



# Public Opinions on Water Quality Issues 2014

Prepared for the Colorado Watershed Assembly

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# INTRODUCTION

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This survey is a follow-up to a previous effort Public Opinions on Water Quality Issues – 2007, both prepared for the State of Colorado Water Quality Control Division (division). The division, in partnership with the Colorado Water Resources and Power Development Authority, the Colorado Watershed Assembly (CWA), and Corona Insights, is updating the 2007 survey to inform implementation of a number of programs including the development of regional outreach strategies for the Statewide Water Quality Management Plan and outreach approaches for the Nonpoint Source program. Results of this survey and subsequent stakeholder involvement will be open to all interested individuals and watershed groups as part of CWA's effort to build a cohesive and well-informed community of watershed groups and local entities.

## BACKGROUND

In 2014, the Colorado Watershed Assembly (CWA) was asked by the division to repeat a phone survey of Colorado residents first conducted in 2007 to understand opinions towards water quality and to see if opinions have changed over time. Colorado Water Resources and Power Development Authority funding was utilized and CWA retained Corona Insights, the same Denver-based market research and strategic consulting firm that conducted the initial survey.

In order to better target differences among state residents, this study was conducted in five distinct regions of the state as was done in 2007. Both surveys measured opinions towards general environmental issues, opinions towards water quality, personal actions taken in relation to water quality, benefits of and barriers to taking action, and avenues to education and communication. CWA engaged stakeholders from the 2007 effort along with others to inform survey design. The division and CWA will collaborate with this stakeholder group to develop outreach strategies based on survey results.

## METHODOLOGY

Corona Insights conducted the telephone survey in September and October 2014, and we collected responses from a random sample of adults who live in Colorado. Because a large proportion of adults do not use a landline for personal calls, we derived 60 percent of our responses from cellular phone numbers; we did not sample cellular phone numbers in the 2007 survey. It is likely that opinions towards water quality differ by geography. In order to analyze and report results by sub-state areas, and in order to ensure comparability with the 2007 survey results, we reused the five county-based regions there were created for the previous survey. We collected about 380 responses from each region.

Analyses involved weighing the data, calculating descriptive statistics such as means and percentages, and in some cases, testing for statistically significant relationships or differences between segments. We provide additional background on our methodology in [Appendix A](#).

## MARGIN OF ERROR

We gathered 1,959 survey responses during the study period resulting in an overall adjusted margin of error of  $\pm 4.3$  percent within a 95 percent confidence interval. Margins of error by segment are shown in the table below. All reported margins of error are corrected for the weighting effect, which will increase the margin of error in proportion to the size of the applied weights.

Subpopulation	Survey Respondents	95% MoE
Statewide	1,959	$\pm 4.3\%$
Eastern Mountains	396	$\pm 5.0\%$
Eastern Plains	389	$\pm 5.2\%$
Front Range	388	$\pm 5.2\%$
San Luis Valley	384	$\pm 5.3\%$
Western Slope	402	$\pm 5.3\%$
Males	1,009	$\pm 3.3\%$
Females	950	$\pm 3.3\%$

## ACKNOWLEDGMENTS

- Colorado Water Resources and Power Development Authority
- Colorado Water Quality Control Division
- Colorado Foundation for Agriculture
- Colorado Foundation for Water Education
- Colorado Stormwater Council
- Colorado Water Center of Colorado State University
- Keep It Clean Partnership
- Nonpoint Source Colorado
- One World One Water Center of Metropolitan State University

## SUMMARY OF KEY INSIGHTS

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The following key insights are organized by common theme. We support these insights with data displayed in the [Detailed Research Findings](#) section.

### BELIEFS AND OPINIONS ON WATER QUALITY

- **Water quality has clearly become the most important environmental issue.** There was a 24 percent statewide increase in the proportion of residents who considered water pollution to be the most important environmental issue (among five issues tested), making water quality the definitively most important environmental issue statewide and within each region. Eastern Mountains and Western Slope residents showed the greatest increase in signifying that water pollution was the most important environmental issue. Compared to 2007, there was an increase in the importance of water quality for recreation and for groundwater as a source of drinking water. There was no increase in the importance of surface water as a source of drinking water, possibly because a vast majority of respondents agreed surface water was important in 2007; thus, there was little room to increase in 2014. Almost 75 percent of residents said they were worried about water quality in Colorado. [Questions 1, 3, and 8](#)
- **There is some willingness to pay more in taxes or fees.** One quarter of residents said they strongly agreed that they would be willing to pay more to protect water quality, and another 36 percent said they somewhat agreed. Those willing to pay more taxes were likely to be younger, have more education, and be very worried about water quality in Colorado. However, there was a significant proportion of the population (about 20%) that strongly opposed paying more taxes for water protection. [Question 3](#)
- **Many beliefs about water quality relate to worry over water quality and previous behavior.** While it may not be surprising, residents' beliefs about the interconnections of water quality (e.g., the quality of water in my area is affected by upstream pollution sources) were related to their personal concerns about water quality and their previous actions. As agreement with statements describing the relationship between water pollution and water quality increased, so did their level of worry about water quality and their likelihood of taking action to preserve water quality. While we cannot prove that these beliefs caused worry or behavior, a causal relationship seems probable. [Questions 3 and 4](#)
- **Residents are most likely to say their drinking water comes from the government or an organization.** Statewide, about one in four residents said their drinking water comes from the government or an organization such as a water company or water district. Residents who were unsure from where their water originated were likely to be from the Front Range, be younger, female, and have less education. [Question 5](#)
- **Most residents believe home water is safe, but this belief slightly decreased.** Ninety percent of Colorado residents believed home water was safe to drink. Most of the decrease in water safety perceptions was from Front Range residents. [Question 9](#)
- **Residents do not perceive all pollution sources to have the same effect.** Of the pollution sources we tested, residents perceived some sources to have a major effect on water quality and other sources to have a minor or no effect. The major effect sources were pesticides, fertilizers, faulty septic systems, and fluids leaking from vehicles. Minor effect sources were dog waste, exposed soil, runoff from washing a car, and uncollected grass clippings. [Question 10](#)

## PERSONAL ACTIONS

- **Residents take actions to preserve water quality.** Almost 90 percent of all respondents said they strongly or somewhat agreed that they personally took action to preserve water quality. People were very likely to take actions in all regions, but they were most likely to on the Western Slope. About 75 percent of respondents said that people in their area took action to preserve water quality, but of this value, the majority indicated they only “somewhat agreed.” Younger residents were much less likely to take actions than middle-aged or older residents. There was a strong desire to take action to protect water quality, especially to protect home drinking water, and there was a greater desire to take action to protect home drinking water quality than take action to protect downstream water quality. [Questions 3 and 7](#)
- **Public health is the greatest motivator; pet health is quickly increasing.** Similar to 2007, the impact on public health was the greatest motivator for improving water quality. As a motivator, pet health increased by 46 percent since 2007, which was the greatest increase compared to other motivators tested. Most of this increase was in the Front Range and Eastern Plains. [Question 11](#)
- **Some actions are adopted primarily to preserve water quality, while other actions are not.** If respondents did change the way they used fertilizer or pesticides, it was likely to preserve water quality. Inversely, those who used a commercial car wash, picked up dog waste, or collected grass clippings were unlikely to do so for water quality reasons. [Question 12](#)
- **Many residents who did not take actions, did so with good intentions.** For example, some residents believed that not taking action would result in a positive outcome (e.g., dog waste was good fertilizer, grass clippings are good for the soil). Considering a majority of residents believed leaving grass clippings was good for the soil, outreach and public education could have substantial impact on this behavior. The belief that an action caused no harm was also a common reason why residents did not undertake several different types of actions to preserve water quality (e.g., change pesticide or fertilizer use, remove grass clippings, pick up dog waste). Other reasons for inaction that were common across several behaviors were lack of control and infrequent engagement in the action. [Question 13](#)

## EDUCATION AND COMMUNICATION

- **Water quality messages differed by region.** Statewide, about 40 percent of residents heard, saw, or read a message about water quality in the past three months. Residents on the Western Slope were most likely to be exposed to messages and Front Range residents were least likely to be exposed. Mountain areas were most likely to receive messages through the newspaper, and Western Slope residents appear particularly interested in receiving messages from the newspaper in the future. [Questions 17 and 18](#)
- **Social media could be a good way to reach non-compliers.** It will be challenging to communicate with residents who did not previously take action to preserve water quality or those who did not worry about water quality in Colorado. These respondents were least likely to indicate they would attend to information about water quality from most sources. However, they were more likely than others to be open to receiving messages through social media. [Question 19](#)

## DEMOGRAPHIC DIFFERENCES

We found that many responses differed on key demographic variables, especially region, age, and gender, and to a lesser extent, education. We highlight some of the major differences below.

- **Gender:** Females were more likely than males to be worried about water quality in Colorado, not know from where home drinking water originates, and believe most possible pollution sources had an effect on water quality. They were also more likely to be motivated to improve water quality for the health of pets and to reduce odor from bodies of water. Males were more likely than females to believe home drinking water was safe, agree that other people in the area took action to preserve water quality, and offer an answer as to the origins of their drinking water. They were also more likely to be exposed to water quality messages.
- **Age:** Compared to other age groups, younger residents (i.e., 18 to 34 years old) were least likely to be worried about water quality, least likely to take action to preserve water quality, but were most willing to pay more in taxes. Younger residents were most likely to be unsure from where their water originated or say it comes from the faucet, bottle, or store. They were generally most likely to be motivated to improve water quality even though they were least likely to have been exposed to water quality messages. Conversely, residents 55 or older were most likely to believe home water was safe to drink, and residents 35 or older were most likely to be worried about water quality in Colorado. Older residents were most likely to say water originates from wells, from watersheds, or from a river, and they were most likely to take action to preserve water quality and to believe others took actions.
- **Education:** Residents with a bachelor's degree or more were more likely than others to believe their home drinking water was safe, were more willing to pay more taxes for water quality, and more likely to believe others took actions to preserve water quality in their area. They were more likely to suggest from where they receive their drinking water, have serviced their septic system recently, and have been exposed to a water quality message.
- **Front Range:** Compared to other regions, Front Range residents were the least worried about their water quality and least concerned about water pollution. They were most likely to not know where their water originated, most likely to say it comes from the government or from the faucet, and least likely to say it comes from groundwater. They were most likely to not know where storm water runoff drained to, and they were most likely to use a commercial car wash (possibly because of a greater concentration of commercial car washes in urban areas), pick up dog waste, and cover exposed soil to reduce erosion. Front Range residents with a septic system had it serviced the most often (on average), and were most likely to increase the frequency of servicing their system since 2007. They were least likely to have been exposed to a message about water quality.
- **Western Slope:** Compared to other regions, Western Slope residents indicated the greatest increase in concern over water pollution since 2007, and they held the strongest belief that household water quality depended on the quality of water in local lakes, rivers, and groundwater. Nonetheless, they were most likely to believe their home water was safe to drink and local water was clean enough for swimming. They were most likely to take personal action to preserve water quality, were most willing to pay more in taxes to protect water quality, and were most likely to believe others in their area took action to preserve quality. Western Slope residents were most likely to say their water comes from a river or stream, and they were most likely to say storm water drains to a body of water. They were also most likely not to change their use of pesticides, compared to 2007.

