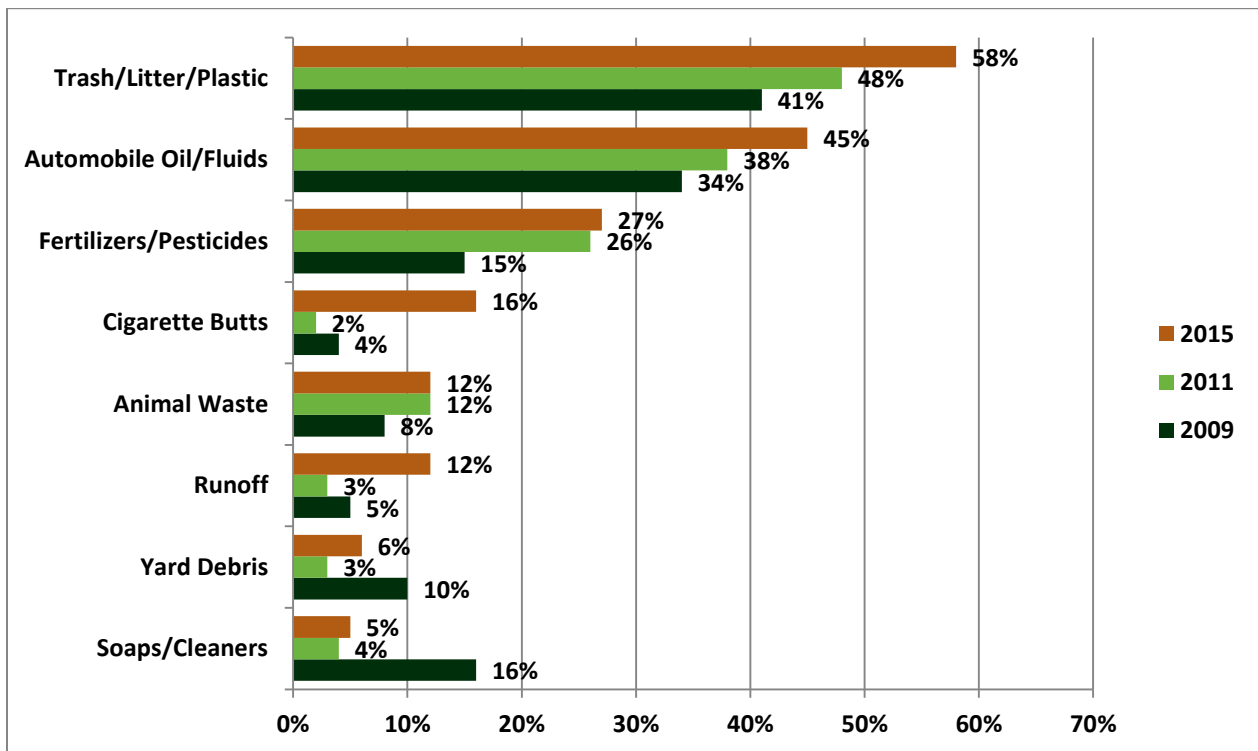
TABLE 4: KNOWLEDGE ABOUT STORMWATER TREATMENT BY LEVEL OF EDUCATION

	All Residents			College Graduates			No College Degree		
	2015	2011	2009	2015	2011	2009	2015	2011	2009
Not treated	25%	43%	37%	30%	49%	50%	22%	41%	31%
Treated	10%	12%	9%	8%	16%	8%	11%	11%	9%
Not Sure	65%	45%	54%	62%	35%	43%	67%	47%	59%

### AWARENESS OF POLLUTANTS

Respondents were asked to name one or two major sources of pollution in storm drains. A total of 634 participants (79%) provided a response. Figure 3 shows the pollutants mentioned. Litter, automotive fluids, fertilizers, and pesticides are among the top mentioned sources of pollution. In 2015, we saw a significantly higher proportion of residents mentioning cigarette butts.

FIGURE 3: SOURCES OF STORMWATER POLLUTION



Note: 2015 N=634, 2011 N=753, 2009 N=719

## YARDS AND GARDENS

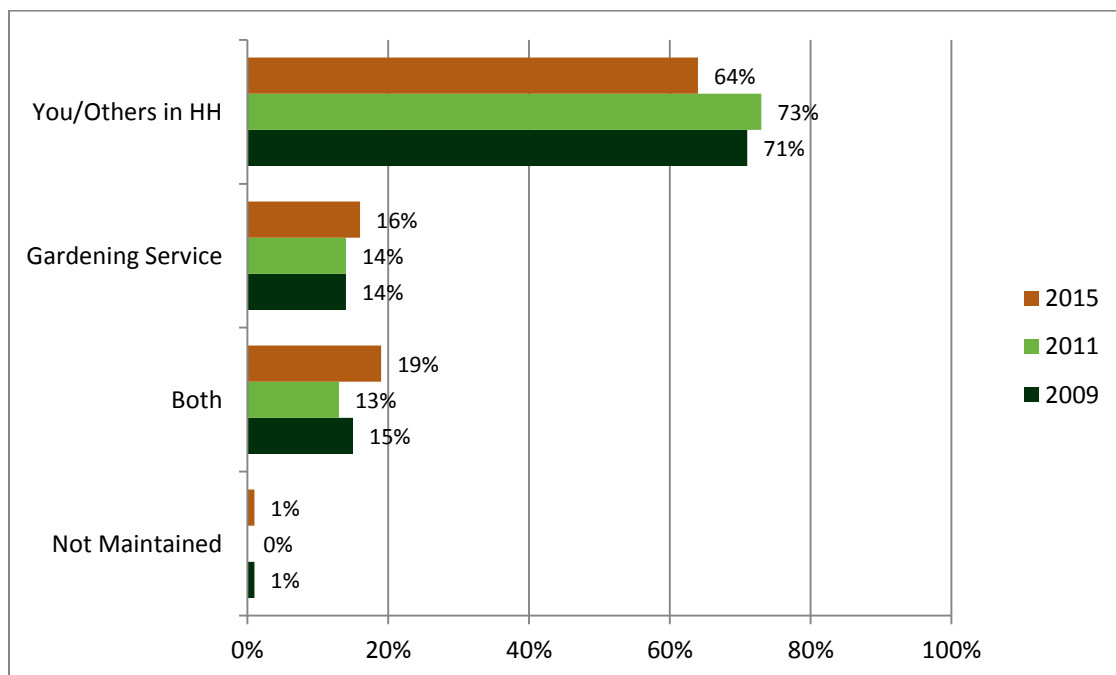
This section is made up of questions designed to look at behaviors among San Diego County residents that can affect stormwater pollution, such as adjusting automatic sprinklers, hosing down driveways, and picking up trash in their neighborhoods.

When asked, “do you live in a single family home, a duplex or triplex, a townhouse, or an apartment or condominium?” 62% of respondents said they lived in a single-family home, and 25% stated they lived in an apartment or condo. Five percent of respondents lived in a townhouse, 4% lived in a duplex or triplex, and 4% lived in an ‘other’ type of residence. These figures are almost identical to the findings of both the 2009 and 2011 studies.

### RESPONSIBILITY FOR YARD AND GARDEN MAINTENANCE

Residents not living in apartments or condominiums were asked whether they had a yard or garden that they or someone in their household was responsible for. Two-thirds of participants (67%) stated that they did have a yard the household was responsible for maintaining. When asked who maintained their yard, almost two-thirds (64%) stated that they or other members of their household did. A gardening service was used for yard maintenance by 16% of the respondents. Nineteen percent (19%) of participants said members of their household and a gardening service were both responsible. The overall pattern of responses was consistent with previous years, although we saw a slightly higher proportion of respondents reporting both using a service and performing their own maintenance.

FIGURE 4: RESPONSIBILITY FOR MAINTAINING YARDS OR GARDENS



Note: 2015 N=532, 2011 N=486, 2009 N=485

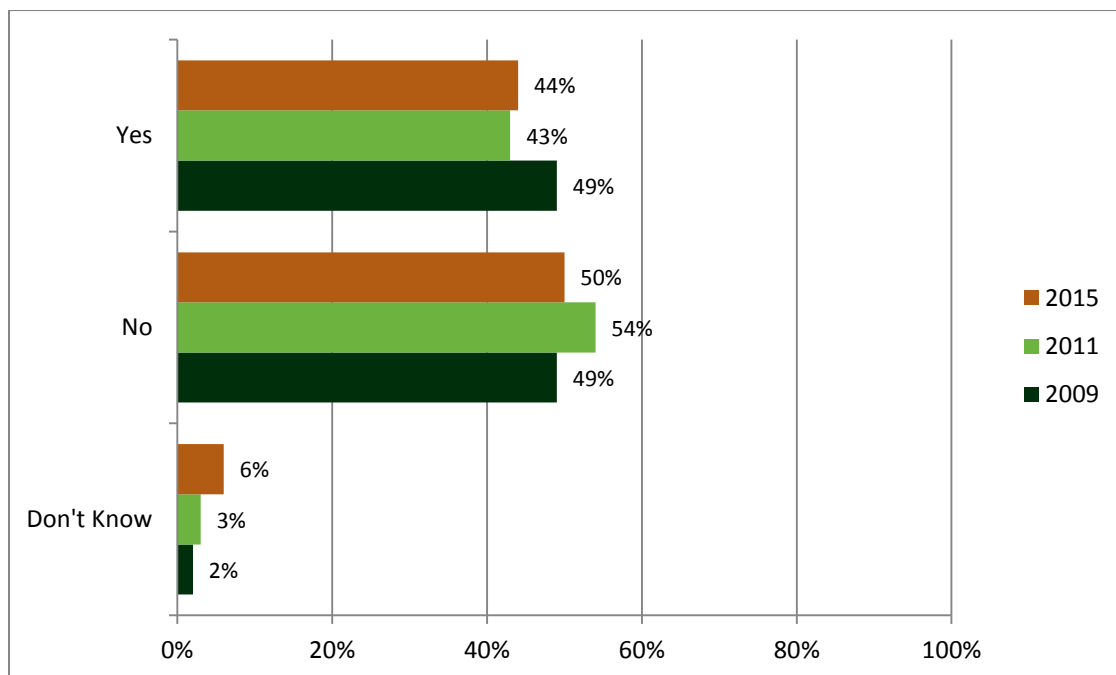
## USE OF AUTOMATIC SPRINKLER SYSTEMS

Respondents who reported having a yard or garden were asked whether or not they had an automatic sprinkler system; 58% replied that they did. Respondents with automatic sprinklers were then asked whether anyone had adjusted them in the last year to reduce the amount of water used. Over three-fourths (77%) stated that their sprinklers had been adjusted. This finding suggests that among households with automatic sprinklers, there is a fairly high level of awareness about adjusting sprinkler settings.