- **Eastern Plains:** Compared to other regions, Eastern Plains residents were most concerned about water pollution and least likely to believe their home drinking water was safe or that local water was clean enough for swimming. They were least likely to believe household water quality depended on water quality in local lakes, rivers and groundwater. Eastern Plains residents were least willing to pay more in taxes to protect water quality, and they were least likely to desire taking action to protect water quality. They were least likely to think faulty septic systems, fluids leaking from vehicles, and uncollected dog waste had an effect on water quality; they were also the most likely to not pick up dog waste. Residents who had a septic system serviced the system the least often; in fact, the Eastern Plains was the only region that saw an increase in time since their system was last serviced, compared to 2007.
- **San Luis Valley:** Compared to other regions, San Luis Valley residents were most likely to say their drinking water originated from a well, and more than half of San Luis Valley households had a septic system, which was more than any other region in 2014. They were most likely to be worried about water quality in Colorado, and they were tied with the Eastern Mountain region in their desire to take actions to protect the quality of home drinking water. San Luis Valley residents were least likely to think that exposed soil, runoff from washing a car, and uncollected grass clippings had an effect on water quality, and they were most likely to not cover exposed soil, use a commercial car wash, or collect grass clippings. Compared to 2007, the health of pets became slightly less motivating of a reason for improving water quality.
- **Eastern Mountains:** Compared to other regions, Eastern Mountain residents were least likely to indicate their drinking water comes from the government or water company and they were least likely to say they did not know where their water originated. Along with Western Slope residents, Eastern Mountain residents were most likely to say taking action to protect water quality was desirable and that water quality was very important. They were the least likely to not change pesticide use or fertilizer use, and they were least likely to say storm water runoff drains to a treatment facility. The proportion of Eastern Mountain households with a septic tank decreased by 24 percent since 2007 (i.e., 58 percent had a septic tank in 2007 compared to 44 percent in 2014), the largest decrease of all the regions.



## DETAILED RESEARCH FINDINGS

The following exhibits represent results from all respondents and key segments where specified. To improve readability, we occasionally rounded figures and removed value labels on graphs. Summary tables and open-ended responses to all questions can be found in the accompanying Excel workbook.

### DEMOGRAPHICS

The following tables summarize the weighed profile of survey respondents. These characteristics should be considered as context and background when examining report findings.

Gender						
	State wide	Eastern Mountains	Eastern Plains	Front Range	San Luis Valley	Western Slope
Male	49%	55%	53%	49%	50%	51%
Female	51%	45%	47%	51%	50%	49%

Age						
	State wide	Eastern Mountains	Eastern Plains	Front Range	San Luis Valley	Western Slope
18 to 34	32%	23%	27%	33%	28%	30%
35 to 54	38%	36%	37%	38%	33%	36%
55 or older	30%	41%	36%	29%	39%	34%

Length of Time as Resident in Current County						
	State wide	Eastern Mountains	Eastern Plains	Front Range	San Luis Valley	Western Slope
Less than one year	8%	3%	4%	8%	4%	8%
1 to 5 years	25%	20%	18%	27%	16%	12%
6 to 10 years	16%	16%	9%	16%	11%	18%
Longer than 10 years	51%	60%	69%	49%	69%	62%

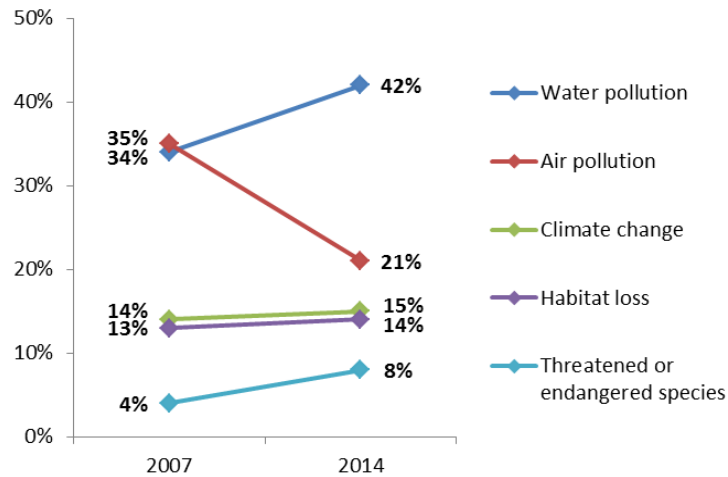
Education Level						
	State wide	Eastern Mountains	Eastern Plains	Front Range	San Luis Valley	Western Slope
Less than Bachelors	52%	61%	72%	50%	62%	56%
Bachelors or more	48%	39%	28%	50%	38%	44%

Someone in Household Works in Natural Resources						
	State wide	Eastern Mountains	Eastern Plains	Front Range	San Luis Valley	Western Slope
Yes	12%	12%	18%	11%	16%	17%
No	88%	88%	81%	89%	82%	83%
Don't know	0%	1%	1%	-	2%	0%

## SECTION 1: OPINIONS ON WATER QUALITY

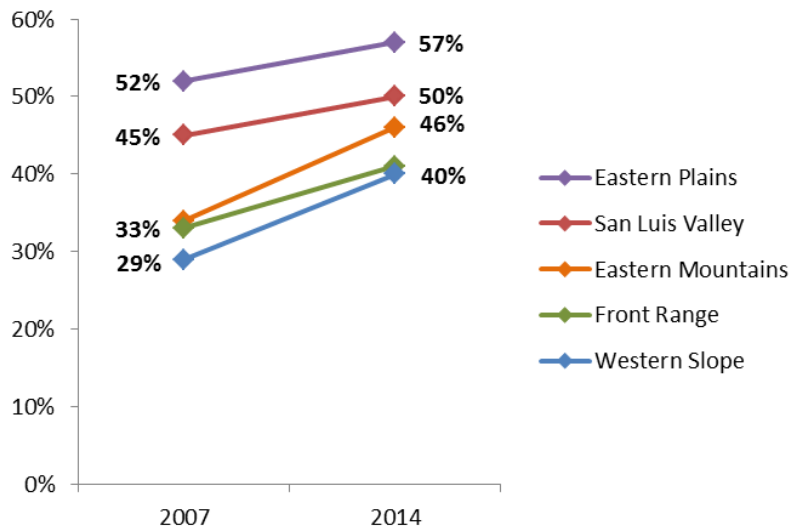
About 40 percent of statewide respondents indicated that water pollution was the most important environmental issue. Compared to 2007, there was an increase in the proportion who said it was the most important environmental issue.

**Exhibit 1-1: Most Important Environmental Issue (Q1 by Year)**



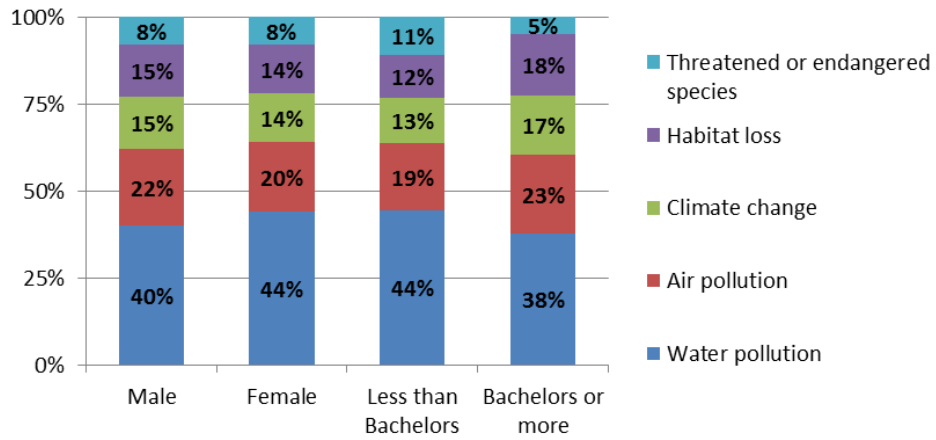
Residents in the Eastern Plains were most likely to indicate water pollution was the most important environmental issue. Compared to 2007, the greatest increases in water pollution as the most important environmental issue were in the Eastern Mountains and Western Slope.

**Exhibit 1-2: Water Pollution as the Most Important Environmental Issue (Q1c by Region)**



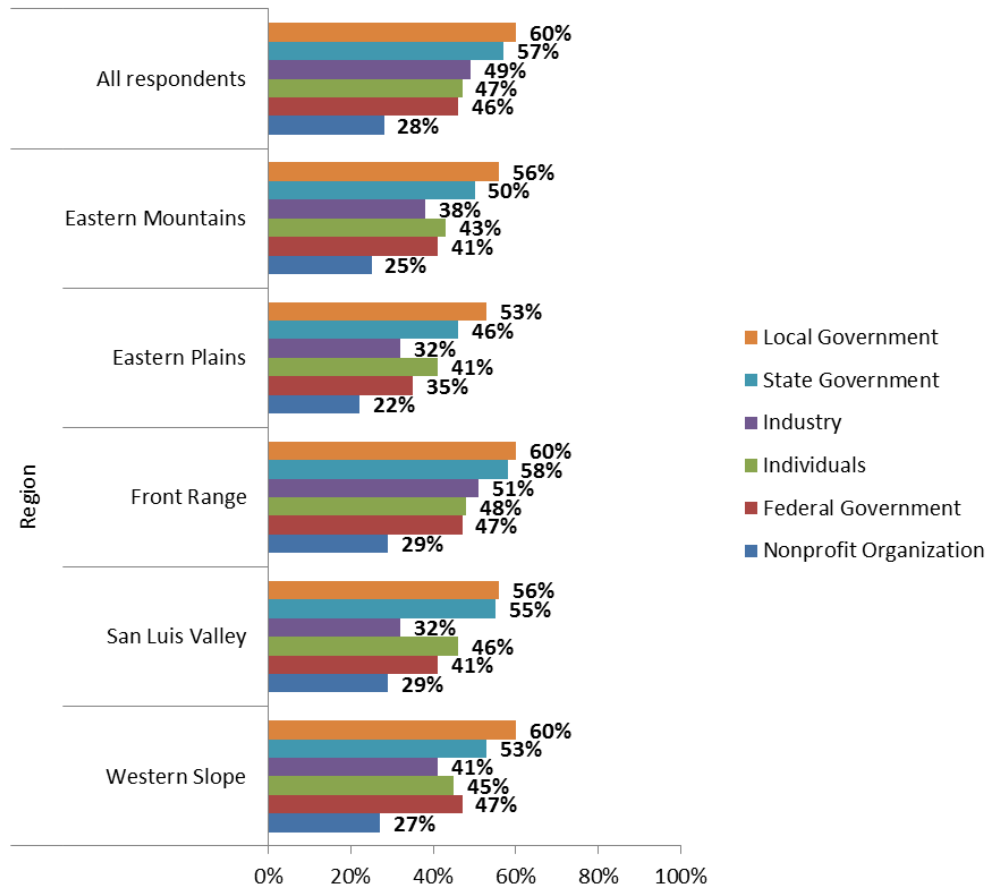
Residents without a bachelor's degree were more likely than residents with a bachelor's degree to indicate water pollution was the most important environmental issue. We found no meaningful difference in responses to this question based on gender.

**Exhibit 1-3: Most Important Environmental Issues (Q1 by Gender and Education)**



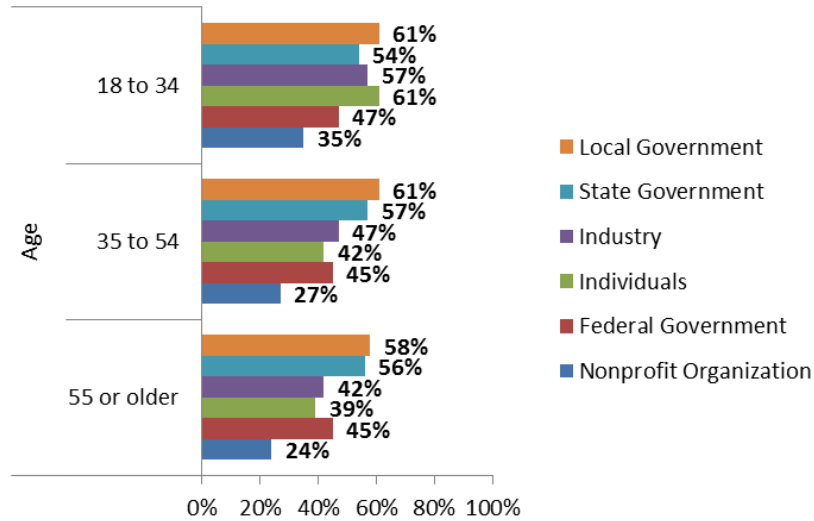
Most respondents believed local government and/or state government had responsibility for water quality oversight in their local area, and about one quarter believed non-profit organizations held responsibility. Front Range residents were most likely to indicate multiple entities while the Eastern Plains residents were least likely to indicate multiple entities. Respondents from the Front Range and Western Slope were most likely to believe the federal government had oversight, while Eastern Plains respondents were least likely to believe this. The disparity between proportions may be, at least partly, due to the greater concentration of federal land on the Western Slope compared to the Eastern Plains.