## FERTILIZER AND PESTICIDE USE

**Fertilizer Use.** When asked if fertilizer had been used on their yard in the past year, 44% said that fertilizer had indeed been used. The pattern of responses was similar to what had been observed in previous years with one exception. Specifically, in 2015, there was a slightly higher tendency among participants to report that they did not know whether or not fertilizers were used. See Figure 5. This finding may be attributed to the higher proportion of households who reported using a gardening service either exclusively or in combination with their own maintenance.

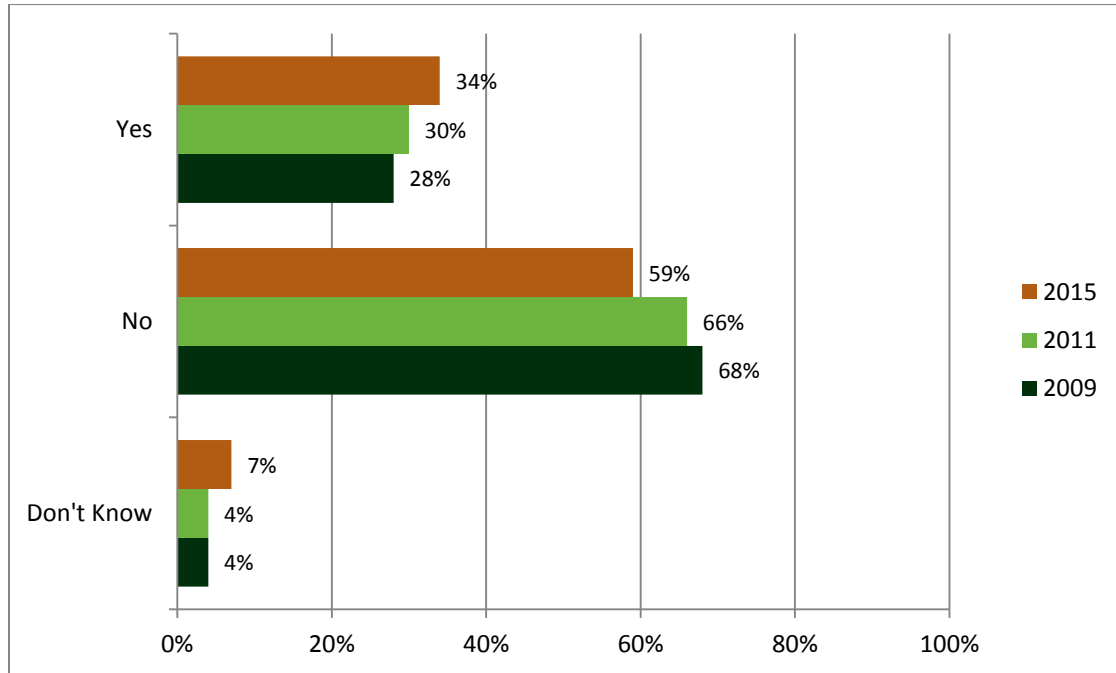
FIGURE 5: USE OF FERTILIZER IN THE PAST YEAR



Note: 2015 N=532, 2011 N=486, 2009 N=485

**Pesticide Use.** When asked if pesticides or other chemicals had been used on their yard in the past year, just over one-third of participants (34%) said that these products had been used. The proportion of respondents who responded with certainty that they did not use pesticides was significantly lower (59% said they did not use pesticides) compared to what was reported on the earlier surveys (68% in 2009 and 66% in 2011 said that they did not use pesticides). Since 2009, we have observed a steady increase in the proportion of households reporting that they are using pesticides.

**FIGURE 6: USE OF PESTICIDES OR OTHER CHEMICALS**



Note: 2015 N=532, 2011 N=486, 2009 N=485

**Fertilizer and Pesticide Use by Age.** The survey data showed a direct correlation between respondents' age and the use of fertilizers and pesticides or other chemicals. As shown in Table 5, older residents were far more likely to have used fertilizer on their lawn in the past year compared to younger groups. They were also slightly more likely to report using pesticides.

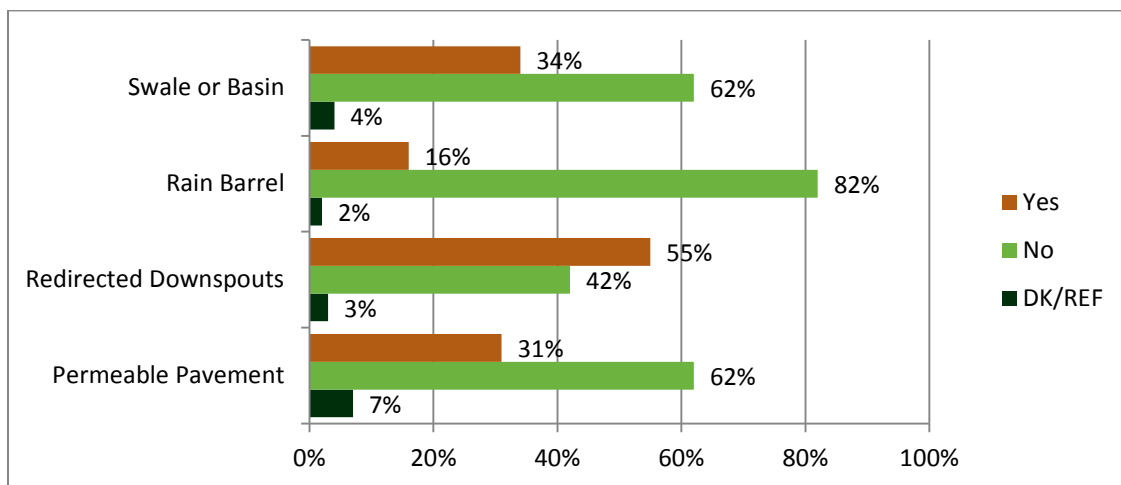
**TABLE 5: USE OF FERTILIZERS AND PESTICIDES BY AGE**

	Used Fertilizers			Used Pesticides		
	18-39	40-59	60 & Over	18-39	40-59	60 & Over
Yes	30%	42%	<b>51%</b>	29%	32%	<b>38%</b>
No	60%	53%	<b>43%</b>	64%	61%	<b>55%</b>
Not Sure	10%	5%	<b>6%</b>	7%	7%	<b>7%</b>

## WATER SAVING AND RUNOFF PREVENTION MEASURES

On the 2015 survey, questions were added to assess whether residents had certain water-saving or runoff prevention features installed on their property. Specifically, participants were asked whether or not they had any of the following: a vegetated swale or rock basin; a rain barrel or cistern; permeable pavement; or downspouts that are redirected to drain onto landscaping. The least common measure reported by respondents was rain barrels (16%), followed by permeable pavement (31%) and a swale or basin (34%). The most common measure reported was redirected downspouts. More than half (55%) of respondents reported that they had redirected downspouts to drain onto landscaping.

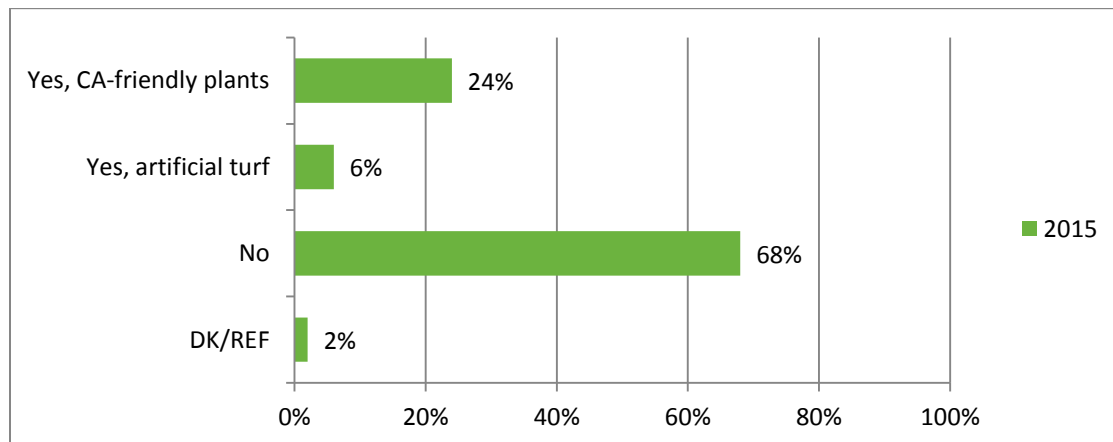
FIGURE 7: PREVALENCE OF WATER SAVING AND RUNOFF PREVENTION MEASURES



Note: 2015 N=532

Participants were also asked if they had removed any of their turf and replaced it with either California-friendly plants or artificial turf. Most respondents had done neither (68%), but nearly a quarter had installed California-friendly plants. Artificial turf was not common (6% reporting).

FIGURE 8: REPLACED TURF WITH CA-FRIENDLY PLANTS OR ARTIFICIAL TURF



Note: 2015 N=532



## DRIVEWAYS AND PARKING AREAS

**Driveway Cleaning.** Participants were asked if they had a driveway or off-street parking area for their home. The majority of respondents (85%) said they did have a driveway or off-street parking. Those with driveways or parking areas were asked if, in the last year, they had cleaned these areas using any of three different methods: sweeping, using a blower, or using a hose.

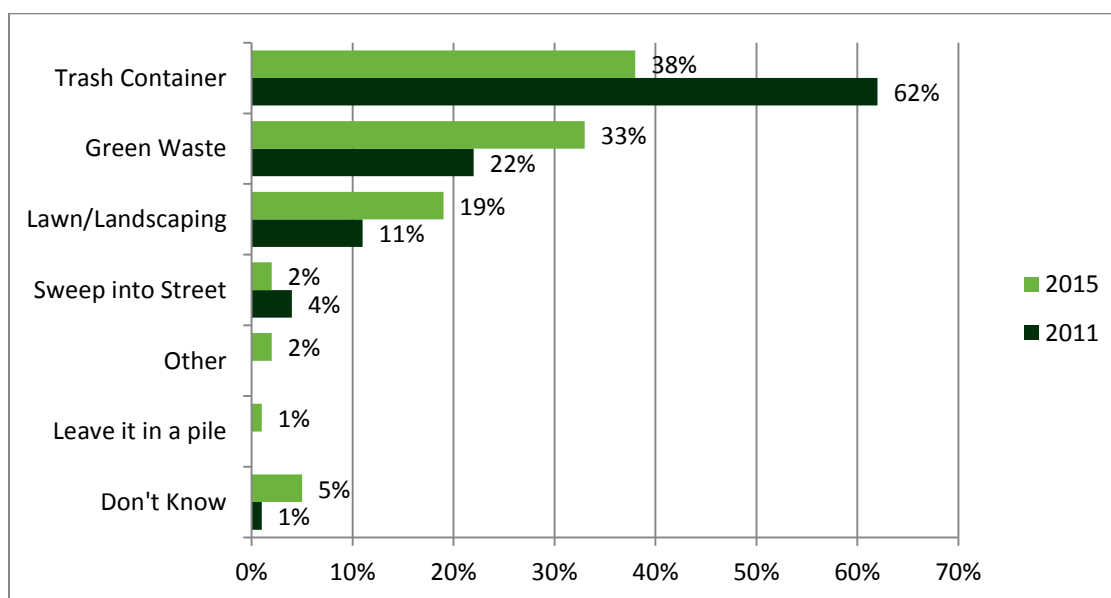
Over half of the respondents (59%) stated they had cleaned their driveway by sweeping, 44% said they had used a blower, and 13% used a hose to clean their driveway.

TABLE 6: METHODS USED TO CLEAN DRIVEWAYS OR OFF-STREET PARKING AREAS

	Using a Broom			Using a Blower			Using a Hose		
	2015	2011	2009	2015	2011	2009	2015	2011	2009
Yes	<b>25%</b>	43%	37%	<b>30%</b>	49%	50%	<b>22%</b>	41%	31%
No	<b>10%</b>	12%	9%	<b>8%</b>	16%	8%	<b>11%</b>	11%	9%
Not Sure	<b>65%</b>	45%	54%	<b>62%</b>	35%	43%	<b>67%</b>	47%	59%

**Materials Disposal.** Finally, residents who reported sweeping to clean their driveway were asked how they disposed of the material that was swept up. As shown in Figure 9, far fewer reported that they threw the materials in a trash container this year than did in the 2011 study; however, more reported disposing of the materials in their green waste bins or placing material on the lawn or landscaping than what was observed in the 2011 study. A small number stated that they swept the material into the street.

FIGURE 9: HOW ARE SWEEPED UP MATERIALS ARE DISPOSED OF?

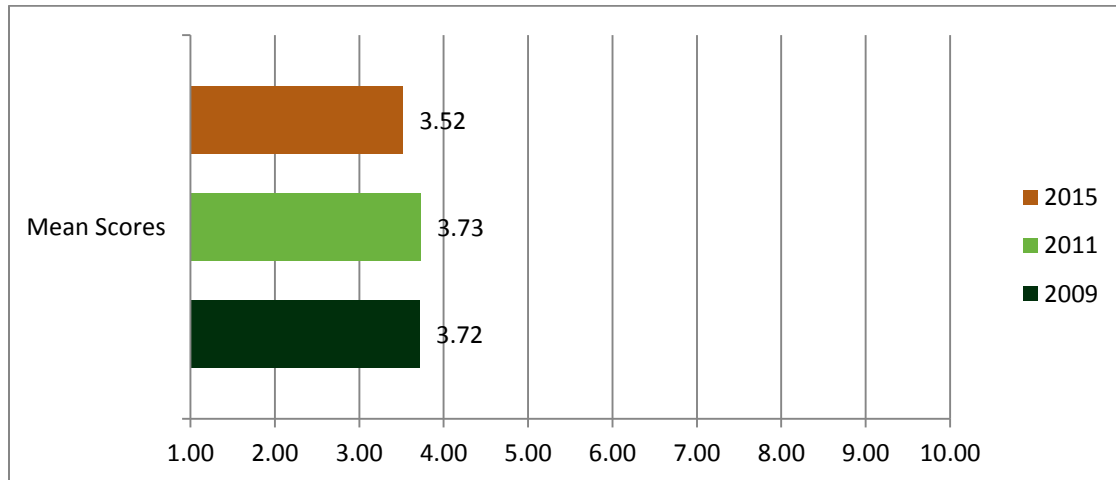


Note: 2015 N=472, 2011 N=375

## AWARENESS AND PICK-UP OF LITTER

**Visible Litter.** As part of the section intended to assess the problems caused by stormwater pollutants, San Diego County residents were asked how often they see litter on the block where they live. Respondents rated how frequently they saw litter on a 10 point scale from 1 (never) to 10 (very frequently). Overall, ratings of visible litter were low (below the mid-point on the 10-point scale) and were slightly lower than what had been observed in 2009 and 2011.

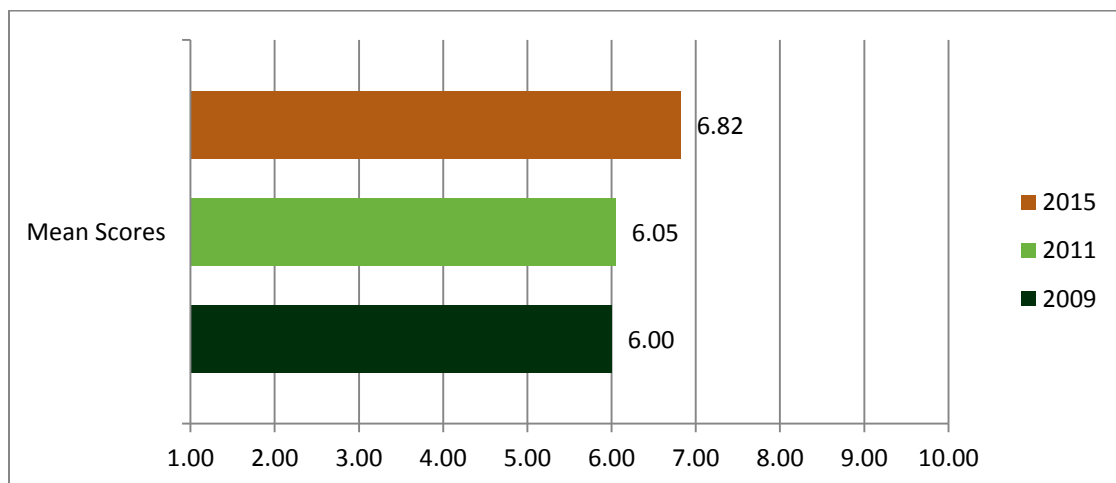
FIGURE 10: HOW OFTEN LITTER IS SEEN ON THE BLOCK WHERE YOU LIVE?



Note: 2015 N=800, 2011 N=801, 2009 N=808

**Litter Clean-Up.** Respondents who reported that they see litter on the block where they live were asked to rate how often they pick-up and dispose of the litter that they see using a 10 point scale from 1 (never pick up) to 10 (very frequently pick up). Overall, respondents were very likely to report picking up litter on their block (above the mid-point on the 10-point scale). Additionally, this rating rose almost a full point from the 2009 and 2011 surveys.

FIGURE 11: HOW OFTEN LITTER IS PICKED-UP ON THE BLOCK WHERE YOU LIVE?



Note: 2015 N=506, 2011 N=486, 2009 N=508

## CONCERN ABOUT POLLUTION AND IMPACT ON BEHAVIOR

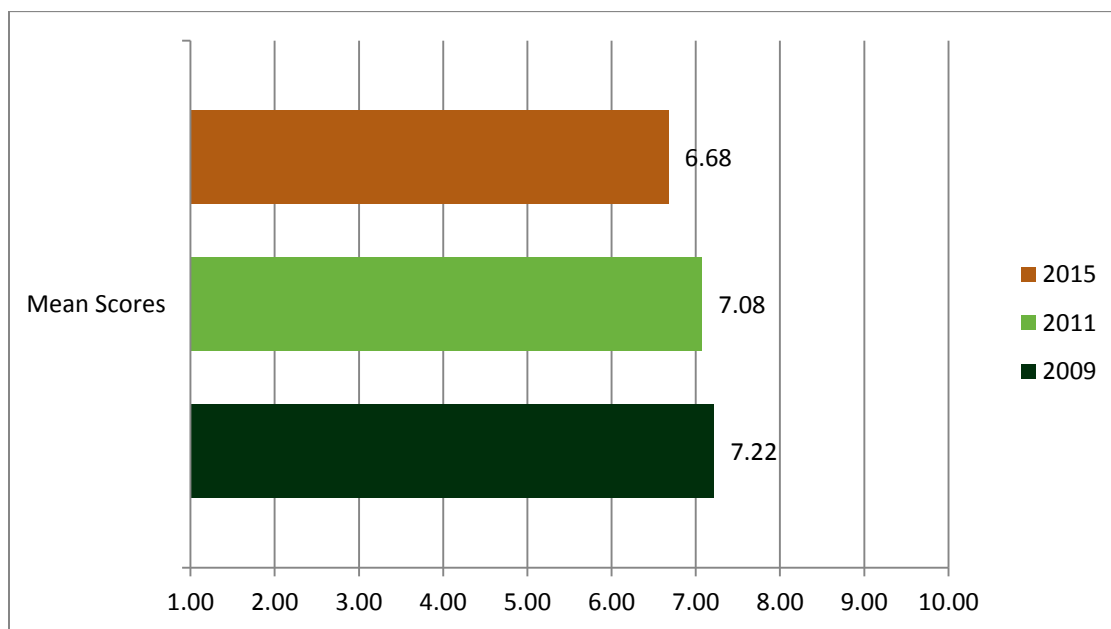
This section begins with questions designed to determine whether residents of San Diego County feel personally affected by stormwater pollution and to what extent, if any, residents avoid going into the ocean, lakes, and rivers due to concern about polluted water.