**Exhibit 1-4: Entity Responsible for Water Quality Oversight (Q2 by Region)**



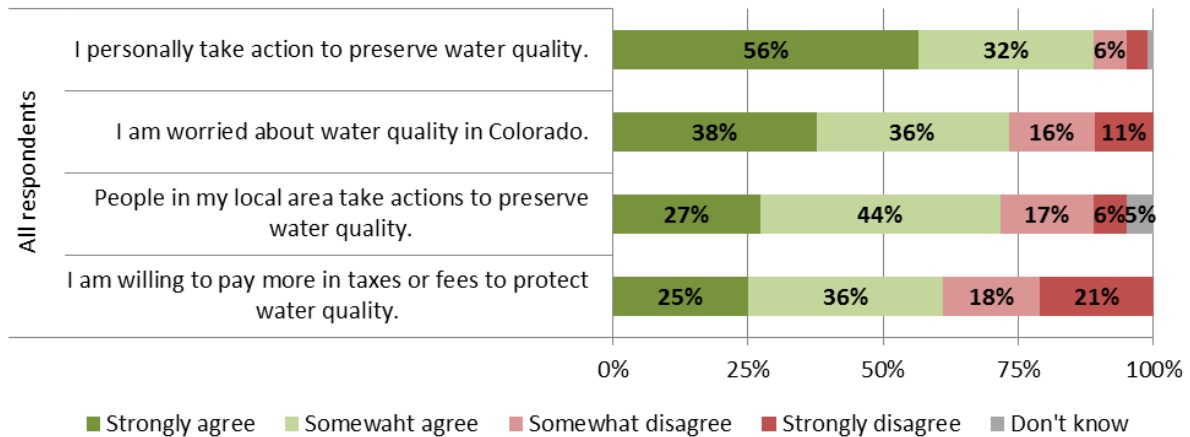
Younger adults (i.e., 18 to 34 years old) were much more likely than other respondents to believe individuals, industry, or non-profit organizations held water quality oversight.

**Exhibit 1-5: Entity Responsible for Water Quality Oversight (Q2 by Age)**



Among all respondents, a vast majority (i.e., almost 90 percent) agreed that they took at least some action to preserve water quality, and about two-thirds indicated they were worried about water quality in Colorado and that people in their area took actions to preserve water quality. About 60 percent agreed to pay more in taxes or fees to protect water quality, but about one-fifth strongly disagreed with this statement.

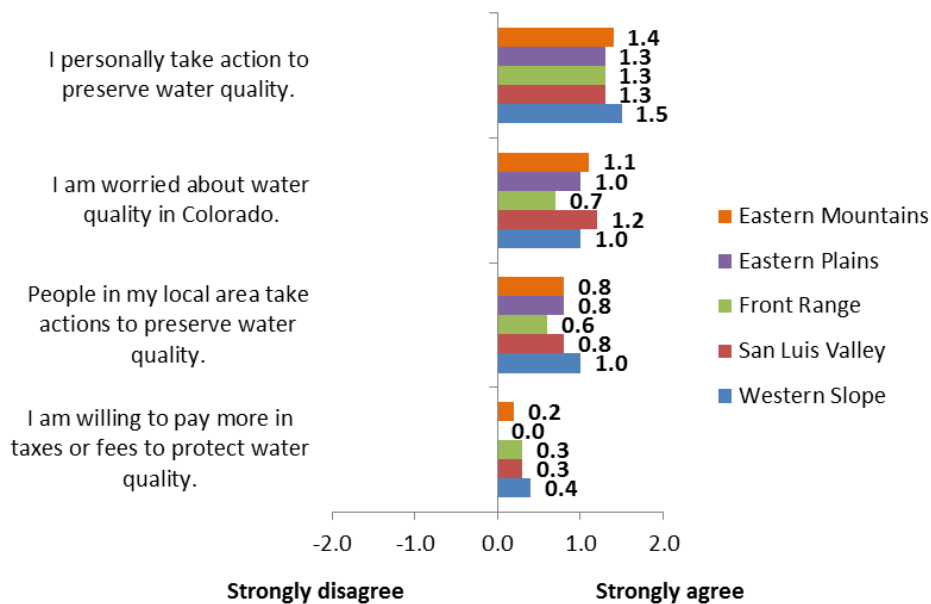
**Exhibit 1-6: Opinions about Water Quality (Q3)**



To more easily compare responses by region, we calculated average scores after assigning a numeric code to each response category (Strongly agree = 2, Somewhat agree = 1, Somewhat disagree = -1, and Strongly disagree = -2). Large positive averages represent stronger agreement with the statement, while larger negative averages represent stronger disagreement with the statement.

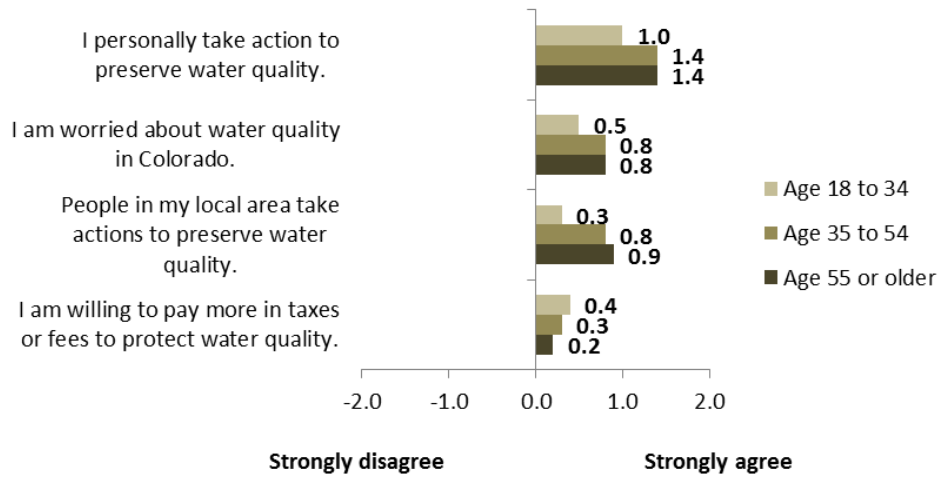
Generally, residents in all regions agreed that they took personal action to preserve water quality and that they were worried about water quality. Residents in the San Luis Valley were the most worried about water quality and those on the Front Range were least worried. Residents on the Western Slope were most likely to agree that people in their area took action to preserve water quality, and Front Range residents were least likely to believe this. Respondents from the Eastern Plains were the least willing to pay more in taxes or fees to protect water quality, and Western Slope respondents were most likely to be willing to pay more.

**Exhibit 1-7: Opinions about Water Quality (Q3 by Region)**



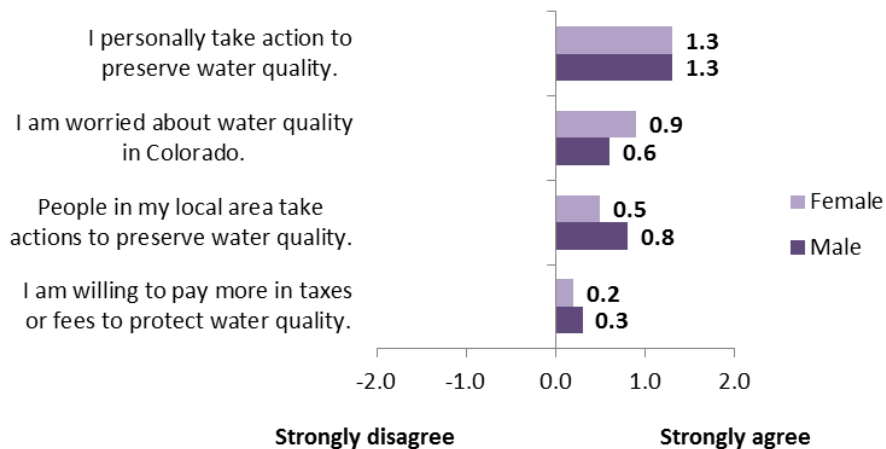
Younger respondents (i.e., 18 to 34 years old) were less likely than other respondents to take personal action to preserve water quality, be worried about water quality, or believe their neighbors took action to preserve water quality. However, they were more willing than respondents 55 and older to be willing to pay more taxes or fees.

**Exhibit 1-8: Opinions about Water Quality (Q3 by Age)**



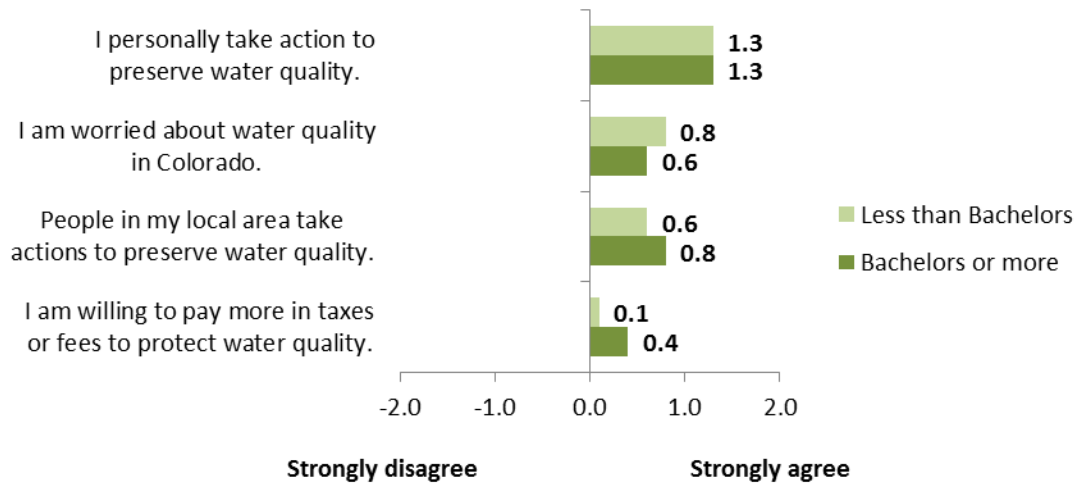
Females were more likely than males to be worried about water quality in Colorado and less likely to believe others took actions to preserve water quality. We found no meaningful differences by gender regarding taking action or willingness to pay more taxes or fees.

**Exhibit 1-9: Opinions about Water Quality (Q3 by Gender)**



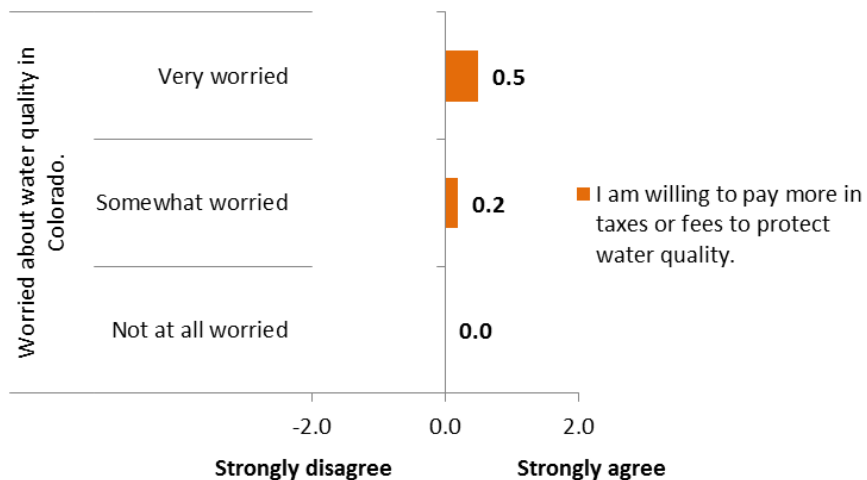
Level of education appeared to relate to some opinions about water quality. Respondents with at least a bachelor's degree were more willing to pay taxes or fees and to believe others took action to preserve water quality. However, those with less than a bachelor's degree were more likely to be worried about water quality in Colorado.