### HOW MUCH ARE YOU AND YOUR FAMILY AFFECTED BY POLLUTION?

Residents were asked to rate how much the pollution of San Diego County beaches, oceans, lakes and rivers affects them using a 10 point scale from 1 (does not affect them at all), to 10 (affects them a great deal).

Overall, respondents believed strongly that pollution of San Diego County beaches, oceans, lakes and rivers affects them and their families. Although this concern dropped slightly from previous years, overall concern was far above the mid-point (nearly a 7 on a 10-point scale). See Figure 12.

FIGURE 12: HOW MUCH DOES POLLUTION OF LOCAL WATERWAYS AFFECT YOU AND YOUR FAMILY?

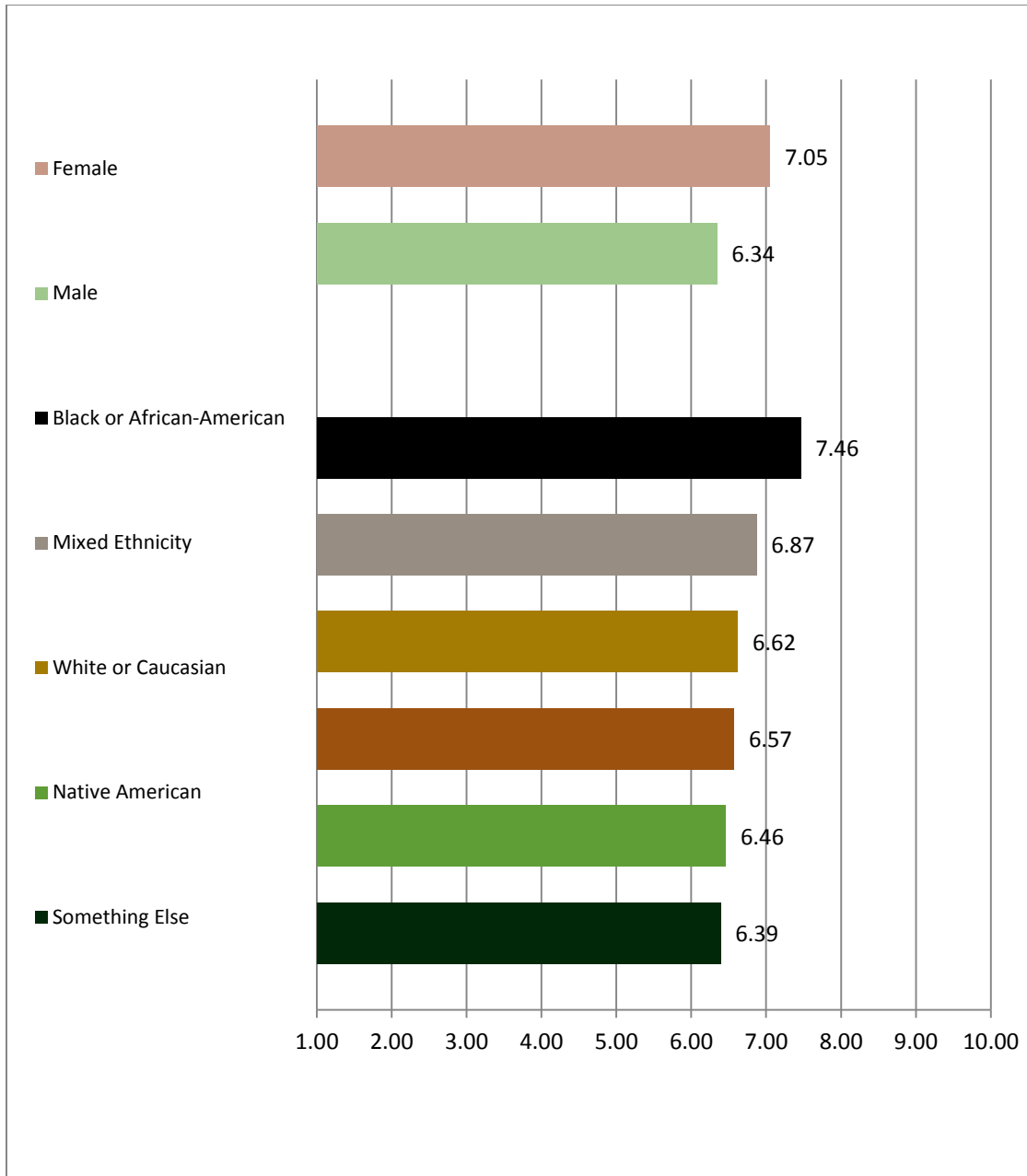


Note: 2015 N=769, 2011 N=486, 2009 N=506

**Gender.** Female residents (*Mean* = 7.05) rated the effects pollution had on them significantly higher than male residents did (*Mean* = 6.34).

**Race.** Respondents who identified themselves as Black or African American rated the effect pollution had on them significantly higher than those of all other races. See Figure 13 on the following page.

FIGURE 13: HOW MUCH DOES POLLUTION AFFECT YOU AND YOUR FAMILY (BY GENDER AND RACE)?



Note: N = 769

## AVOIDANCE OF LAKES, RIVERS, AND OCEAN WATER DUE TO POLLUTION

**Beach.** In order to gauge the level of impact that water pollution has on the public's use of San Diego County waterways, residents were asked if they avoided going into the water at a beach due to concern over pollution. Twenty-seven percent (27%) of residents stated that they had avoided going into the water at a beach due to concern over pollution. This figure represents a slight decrease from 2011 where 33% of respondents reported that they avoided going into the water at the beach due to concern about pollution.

**Other Waterways.** Next, residents were asked if they had avoided visiting a lake or river in San Diego County due to concern over pollution. Only 13% replied that they had avoided visiting a lake or river due to concern over pollution. This figure represents a slight decrease from 2011 where 20% of respondents reported that they had avoided these activities.

## CHANGES MADE TO HELP REDUCE POLLUTION

To measure the possible impact knowledge about water pollution has had on the behavior of San Diego County residents, we asked whether, in the past year, participants had made any changes to their behavior that were a direct result of seeing or hearing information about polluted stormwater and its effect on local waterways.

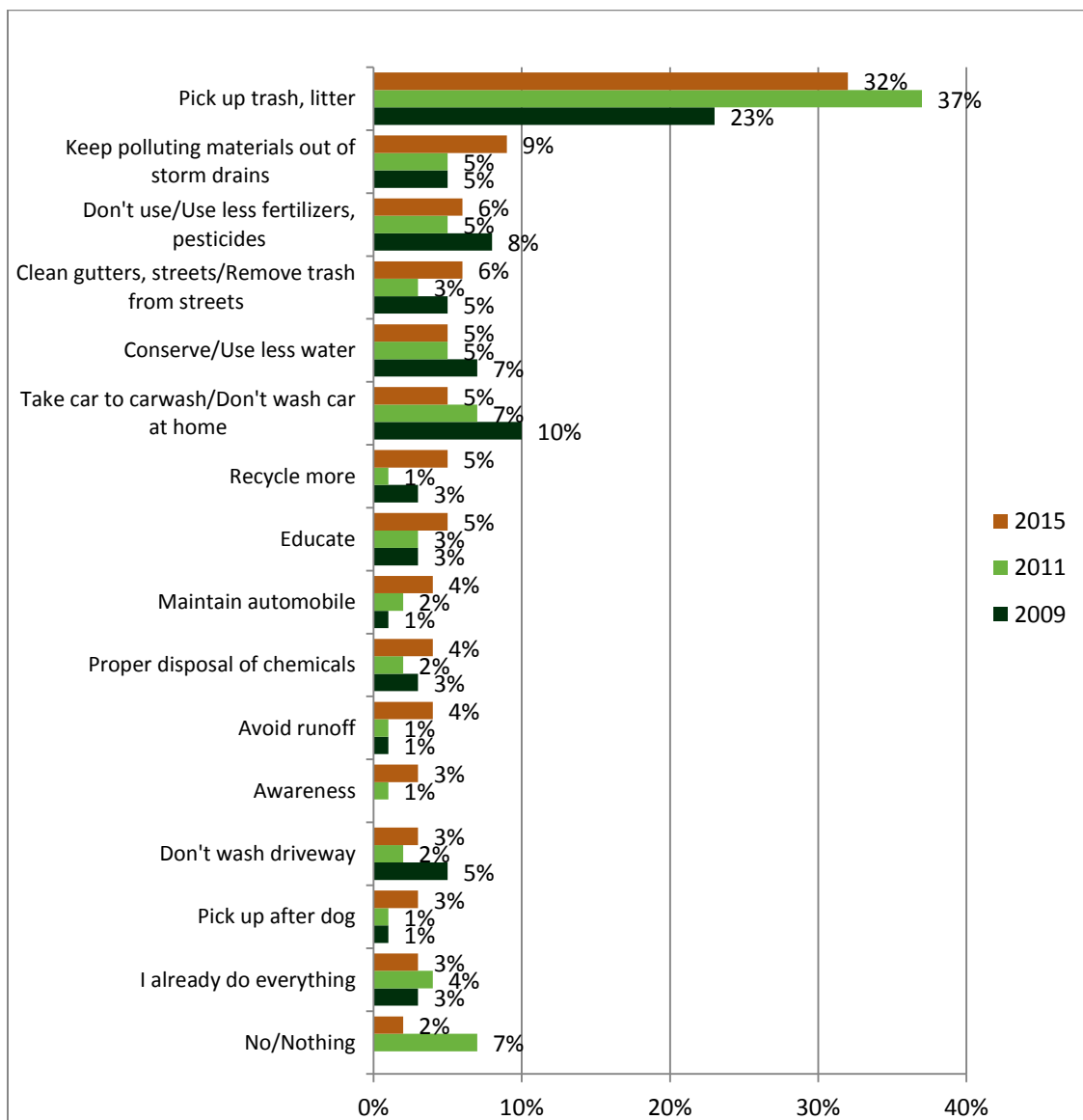
Twenty-four percent (24%) of participants said they had made changes to their behavior as a direct result of seeing information about polluted stormwater and its effect on local waterways. There were no discernible differences in reported behavior change by gender or race.