**Exhibit 1-10: Opinions about Water Quality (Q3 by Education)**



There was a relationship between worry over water quality and willingness to pay more taxes or fees to protect water quality. Residents who were more worried about water quality were more likely to be willing to pay more taxes or fees.

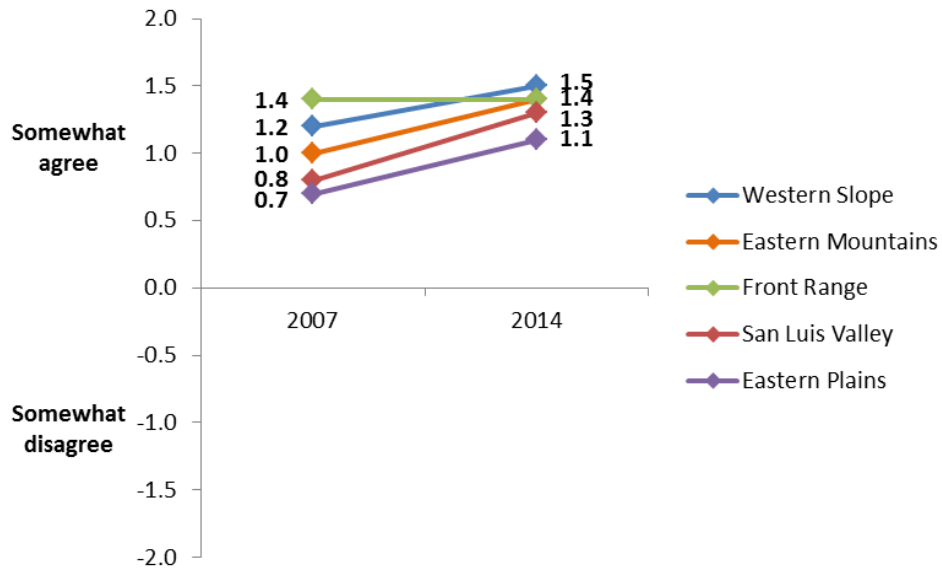
**Exhibit 1-11: Willingness to Pay More in Taxes or Fees (Q3d by Q3c)**





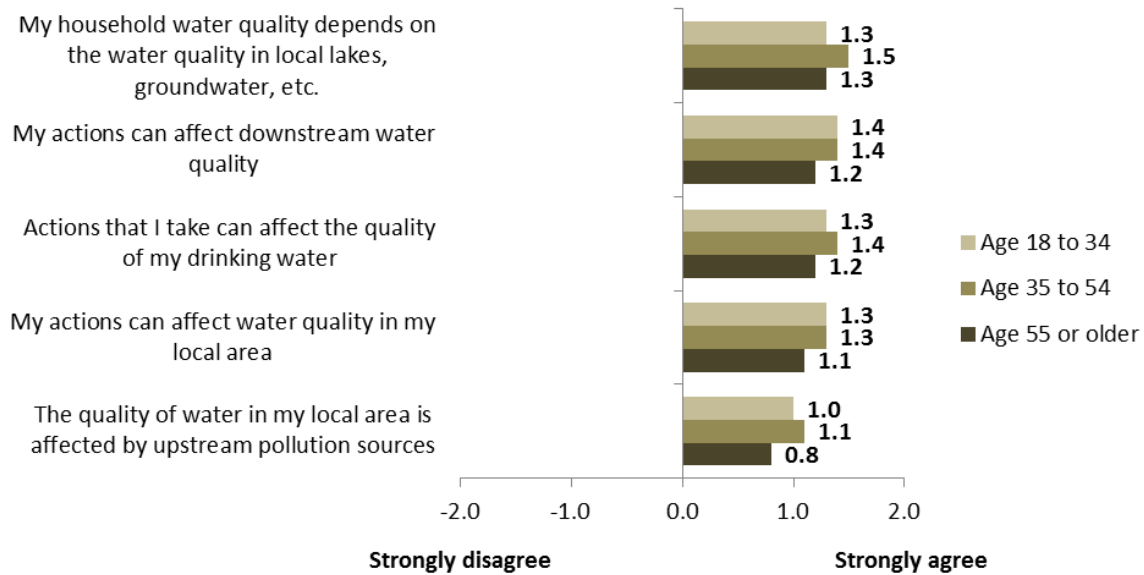
Statewide, we found no significant changes since 2007 regarding agreement towards several water quality statements (e.g., “The quality of water in my local area is affected by upstream sources of pollution”). However, beliefs that household water quality depends on water quality in local rivers, lakes, and groundwater did increase within all regions except the Front Range. We modified this question in 2014 by adding the term *groundwater*, which may account for some of the change between years rather than an actual change within the population. Regardless, it is interesting that the average score on the Front Range did not change at all while scores in other regions did change.

**Exhibit 1-12: Belief that Household Water Quality Depends on Water Quality in local lakes, rivers, and Groundwater (Q4e)**



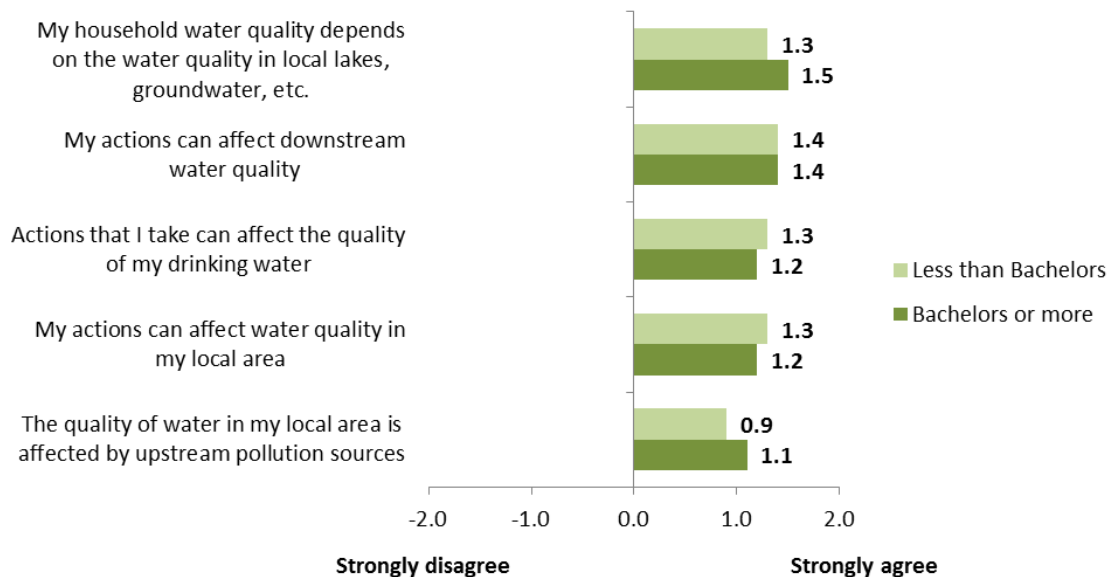
Analyzing results by age, we found that some opinions about water quality differed the most between middle-aged respondents (i.e., 35 to 54) and older respondents (i.e., 55 or older). The greatest difference between these segments was the belief that local water quality was affected by upstream sources.

**Exhibit 1-13: Beliefs about Water Quality (Q4 by Age)**



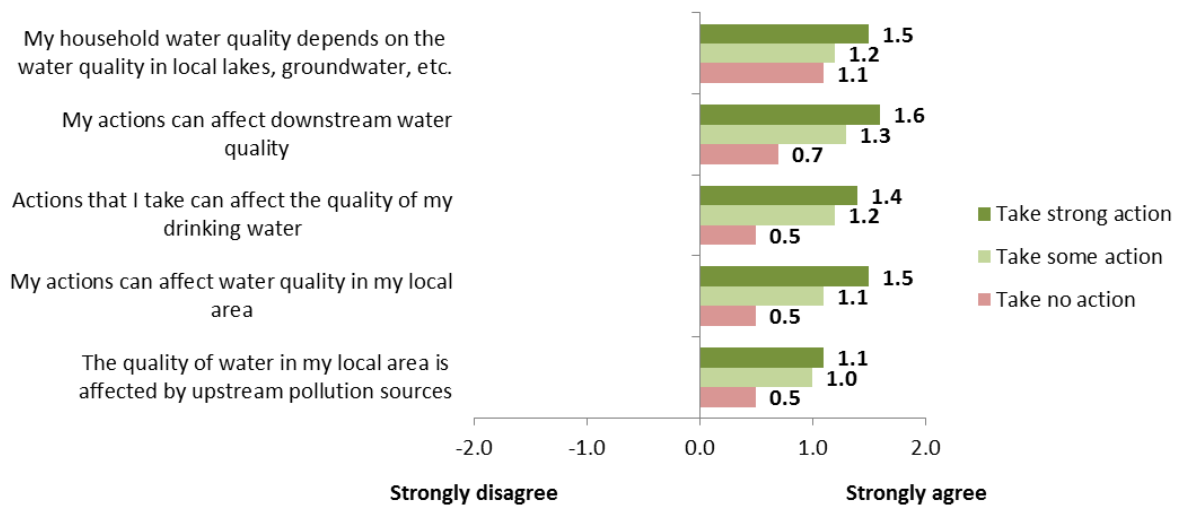
Respondents with less than a bachelor's degree were more likely than those with a bachelor's to believe their actions could affect the quality of their drinking water and the quality of water in their local area.

**Exhibit 1-14: Beliefs about Water Quality (Q4 by Education)**



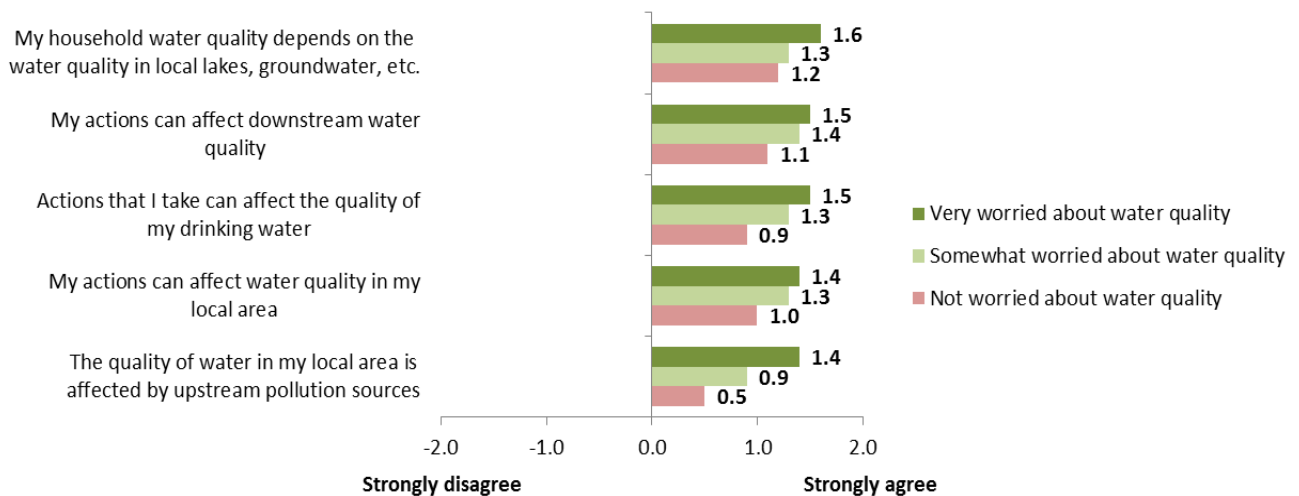
Respondents who took at least some action to preserve water quality (i.e., agreed to question 3b), were much more likely than respondents who took no action (i.e., disagreed to question 3b) to agree with most statements about water quality. Not surprisingly, those who took action believed that taking action could affect the quality of their personal drinking water as well as the water in their local area. Interestingly, those who took no action generally agreed that their household water quality depended on the quality of local water sources.