## ONE THING THAT WILL HELP PREVENT STORMWATER POLLUTION

To further evaluate the public's awareness of the sources of stormwater pollution, residents were asked to name one thing they could do to help prevent stormwater pollution. A total of 640 survey participants (80% of the full sample) were willing and able to provide a response.

Open-ended responses were categorized and are listed below in Figure 14. Consistent with the 2009 and 2011 surveys, the most frequently mentioned action was *pick up trash, litter* (32%). However, in 2015, we also observed a greater frequency of respondents specifically mentioning keeping materials out of storm drains (9%) or streets/gutters (8%).

FIGURE 14: WHAT IS ONE THING YOU CAN DO TO HELP PREVENT STORMWATER POLLUTION?



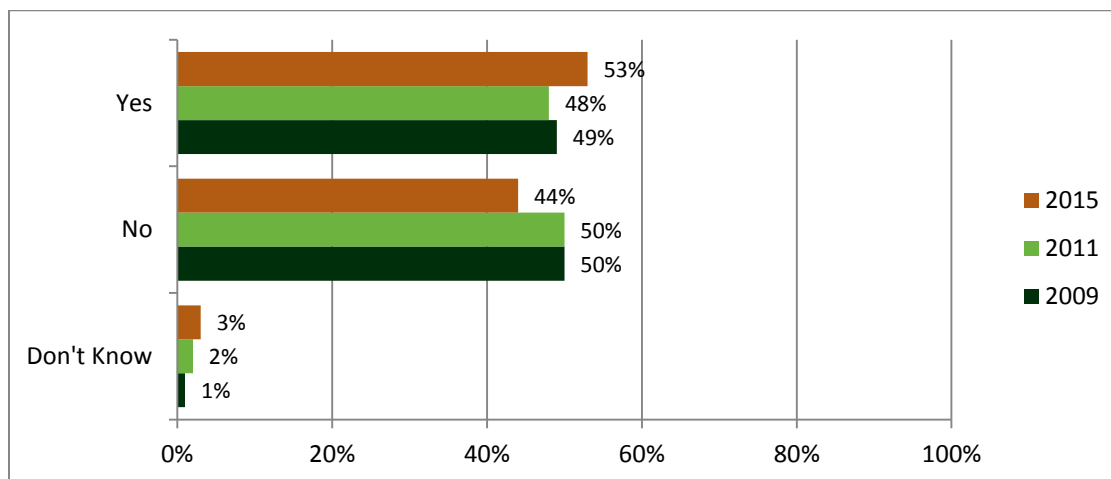
Note: 2015 N=640, 2011 N=753, 2009 N=654

## CONTACT WITH ANTI-POLLUTION PROGRAMS

### FAMILIARITY WITH THE SLOGAN THINK BLUE SAN DIEGO

At the beginning of the survey, respondents were asked if they had seen or heard the slogan *Think Blue San Diego* during the past year. As shown in Figure 15 below, over half (53%) replied that they had seen or heard the slogan. This is a respectable increase from previous years where less than half of respondents reported having heard the slogan.

FIGURE 15: HAVE YOU SEEN OR HEARD THE SLOGAN *THINK BLUE SAN DIEGO*?



Note: 2015 N=800, 2011 N=801, 2009 N=808

**Differences by Knowledge.** Having heard the Think Blue slogan goes hand-in-hand with knowledge of living in a watershed, knowledge that stormwater is not treated, and being familiar with the term *storm drain*. Respondents aware that they lived in a watershed were far more likely to also be familiar with Think Blue (71% heard of Think Blue) compared to people who did not know that they lived in a watershed (53% heard of Think Blue).

Similarly, people who knew that storm water is not treated were slightly more likely to have heard of Think Blue (70%) compared to those who believed it was treated (61% heard) or who were unsure (48% heard). Finally, 59% of those who were familiar with the term *storm drain* heard of Think Blue compared to 29% who were not familiar with the term and 25% who were unsure. See Table 7.

TABLE 7: FAMILIARITY WITH THINK BLUE RELATIVE TO OTHER CONCEPTS

Seen or heard <i>Think Blue San Diego</i>	Do you live in a watershed?			Is stormwater treated?			Familiar with <i>storm drain</i> .		
	Yes	No	Not Sure	Yes	No	Not Sure	Yes	No	Not Sure
Yes	71%	53%	53%	61%	70%	48%	59%	29%	25%
No	29%	47%	47%	39%	30%	52%	41%	71%	75%

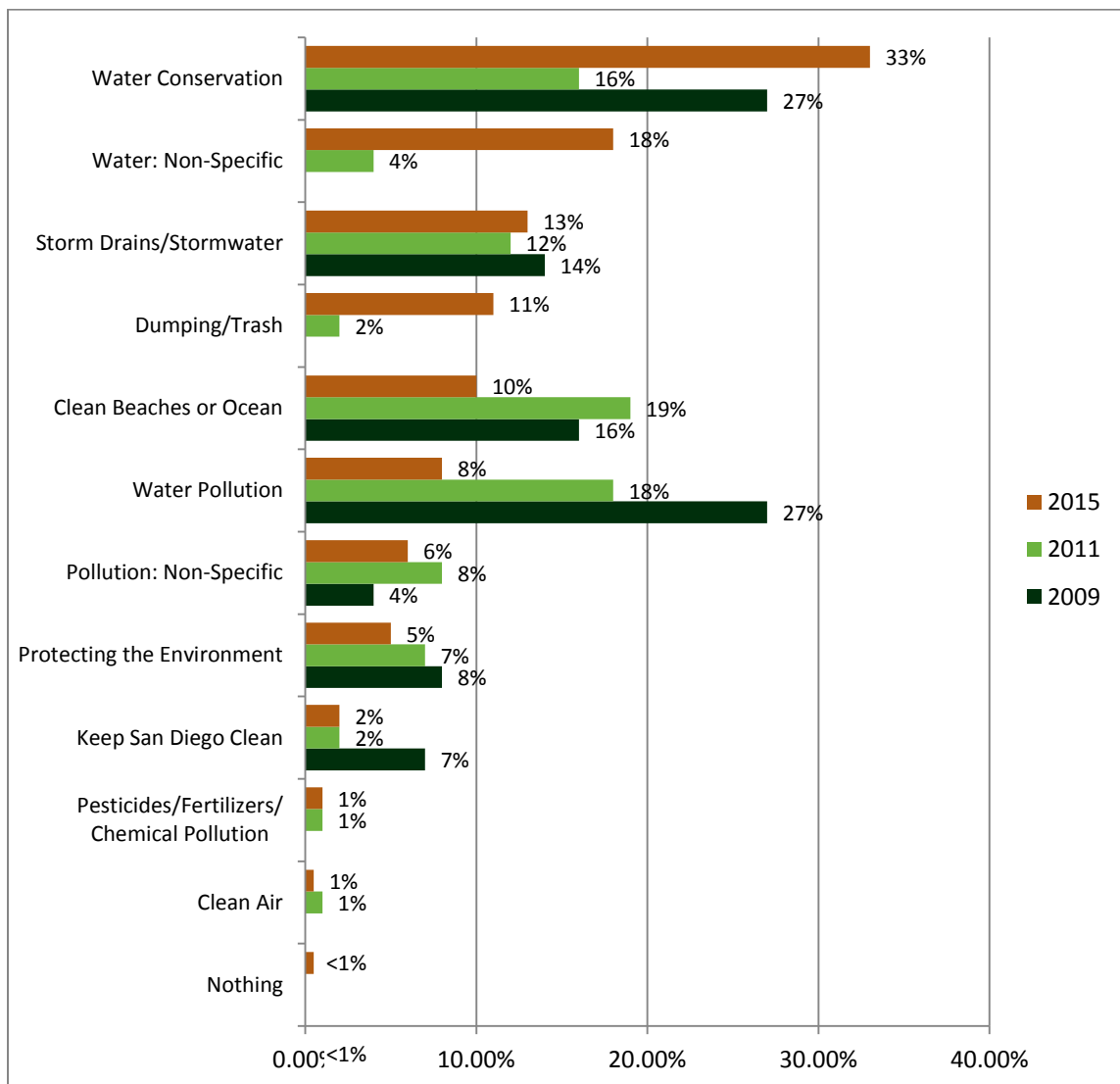
## MEANING OF THE THINK BLUE SLOGAN

Respondents who reported that they were familiar with the slogan *Think Blue San Diego* were asked to describe in a few words what they felt it was asking them to do. Responses were provided by almost all of the participants (93%). The responses were categorized, and are listed in Figure 16 below.