**Exhibit 1-15: Beliefs about Water Quality (Q4 by Q3b)**



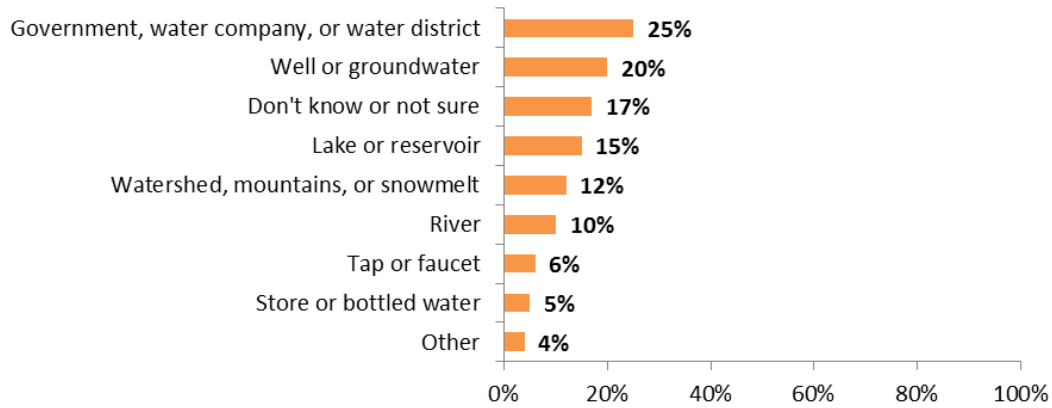
Akin to the results shown above, there was a relationship between beliefs about water quality and worry over water quality. As agreement towards these statements increased, so did worry. The strongest relationship is regarding the belief that local water quality was affected by upstream pollution.

**Exhibit 1-16: Beliefs about Water Quality (Q4 by Q3b)**



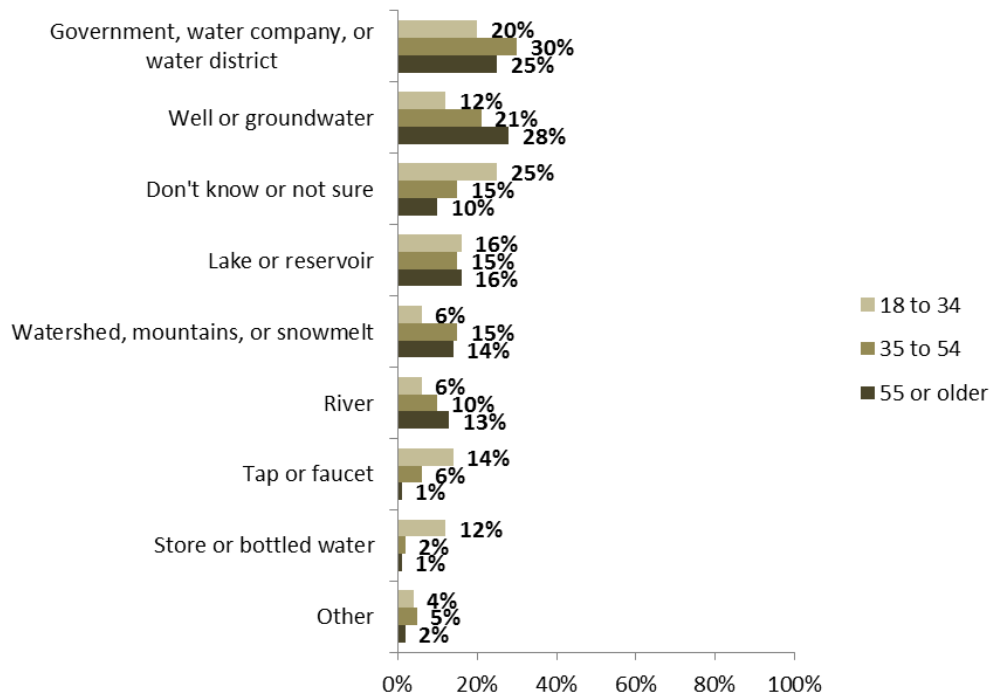
Statewide, residents were most likely to report that their drinking water originated from organizations such as governments, water companies, or water districts. About one-fifth said their water originated from wells or aquifers, and about one-sixth said they did not know or were not sure from where their water came.

**Exhibit 1-17: Origin of Drinking Water (Q5)**



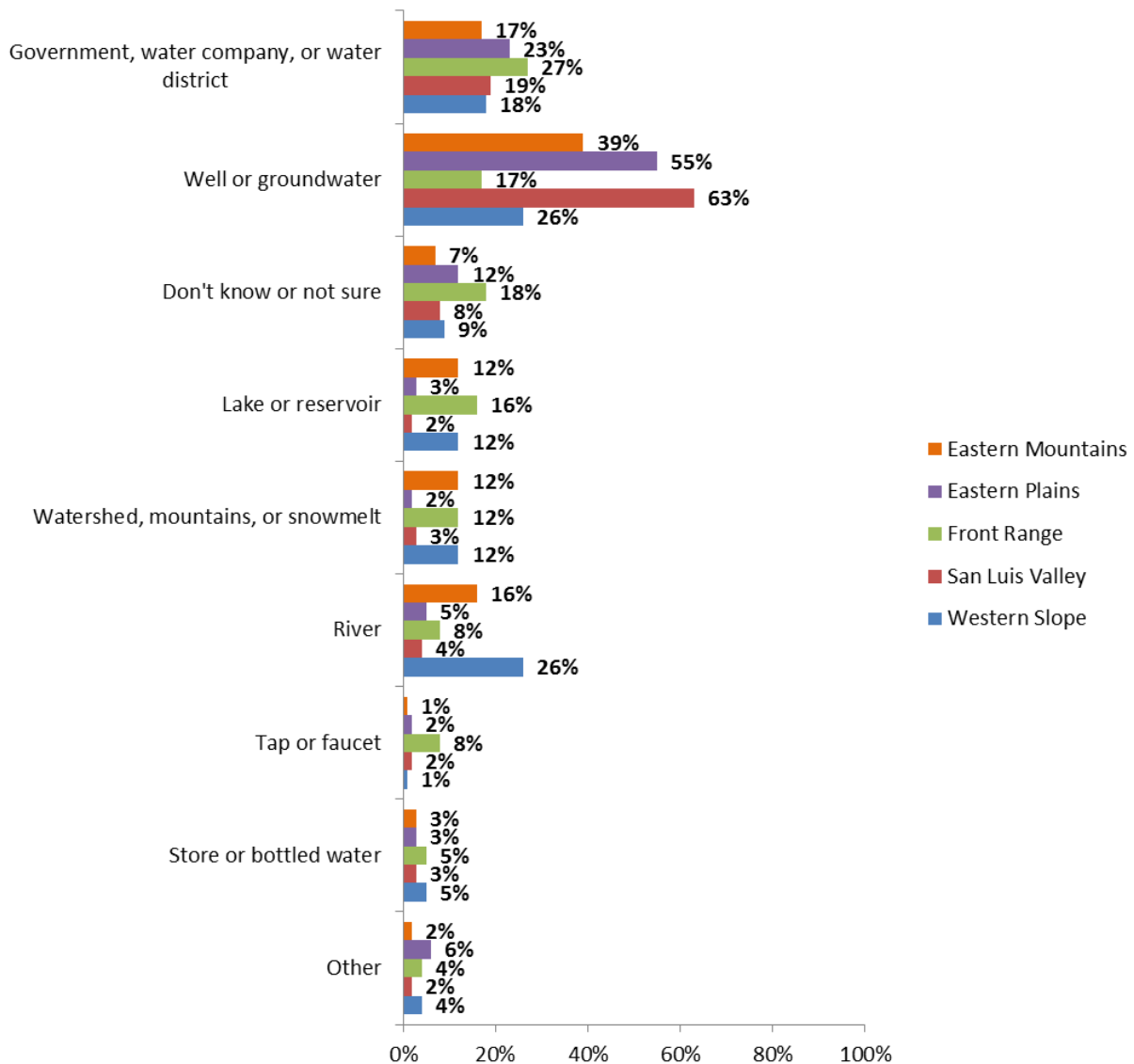
Younger residents (i.e., 18 to 34 years old) were much more likely than others to not know where their drinking water originated or to mention their water comes from the faucet or store. Older residents were more likely than younger residents to say their water comes from a well or aquifer or that their water comes from a watershed, mountains, or snowmelt.

**Exhibit 1-18: Origin of Drinking Water (Q5 by Age)**



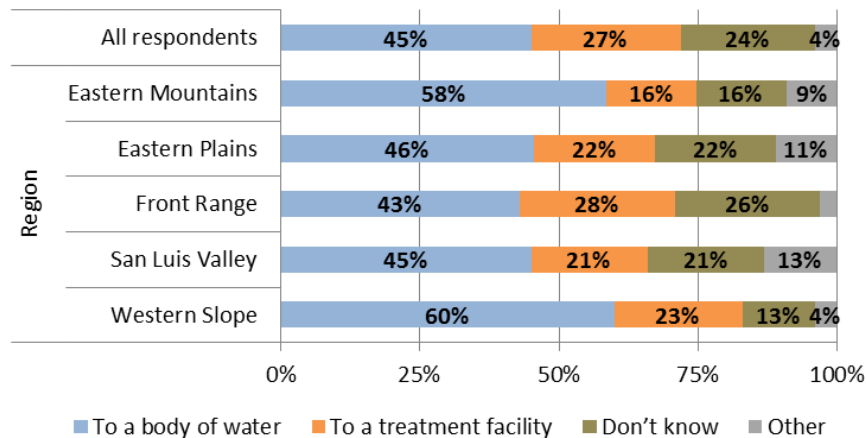
More than half of residents in the San Luis Valley and Eastern Plains said their drinking water comes from wells or aquifers. Compare to other regions, Front Range residents were the most likely to say their water comes from an organization (e.g., municipal government), from a lake or reservoir, from the faucet, and they were also most likely to say they weren't sure from where their water came. To an extent, this last finding might be due to the complex water delivery system on the Front Range. Compared to other regions, residents on the West Slope and in the Eastern Mountains were likely to say their water comes from rivers.

**Exhibit 1-19: Origin of Drinking Water (Q5 by Region)**



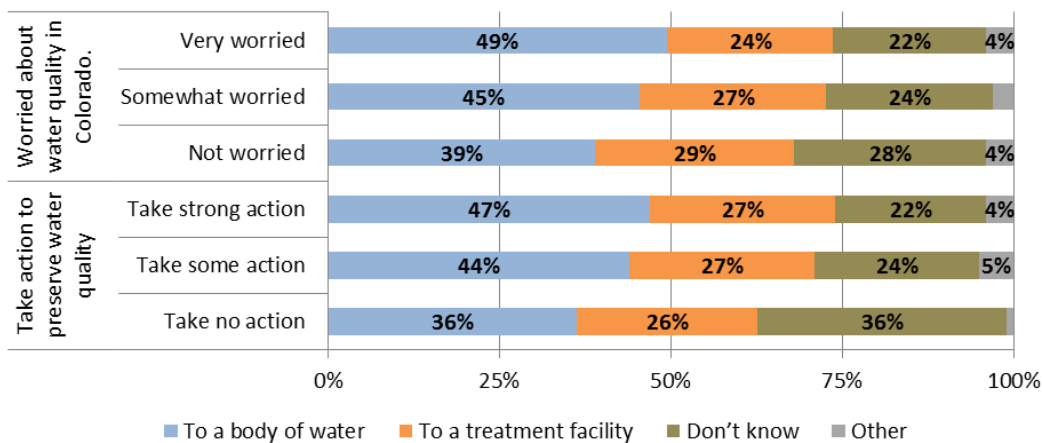
Statewide, almost half of respondents said that, in their community, storm water drains to a body of water while about one-quarter said it drains to a treatment facility. More than half of residents in the Eastern Mountains and Western Slope said storm water drains to a body of water, while less than half of residents in other regions gave this answer.

**Exhibit 1-20: Destination of storm water runoff (Q6 by Region)**



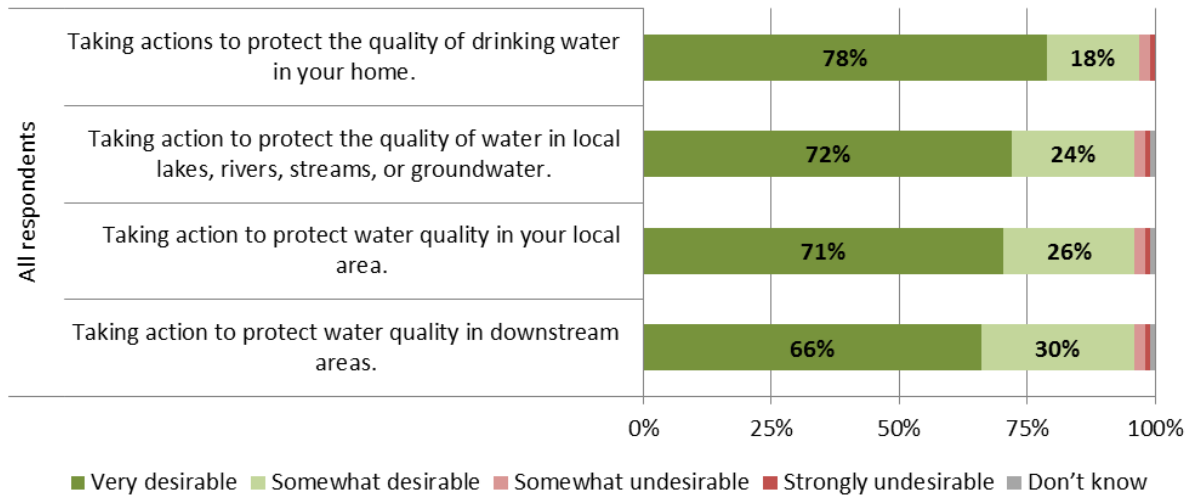
Respondents who were worried about water quality in Colorado (Q3c) were more likely than those who were not worried to believe storm water drains to a body of water and less likely to believe it drains to a treatment facility. We found a similar pattern when segmenting the population by action taken to preserve water quality (Q3b), with the exception that among respondents who took no action, more than one-third did not know where storm water drained in their community. While we cannot be sure of the direction of this finding, it could suggest that when people believe storm water flows to a body of water untreated, they are more concerned and likely to take action.

**Exhibit 1-21: Destination of storm water runoff (Q6 by Q3c and Q3b)**



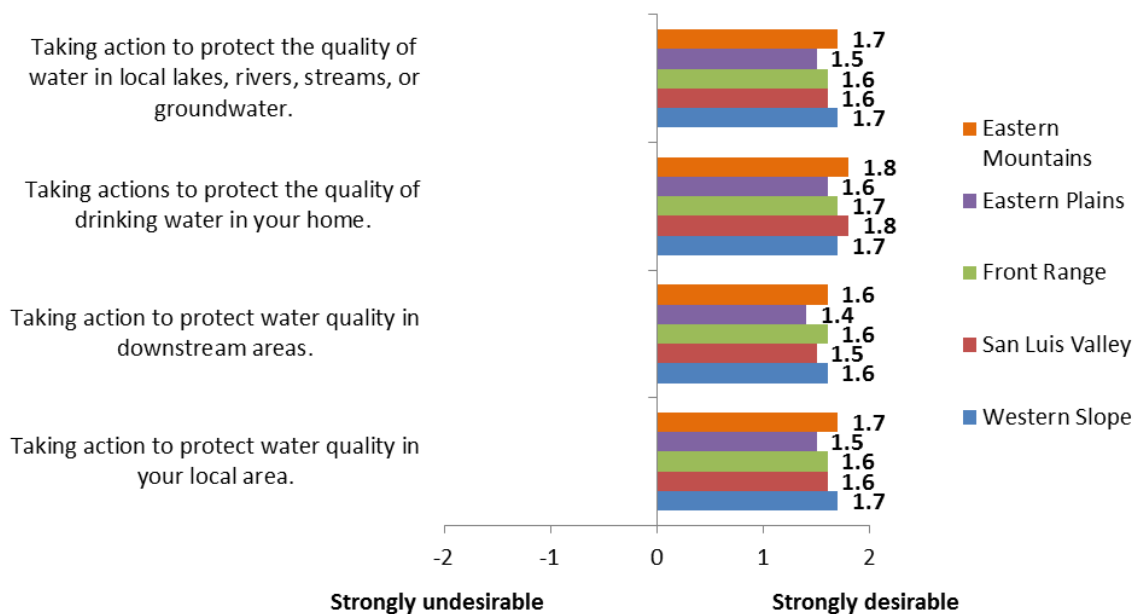
The vast majority of residents (around 95 percent) indicated that it was desirable to take action to protect water quality. Respondents indicated, on average, a stronger desire to take actions to protect the quality of drinking water in their home than taking action to protect water quality for other reasons. There appears to be a relationship between desire to protect water quality and the distance from its effects; the desire to take action increases as the effect of taking action gets closer to home.

**Exhibit 1-22: Desirability to Take Action to Protect Water Quality (Q7)**



Most residents in each region found it desirable to take action to protect water quality. Residents on the Eastern Plains generally had less desire than residents in other regions.

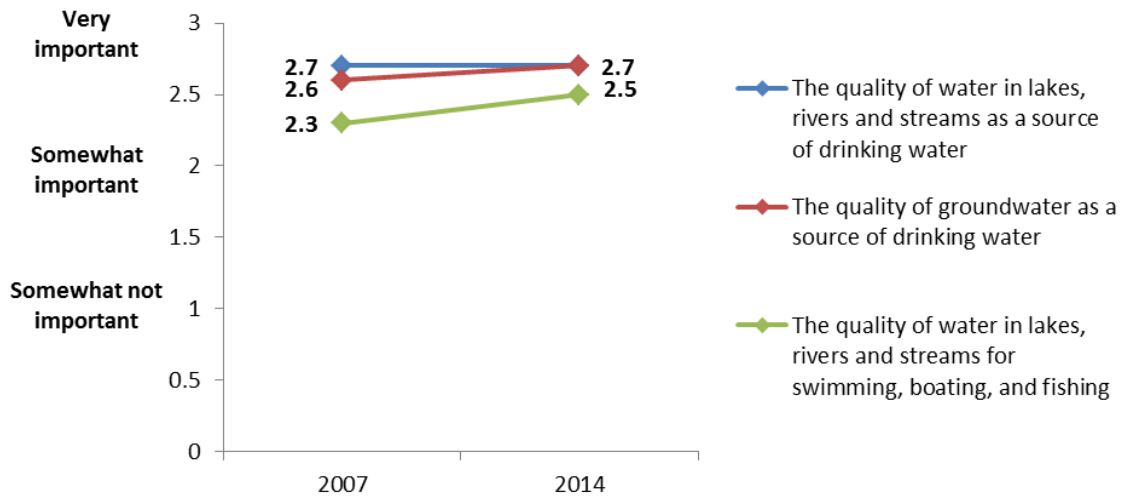
**Exhibit 1-23: Desirability to Take Action to Protect Water Quality (Q7 by Region)**



To compare the importance of water quality between 2007 and 2014, we calculated average scores after assigning numeric codes to response categories (Very important = 3, Somewhat important = 2, Somewhat not important = 1, and Not important at all = 0). Larger averages represent greater importance.

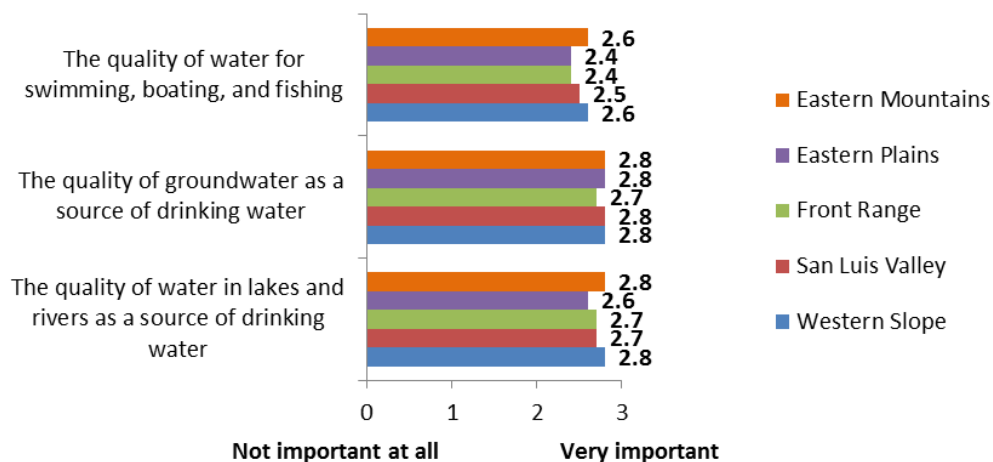
For most Colorado residents, the quality of water is somewhat or very important. Compared to 2007, we found statistically significant increases, statewide, in the importance of quality water for recreation and for groundwater as a source of drinking water.

**Exhibit 1-24: Importance of Water Quality (Q8 by Year)**



While respondents from all regions generally believed that water quality was important, we did find some differences among regions. Residents in the Eastern Mountains and Western Slope were most likely to say water quality was important for recreation. Eastern Plains residents were least likely to say water quality in lakes and rivers was important, which was not unexpected considering they were more likely to obtain drinking water from wells than from lakes and rivers.

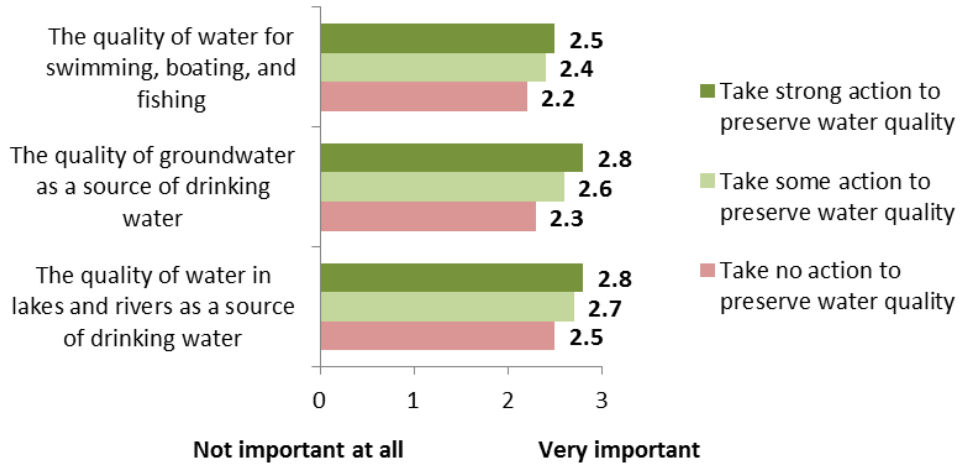
**Exhibit 1-25: Importance of Water Quality (Q8 by Region)**





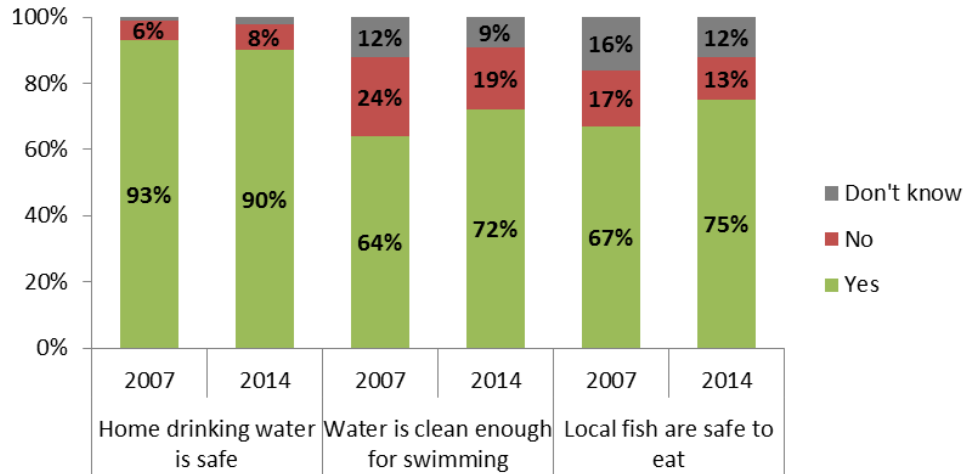
The importance of water quality appears to be related to likelihood of taking action to preserve water quality. As importance increases, so does the likelihood of taking stronger action. The strongest relationship is regarding the quality of groundwater as a source of drinking water.