Water conservation was the most frequently given response (33%) followed by non-specific mention of water (18%). We speculate that the higher reference to water conservation in 2009 and 2015 is likely due to the highly publicized drought conditions in each of those years.

Not shown on the chart below are an additional 8% of participants that gave answers that could not be categorized, and a further 7% that responded they were not sure.

FIGURE 16: WHAT IS THE SLOGAN THINK BLUE SAN DIEGO ASKING YOU TO DO?



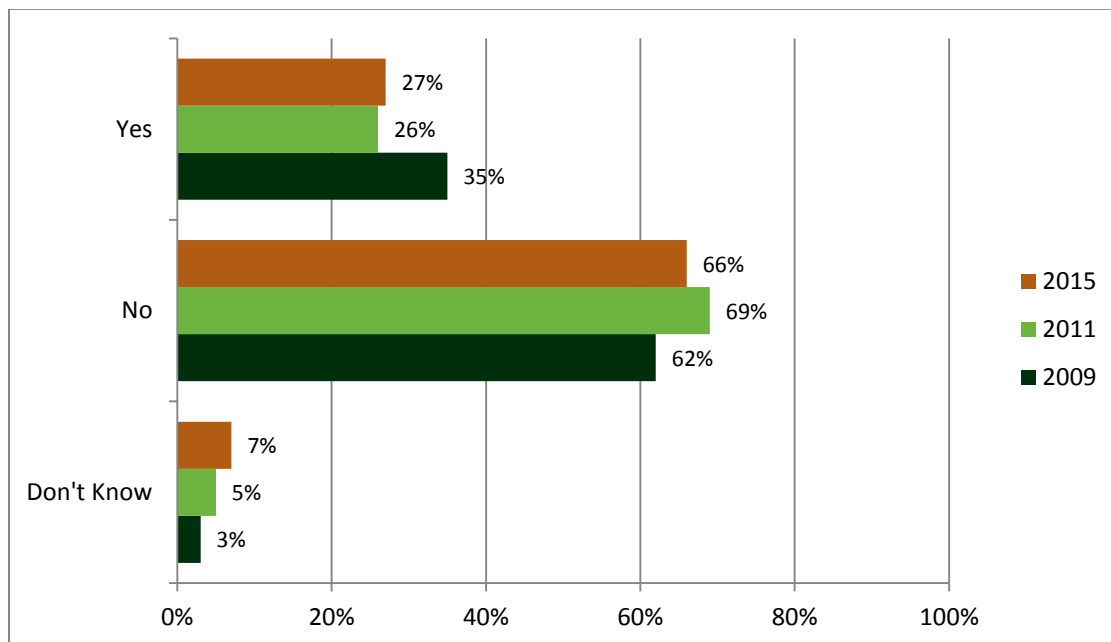
Note: 2015 N=426, 2011 N=413, 2009 N=396



## AWARENESS OF LOCAL POLLUTION PREVENTION EFFORTS

Residents were asked if they had seen or heard anything about steps taken by local government agencies to prevent pollution of water in storm drains. As shown in Figure 17, just over one-fourth of participants (27%) reported that they were aware of any government steps to prevent stormwater pollution. The pattern was similar to what had been observed in 2011 and suggests that the public is generally unaware of what is being done in their communities to prevent stormwater pollution.

FIGURE 17: AWARENESS OF LOCAL GOVERNMENT EFFORTS TO PREVENT STORMWATER POLLUTION



Note: 2015 N=800, 2011 N=801, 2009 N=808

## REPORTING POLLUTION-GENERATING ACTIVITIES

This final group of questions was designed to find out how many residents were familiar with and had used the stormwater pollution prevention hotline in the past year. We also asked participants which of several methods would be most convenient for them to use when reporting pollution-generating activities.

### STORMWATER WEBSITE AND HOTLINE

**Website.** Residents were asked if they had visited a website to get information about ways to reduce stormwater pollution. Only 8% responded that they had visited a website. This percentage has remained essentially the same through all three survey studies (2009, 2011, 2015).

**Hotline.** Residents were asked whether they were aware of a telephone hotline which can be used to get stormwater pollution prevention information, or to report polluting activities. Less

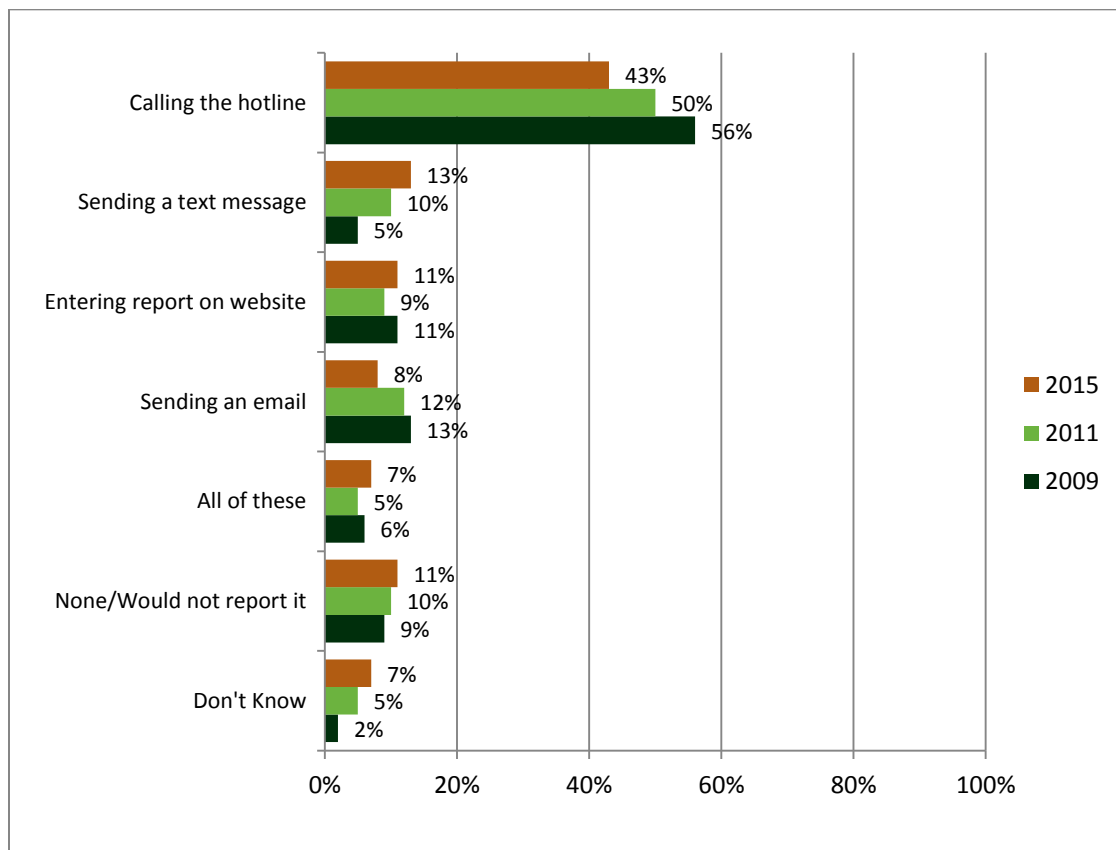
than a quarter of respondents (21%) were aware of the hotline. This finding represents a small increase over the 18% who reported hearing about the hotline in 2011.

Respondents who reported that they were aware of the hotline were asked if they had called it for any reason during the past year. Only 4% of those who knew about the hotline stated that they had made a call to the hotline. This is a substantial decrease from the 2011 study finding where 11% had made a call to the hotline.

### PREFERRED METHOD FOR REPORTING POLLUTION

Finally, residents were asked which one of four options would be the most convenient way to report polluting activity (assuming confidentiality). Figure 18 shows the proportion of respondents selecting each category. The proportion of respondents who report that calling the hotline would be the most convenient has decreased over time (from 56% in 2009, to 50% in 2011, to 43% in 2015). However, we also see a paralleled increase in the proportion of respondents who indicated that they would prefer to send a text message (5% in 2009, 10% in 2011, and 13% in 2015).

FIGURE 18: MOST CONVENIENT METHOD TO REPORT POLLUTING ACTIVITY



Note: 2015 N=800, 2011 N=801, 2009 N=808

## CONCLUSIONS AND RECOMMENDATIONS

### GENERAL CONCLUSIONS

- **Awareness of living in a watershed remains low.** Only one in ten participants correctly reported that they live in a watershed. This finding is consistent with surveys conducted in 2009 and 2011 and suggests that current education efforts are not producing widespread awareness of this term.
- **Although most people know what a storm drain is, few know that the water that goes into a storm drain is not treated before being released.** The vast majority (86%) of the participants reported that they were familiar with the term storm drain, but only 25% correctly answered that stormwater goes directly to local waterways and the ocean without treatment.
- **There is a high level of awareness about common pollutants.** When asked to freely name one of two major sources of pollution in storm drains, the majority of participants were able to provide a response. Of these, more than half mentioned litter/trash/plastic as a pollutant. Automobile fluids (45% mentioned), fertilizers/pesticides (27% mentioned), and cigarette butts (16% mentioned) were also among the most frequently mentioned items.
- **Most San Diego residents take care of their own yards and gardens.** Three quarters of the households included in the survey reported either taking care of their yard/garden themselves or doing so in combination with a gardening service. Only 16% of participants reported using a gardening service.
- **Residents seem to know how to adjust sprinklers in order to save water.** Over three-fourths of residents with automatic sprinkler systems reported that they had adjusted them in the last year to reduce the amount of water used. This suggests a fairly high level of awareness about adjusting sprinkler settings.
- **Overall use of pesticides and fertilizers is moderate, but higher among older populations.** Overall, 34% of respondents reported using pesticides, and 44% reported using fertilizers in the last year. However, respondents age sixty and over, were more likely to report having used these products (38% and 51% for pesticides and fertilizers respectively).

- **Penetration of water-saving and runoff prevention measures is very low.** Very few participants reported having installed rain barrels and only about one-third reported having swales or permeable pavement installed. This finding provides little information about the mechanisms that go into an individual's decision to install these measures. However, it does provide a good baseline measurement for gauging future progress.
- **Nearly one-third of participants had replaced turf.** Twenty-four percent (24%) of participants replaced turf with California-friendly plants and 6% had installed artificial turf. This finding provides little information about the mechanisms that go into an individual's decision. However, it does provide a good baseline measurement for gauging future progress.
- **Most people are not hosing off driveways, but blowers are still prevalent.** Only 13% of respondents with driveways reported that they used a hose to clean it. However 44% said that they had used a blower.
- **Most people are doing the right thing with regard to disposal of swept up materials.** Respondents reported placing these items in a trash container, green waste bin, or on the lawn/landscaping. Very few reported sweeping materials into the street.
- **Concern about litter is high and people are willing to pick up.** Respondents were likely to mention litter as a potential source of pollution. Although they reported not seeing it with a great deal of frequency, when they do see it, they are likely to pick it up.
- **Overall awareness of the Think Blue San Diego slogan is high.** More than half of participants had seen or heard the slogan in the last year.
- **Awareness of the Think Blue San Diego slogan is linked to higher levels of knowledge about other stormwater topics.** Those who had heard about Think Blue were also more likely to know that stormwater was not treated and that they lived in a watershed.
- **Most people are unaware of what local governments are doing about pollution.** Two-thirds of respondents had not heard anything about efforts of local governments to prevent pollution.
- **Few people visited a website for information about preventing pollution.** Only 8% had visited a website to get information about pollution prevention.

## RECOMMENDATIONS FOR FUTURE OUTREACH

- **Develop vivid and visual communications that highlight local watersheds.** Electronic maps, posted signage, and other visual communications that highlight specific locations and the watershed in which they are located could help enhance knowledge among the public that we all live in a watershed.
- **Continue school-based education programs.** In other San Diego County evaluations, we have found that school-based programs which educate youth about local watersheds are effective at increasing knowledge of watersheds and other stormwater topics. There is also some evidence that this knowledge is retained as children advance to older grades. It is likely that these concepts could carry on to adulthood as well.
- **Continue and expand education that stormwater is not treated before being released to local waterways.** Explicit, visual messages that clearly convey that stormwater is not treated before being released could help enhance knowledge of this concept. Consistent storm drain stenciling throughout the region could also serve as a channel for messages about the connection between water in storm drains and local water bodies.
- **Focus on educating people about what to do to prevent pollution rather than on what not to do.** The survey indicated that people are aware of what the primary pollutants are (e.g., litter, automotive fluids, fertilizers). However, people seem less knowledgeable about what they can do to prevent pollution other than engaging in more obvious actions like picking up litter and keeping things out of storm drains.
- **Residents, more so than gardening services, may be an optimal target for messages about lawn care practices that prevent pollution.** Most residents report having at least some responsibility for maintaining their yards and gardens, even if they share maintenance responsibilities with a gardening service. Therefore, residents could benefit both from educational materials that they can use to inform themselves as well as materials that can be shared with their gardening service. Specifically, residents may benefit from materials that help them to approach and speak with their lawn care professionals about best management practices to prevent stormwater pollution.
- **Seniors represent a viable target audience for messages about fertilizer and pesticide use.** Messages about fertilizer and pesticide alternatives could be presented at senior centers, community garden shows, health fairs, and other events drawing a higher proportion of senior citizens. It is possible that these populations are using certain

products out of habit and therefore in need of education on more environmentally responsible choices.

- **Conduct research such as focus groups, interviews, or literature reviews to learn more about the barriers and benefits to installing runoff prevention and water conservation measures.** There is considerable room to move in terms of increasing uptake of measures such as rain barrels, swales/basins, and permeable pavement. However, little is known about the barriers that might prevent people from installing these measures or the potential benefits that they may experience.
- **Consider messages that highlight the personal effects of pollution on residents and their families.** Respondents felt strongly that pollution of local waterways affects them and their families. This could represent a strong message framing for outreach materials.
- **Highlight through press releases and other media what local governments are doing to prevent pollution.** Respondents were largely unaware of steps being taken by local government agencies to prevent pollution.
- **Continue the hotline, but allow a text-to-report option.** A hotline remains the preferred method for reporting polluting activities. However, preference for the hotline has shown a steady decline since 2009 whereas preference for texting is increasing.
- **Consider media channels other than websites for distributing information about pollution prevention.** Despite the expansion and growth of Internet access over the last several years, the proportion of respondents reporting that they use a website to get information about pollution prevention is very small.

## APPENDIX A: TOPLINE SURVEY RESULTS

Hello, I'm \_\_\_\_\_ from \_\_\_\_\_. We've been asked by several cities in San Diego County to conduct a survey of local residents, and your telephone number was selected at random. We are not trying to sell you anything, and we are only interested in your opinions.

- QA. Have I reached a household, or is this a place of business?
1. Household
  2. Business **[TERMINATE]**
  99. OTHER/REF **[TERMINATE]**

- QB. According to the research procedure, may I speak to the person in the house who is 18 or older \_ who had the most recent birthday?
1. Yes
  2. No **[ASK FOR BETTER TIME TO CALL BACK]**

**[INSERT CALL BACK TEXT]**

**[INSERT CELL PHONE TEXT]**

**ASK EVERYONE**

- QG. Now, do you live in the County of San Diego, or in some other county?
1. San Diego \_\_\_\_\_ 100
  2. Other county **[TERMINATE]**
  3. DK/REF **[TERMINATE]**

- QH. For statistical purposes, what is the zip code of your place of residence? **[IF RESPONDENT REFUSES SAY]** We only need it so you will be included when we represent the viewpoints of residents in each area of the county.
1. RECORD 5-DIGIT ZIP CODE **[IF ZIP NOT FOUND ON LIST, TERMINATE]**
  2. IF NOT SURE RECORD 99999 **[TERMINATE]**
  3. REF **[TERMINATE]**

- Q1. Now, in the past year, have you seen or heard the slogan "Think Blue San Diego?"
1. Yes 53
  2. No **[SKIP TO Q3]** 44
  3. DK/REF **[SKIP TO Q3]** 3

- Q2. In a few words of your own, what do you think that the slogan "Think Blue San Diego" is asking you to do?
1. RECORD VERBATIM
  2. DK/REF

- Q3. Do you live in a single family home, a duplex or triplex, a townhouse, or an apartment or condominium?
1. Single family 61
  2. Duplex/Triplex 4
  3. Townhouse 5
  4. Apartment/Condo 25
  5. OTHER 4
  6. DK/REF 1

- Q4. Now, thinking about your home, is there a yard or garden that you or someone in your household are responsible for?
1. Yes 67
  2. No **[SKIP TO Q12]** 33
  3. DK/REF **[SKIP TO Q12]**



- Q5. Is your yard or garden maintained by you or others in your household? By a gardening service? Or by both household members and a gardening service together?
- |                               |    |
|-------------------------------|----|
| 1. You or others in household | 64 |
| 2. Gardening service          | 16 |
| 3. Both                       | 19 |
| 4. NOT MAINTAINED             | 1  |
| 5. OTHER                      |    |
| 6. DK/REF                     |    |
- Q6. Do you have an automatic sprinkler system for your yard or garden?
- |                               |    |
|-------------------------------|----|
| 1. Yes                        | 58 |
| 2. No <b>[SKIP TO Q8]</b>     | 42 |
| 3. DK/REF <b>[SKIP TO Q8]</b> |    |
- Q7. In the last year or so, did anyone adjust the sprinklers in your yard or garden to reduce the amount of water you use? Or did that not happen in the last year?
- |           |    |
|-----------|----|
| 1. Yes    | 77 |
| 2. No     | 16 |
| 3. DK/REF | 7  |
- Q8. In the last year or so, did any fertilizers get used on your yard or garden?
- |           |    |
|-----------|----|
| 1. Yes    | 44 |
| 2. No     | 50 |
| 3. DK/REF | 6  |
- Q9. In the last year or so, did any pesticides or chemicals get used on your yard or garden to control insects, weeds, or plant diseases?
- |           |    |
|-----------|----|
| 1. Yes    | 34 |
| 2. No     | 59 |
| 3. DK/REF | 7  |
- Q10. There are a number of landscape and other design features that prevent or reduce the flow of rain water off your property. Please tell me if you have any of the following features in your front or back yard. **[ROTATE a-d]**
- a. Do you have a planted or rock area designed to catch rain water to allow it to seep into the ground? This is called a vegetated swale or rock basin.
- |           |    |
|-----------|----|
| 1. Yes    | 34 |
| 2. No     | 62 |
| 3. DK/REF | 4  |
- b. Do you have a barrel or cistern connected to a rain downspout to collect rain water for later use?
- |           |    |
|-----------|----|
| 1. Yes    | 16 |
| 2. No     | 82 |
| 3. DK/REF | 2  |
- c. Do you have roof downspouts that drain onto landscaping?
- |           |    |
|-----------|----|
| 1. Yes    | 55 |
| 2. No     | 42 |
| 3. DK/REF | 3  |
- d. Do you have a paved driveway or walkway that allows rain water to seep through its surface into the ground? This is called permeable pavement.
- |                                     |    |
|-------------------------------------|----|
| 1. Yes                              | 31 |
| 2. No                               | 61 |
| 3. Driveway or walkway is not paved | 1  |
| 4. DK/REF                           | 7  |