**Exhibit 1-26: Importance of Water Quality (Q8 by Q3b)**



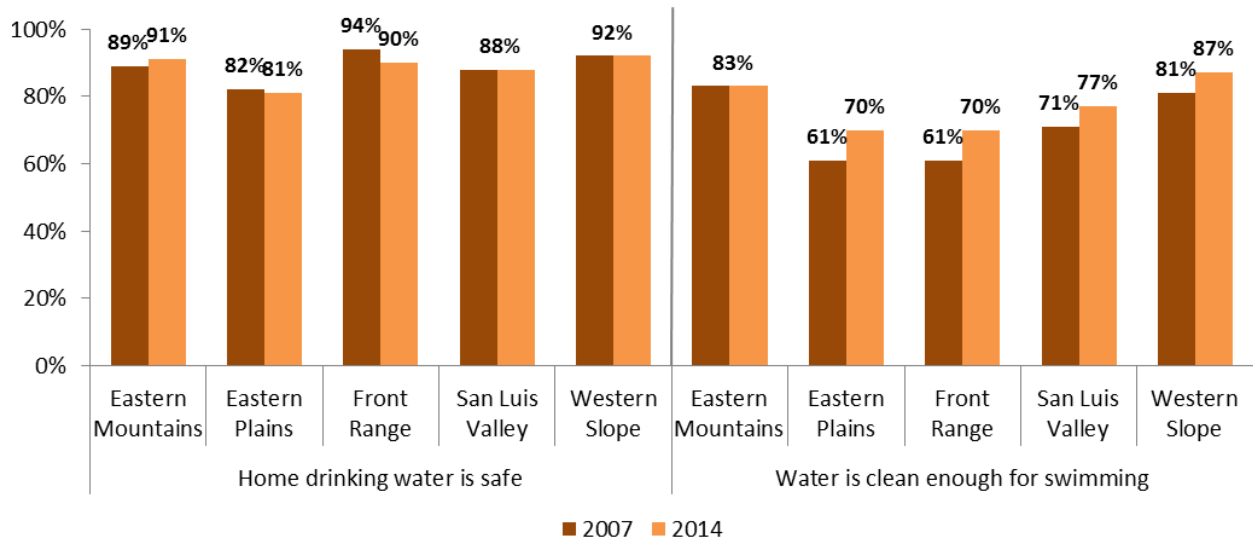
Among all respondents, most believed home drinking water was safe, local water was clean enough for swimming, and locally caught fish were safe to eat. The percent of Colorado residents who believed water was clean enough for swimming and who believed fish were safe to eat substantially increased since 2007; however, beliefs that home water was safe to drink slightly decreased.

**Exhibit 1-27: Safety of Local Water (Q9 by Year)**



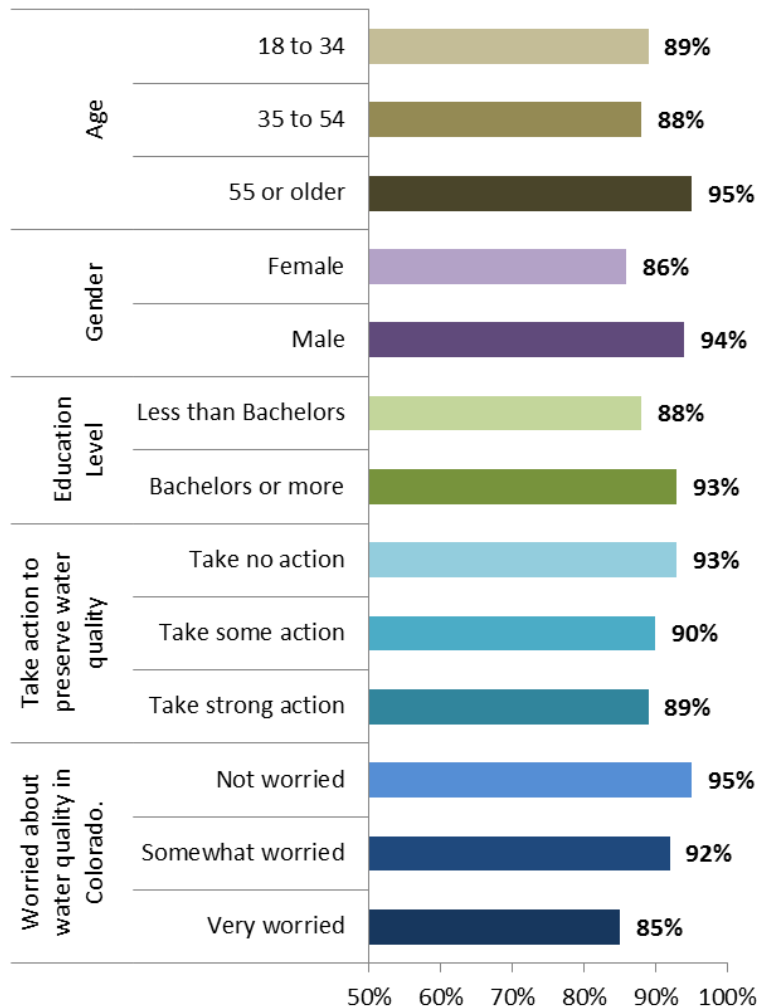
While most residents believed their home water was safe to drink, residents on the Eastern Plains were least likely to believe this and Western Slope residents were most likely to believe this. Since 2007, beliefs about drinking water safety decreased the most in the Front Range. Regarding swimming in local water, residents on the Western Slope were again most likely to believe water was safe enough for swimming and those on the Eastern Plains were again least likely to believe this.

**Exhibit 1-28: Safety of Local Water (Q9a and Q9b by Year by Region)**



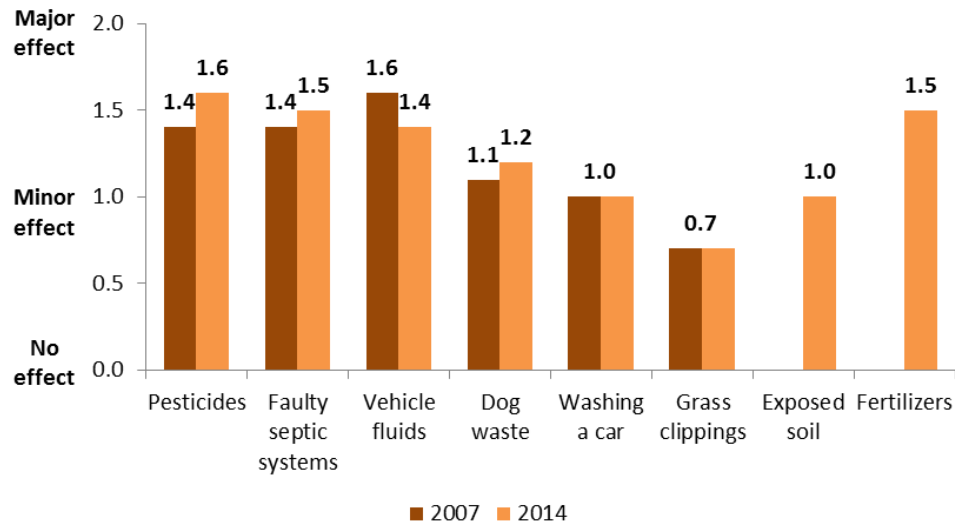
Compared to the percentage of all respondents, older respondents (i.e., 55 or older) were more likely to believe their home drinking water was safe. Males and respondents with at least a bachelor's degree were more likely than females or those with less than a bachelor's degree to believe home drinking water was safe. There also appears to be a relationship between belief that home water was safe to drink and worry about water quality in Colorado. Those who were very worried were less likely to believe water was safe than those who were somewhat or not worried. We found a much weaker relationship between belief that home water was safe and taking action to preserve water quality.

**Exhibit 1-29: Believe Home Drinking Water is Safe (Q9 by Age, Gender, Education, Q3b, and Q3c)**



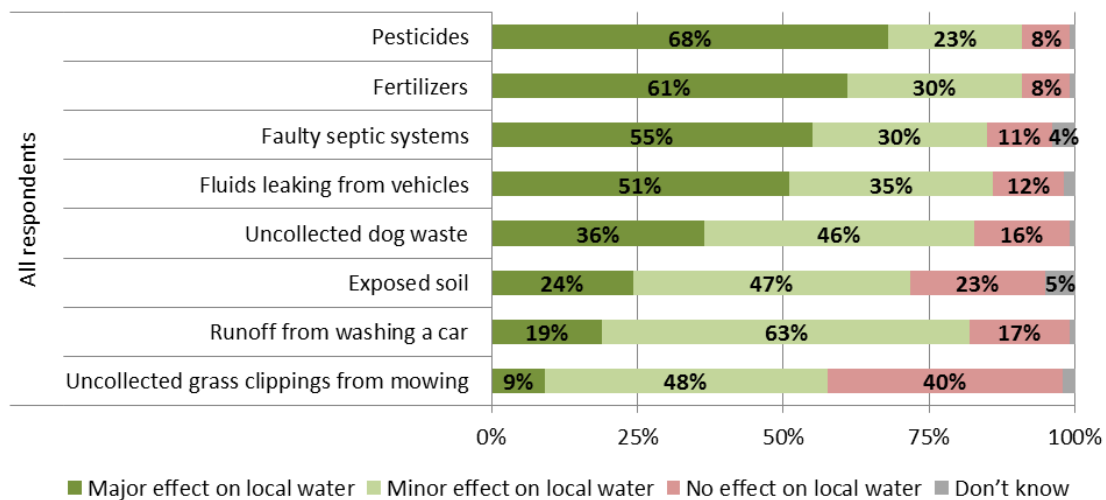
Statewide, respondents indicated that pesticides had the greatest effect on water quality, followed by faulty septic systems, fertilizers, and leaking vehicle fluids. Beliefs that pesticides, faulty septic systems, and dog waste affect water quality increased since 2007, while beliefs that vehicle fluids affect water quality slightly decreased. This was the first year we asked respondents about the effects of exposed soil and fertilizers.

**Exhibit 1-30: Effect of Pollution Sources on Water Quality (Q10 by Year)**



Among a list of potential pollution sources, we classified perceptions of their effect on local water into two categories: 1) major effect and 2) minor effect. Major effect sources were pesticides, fertilizers, faulty septic systems, and fluids leaking from vehicles. Minor effect sources were dog waste, exposed soil, runoff from washing a car, and uncollected grass clippings. Two-fifths of respondents said grass clippings had no effect on local water quality.