- Q11. Have you removed any of your turf and replaced it with California-friendly plants or artificial turf?
- |                                    |    |
|------------------------------------|----|
| 1. Yes, California-friendly plants | 24 |
| 2. Yes, artificial turf            | 6  |
| 3. No                              | 68 |
| 4. DK/REF                          | 2  |
- Q12. Do you have either a driveway or an off-street parking area that is for your home?
- |                                |    |
|--------------------------------|----|
| 1. Yes                         | 85 |
| 2. No <b>[SKIP TO Q15]</b>     | 14 |
| 3. DK/REF <b>[SKIP TO Q15]</b> | 1  |
- Q13. Please tell me if your driveway or off-street parking area was cleaned in each of the following ways in the last year. You can answer Yes or No to each one. **[ROTATE a-c]**
- a. By sweeping it?
- |                                |    |
|--------------------------------|----|
| 1. Yes                         | 69 |
| 2. No <b>[SKIP TO Q15]</b>     | 27 |
| 3. DK/REF <b>[SKIP TO Q15]</b> | 4  |
- b. By hosing it down?
- |                                |    |
|--------------------------------|----|
| 1. Yes <b>[SKIP TO Q15]</b>    | 16 |
| 2. No <b>[SKIP TO Q15]</b>     | 80 |
| 3. DK/REF <b>[SKIP TO Q15]</b> | 4  |
- c. By blowing materials off it?
- |                                |    |
|--------------------------------|----|
| 1. Yes <b>[SKIP TO Q15]</b>    | 51 |
| 2. No <b>[SKIP TO Q15]</b>     | 46 |
| 3. DK/REF <b>[SKIP TO Q15]</b> | 3  |
- Q14. When you clean your driveway by sweeping it, what do you do most often with the materials you sweep up? Do you usually sweep it into the street? Put it in a trash container? Put it in a green waste collection bin? Sweep it into your lawn or landscaping? Or something else?
- |                                   |    |
|-----------------------------------|----|
| 1. Sweep into street              | 2  |
| 2. Put in trash container         | 38 |
| 3. Put in green waste bin         | 33 |
| 4. Sweep into lawn or landscaping | 19 |
| 5. Something else <b>[RECORD]</b> | 2  |
| 6. LEAVE IT IN A PILE             | 1  |
| 7. DK/REF                         | 5  |
- Q15. In the last year, how often did you see litter on the block where you live? Use a 1 if you NEVER saw litter on your block, a 10 if you saw it VERY FREQUENTLY, or use any number in between.
- 1 --- 2 --- 3 --- 4 --- 5 --- 6 --- 7 --- 8 --- 9 --- 10 --- DK/REF      3.52 Mean

**IF Q15=1 SKIP TO Q17**

- Q16. When you see litter on your block, how often do you pick it up and dispose of it in a trash container? Use a 1 if you NEVER pick up litter on your block, a 10 if you ALWAYS pick up litter on your block, or use any number in between.
- 1 --- 2 --- 3 --- 4 --- 5 --- 6 --- 7 --- 8 --- 9 --- 10 --- DK/REF      6.82 Mean
- Q17. When our beaches, oceans, lakes, and creeks get polluted, how much do you think this affects you and your family? Use a 1 if this pollution does not affect you at all, a 10 if it affects you a great deal, or use any number in between.
- 1 --- 2 --- 3 --- 4 --- 5 --- 6 --- 7 --- 8 --- 9 --- 10 --- DK/REF      6.68 Mean

Q18. In the last year, did you avoid going into the water at a beach in San Diego County because you were concerned about pollution in the water?

- 1. Yes 27
- 2. No 73
- 3. DK/REF

Q19. In the last year, did you avoid visiting a lake or river in San Diego County because you were concerned about pollution in the water?

- 1. Yes 13
- 2. No 86
- 3. DK/REF 1

Q20. Now, as far as you know, do you live in a watershed, or not?

- 1. Yes 10
- 2. No 48
- 3. DK/REF 42

Q21. Have you ever heard of the term "storm drain" before, or not?

- 1. Yes 86
- 2. No 13
- 3. DK/REF 1

Q22. When water goes into the storm drains in your area, does it go to a sewage treatment plant before it is released, or is it released into local waterways or the ocean without treatment? If you are not sure, just say so.

- 1. Goes to treatment plant 10
- 2. Released without treatment 25
- 3. Not sure 65
- 4. REF

QT1. In fact, water in storm drains in San Diego County does not go into the sewage system, and flows directly into local waterways and the ocean without being treated.

Q23. From what you know or may have heard, what are one or two major sources of pollution in storm drains?

- 1. RECORD VERBATIM
- 2. DK/REF

Q24. In the last year, did you see or hear anything about steps that any local government agencies in this area are taking to prevent pollution of the water in storm drains?

- 1. Yes 27
- 2. No 66
- 3. DK/REF 7

Q25. In the past year, did you make any changes in your behavior that were a direct result of seeing or hearing any information about what polluted water in storm drains does to local waterways, the beaches, and the ocean? If you don't recall, just say so.

- 1. Yes 24
- 2. No 57
- 3. Don't recall 19
- 4. REF

Q26. Now, can you name one thing that you could do to help prevent storm water pollution?

- 1. RECORD VERBATIM
- 2. DK/REF

Q27. Have you ever visited a website to get information about ways to reduce storm water pollution?

- |           |    |
|-----------|----|
| 1. Yes    | 8  |
| 2. No     | 91 |
| 3. DK/REF | 1  |

Q28. Have you heard of a telephone hotline which can be used to get information about preventing pollution, or to report activities that may be polluting our local beaches and storm drains?

- |                                |    |
|--------------------------------|----|
| 1. Yes                         | 21 |
| 2. No <b>[SKIP TO Q30]</b>     | 77 |
| 3. DK/REF <b>[SKIP TO Q30]</b> | 2  |

Q29. In the last year, did you call a storm water pollution prevention hotline for any reason?

- |           |    |
|-----------|----|
| 1. Yes    | 4  |
| 2. No     | 96 |
| 3. DK/REF |    |

Q30. If you saw someone doing something that polluted local waters, what would be the most convenient way for you to report it – assuming your name would be kept confidential? **[ROTATE 1-4]**

- |                                       |    |
|---------------------------------------|----|
| 1. Calling the telephone hotline,     | 43 |
| 2. Sending an email,                  | 8  |
| 3. Entering a report on a website, or | 11 |
| 4. Sending a text message?            | 13 |
| 5. NONE                               | 11 |
| 6. WOULD NOT REPORT IT                |    |
| 7. ALL                                | 7  |
| 8. DK/REF                             | 7  |

QT2. I have just a few additional questions for statistical purposes only.

Q31. ----- How many years have you lived in San Diego County?

- |                    |  |
|--------------------|--|
| 1. RECORD VERBATIM |  |
| 2. DK/REF          |  |

Q32. Did you visit a beach at the ocean in San Diego County in the past year?

- |           |    |
|-----------|----|
| 1. Yes    | 71 |
| 2. No     | 28 |
| 3. DK/REF | 1  |

Q33. Did you visit a lake or river in San Diego County in the past year?

- |           |    |
|-----------|----|
| 1. Yes    | 39 |
| 2. No     | 60 |
| 3. DK/REF | 1  |

Q34. Are you of Hispanic or Latino origin or descent, or do you consider yourself Hispanic or Latino?

- |           |    |
|-----------|----|
| 1. Yes    | 24 |
| 2. No     | 76 |
| 3. DK/REF |    |

Q35. Would you describe your race as Black or African-American; Asian or Asian-American; White or Caucasian; Native American, mixed ethnicity, or something else?

- |                              |    |
|------------------------------|----|
| 1. Black or African-American | 4  |
| 2. Asian or Asian-American   | 6  |
| 3. White or Caucasian        | 60 |
| 4. Native American           | 2  |
| 5. Mixed ethnicity           | 7  |
| 6. Something else            | 15 |
| 7. REF                       | 6  |

Q36. Would you describe where you live as mostly urban, suburban, or rural?

- |             |    |
|-------------|----|
| 1. Urban    | 35 |
| 2. Suburban | 53 |
| 3. Rural    | 12 |
| 4. DK/REF   |    |

Q37. Do you own the home where you live or do you rent it?

- |           |    |
|-----------|----|
| 1. Own    | 60 |
| 2. Rent   | 40 |
| 3. DK/REF |    |

Q38. What was the last level of school you completed?

- |                             |    |
|-----------------------------|----|
| 1. LESS THAN GRADE 12       | 3  |
| 2. HIGH SCHOOL GRADUATE     | 19 |
| 3. SOME COLLEGE, NO DEGREE  | 20 |
| 4. ASSOCIATE DEGREE (2-YR)  | 12 |
| 5. BACHELOR'S DEGREE (4-YR) | 24 |
| 6. POST GRADUATE DEGREE     | 11 |
| 7. PROFESSIONAL DEGREE      | 7  |
| 8. REFUSED                  | 4  |

Q39. What is your age, please?

1. RECORD VERBATIM **[SKIP TO 140]**
2. REF

Q39a. Which of the following categories includes your age?

- |                |    |
|----------------|----|
| 1. 18-29       | 13 |
| 2. 30-39       | 12 |
| 3. 40-49       | 15 |
| 4. 50-59       | 18 |
| 5. 60-64       | 10 |
| 6. 65-69       | 9  |
| 7. 70 or older | 18 |
| 8. REFUSED     | 5  |

Q40. Finally, so we can identify results by watershed, what are the two nearest cross streets to your home?

1. FIRST STREET - RECORD VERBATIM, VERIFY SPELLING
2. SECOND STREET - RECORD VERBATIM, VERIFY SPELLING **[SKIP TO QT3]**
3. REF

Q40a. Can you give me the name of the school or park closest to your home?

1. RECORD VERBATIM
2. REF

QT3. Those are all the questions I have. Thank you very much for participating in the survey.