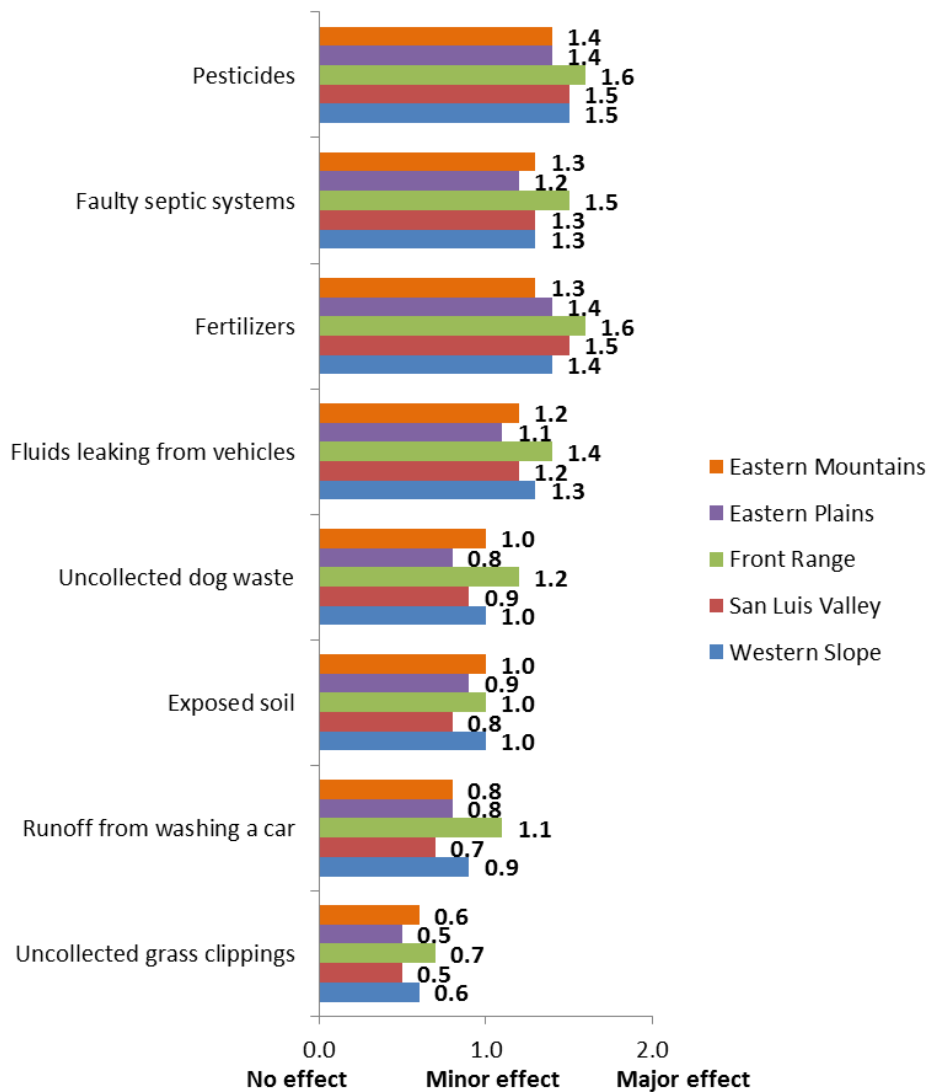
**Exhibit 1-31: Effect of Pollution Sources on Water Quality (Q10)**



To more easily compare responses by region, we calculated average scores after assigning a numeric code to each response category (Major effect = 2, Minor effect = 1, and No effect = 0).

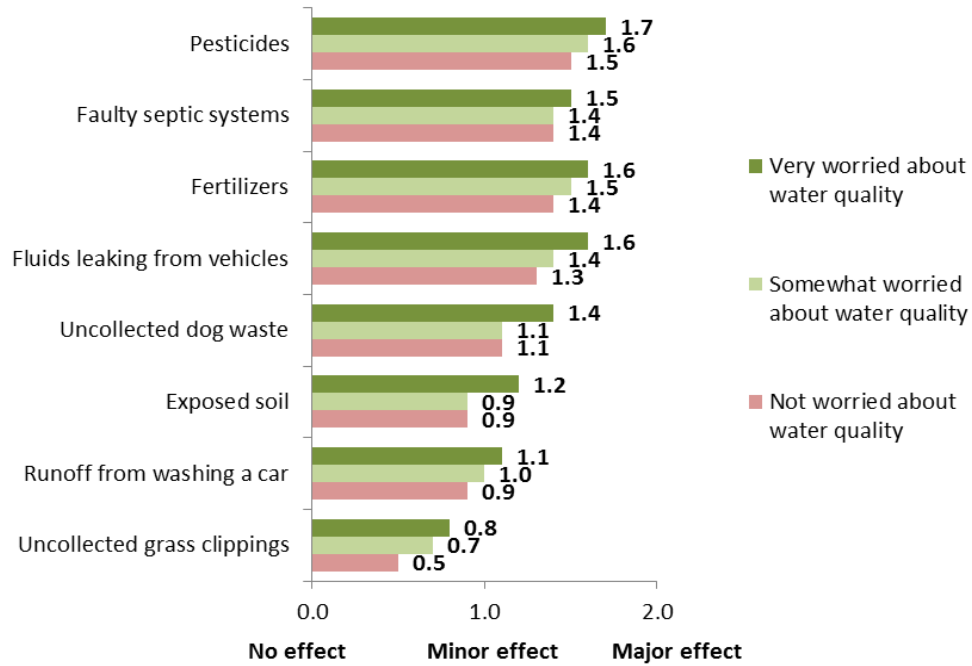
Front Range residents were consistently more likely than respondents from other regions to indicate that each potential pollution source had an effect on water quality. The greatest differences were beliefs about the effects of runoff from washing a car and from dog waste.

**Exhibit 1-32: Effect of Pollution Sources on Water Quality (Q10 by Region)**



Respondents who were more worried about water quality were more likely to believe each source effected local water. The strongest relationships were regarding the effect of exposed soil and dog waste.

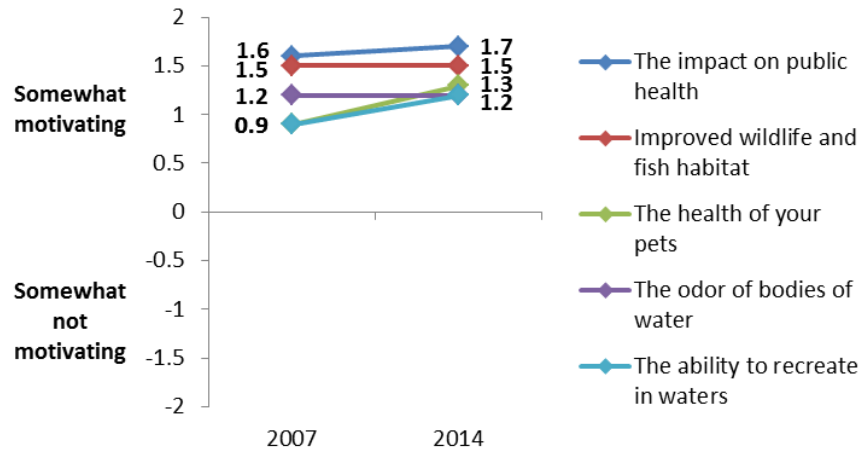
**Exhibit 1-33: Effect of Pollution Sources on Water Quality (Q10 by Q3c)**



## SECTION 2: PERSONAL ACTIONS, BENEFITS, AND BARRIERS

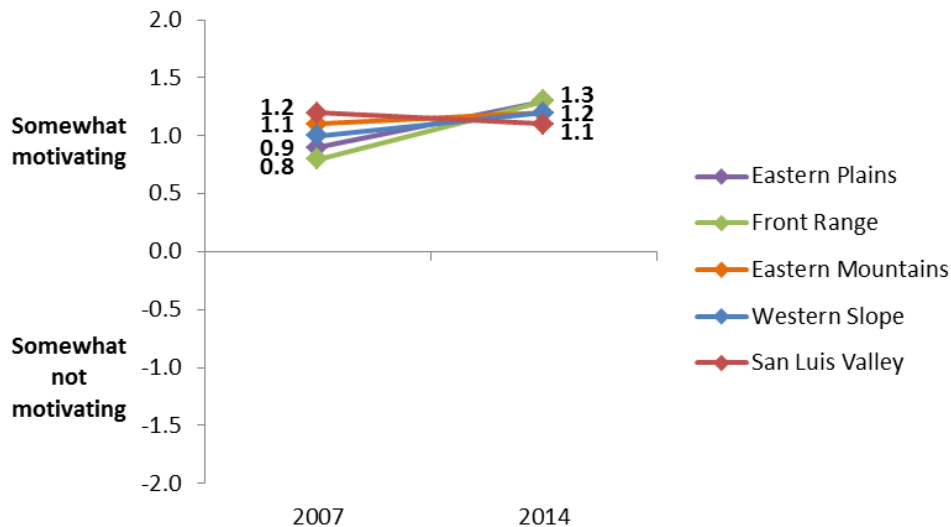
The impact of public health continues to be the greatest motivation for improving water quality. Compared to 2007, we saw large increases in “the health of your pets,” and “the ability to recreate in public waters, such as swimming, boating, and fishing” as motivation for improving water quality.

Exhibit 2-1: Motivation for Improving Water Quality (Q11 by Year)



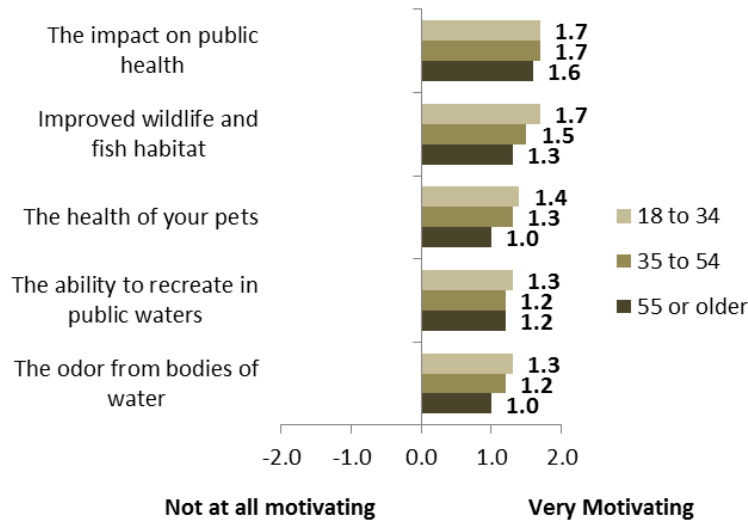
Because motivation to improve water quality for the health of pets increased dramatically since 2007, we analyzed results of that item by year and region. Most of the increase in motivation for pet health came from Front Range and Eastern Plains residents. Indeed, in the San Luis Valley there was a decrease in “pet health” as a motivation to improve water quality.

Exhibit 2-2: Health of Pets as a Motivation for Improving Water Quality (Q11c by Year by Region)



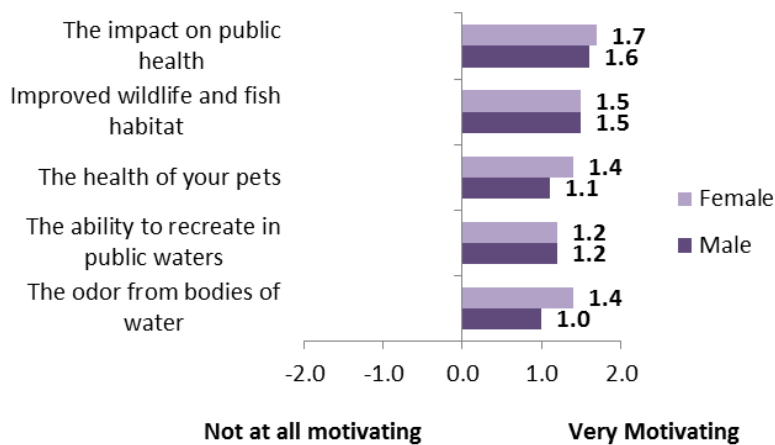
Younger residents found these reasons for improving water quality more motivating than did older residents. The greatest differences among age groups were regarding improved habitat and pet health.

**Exhibit 2-3: Motivations for Improving Water Quality (Q11 by Age)**



Females were more motivated than males to improve water quality for the health of pets, to reduce odor from bodies of water, and for public health reasons. There was no difference between males and females regarding the motivation to improve water quality to improve habitat or for recreation purposes.

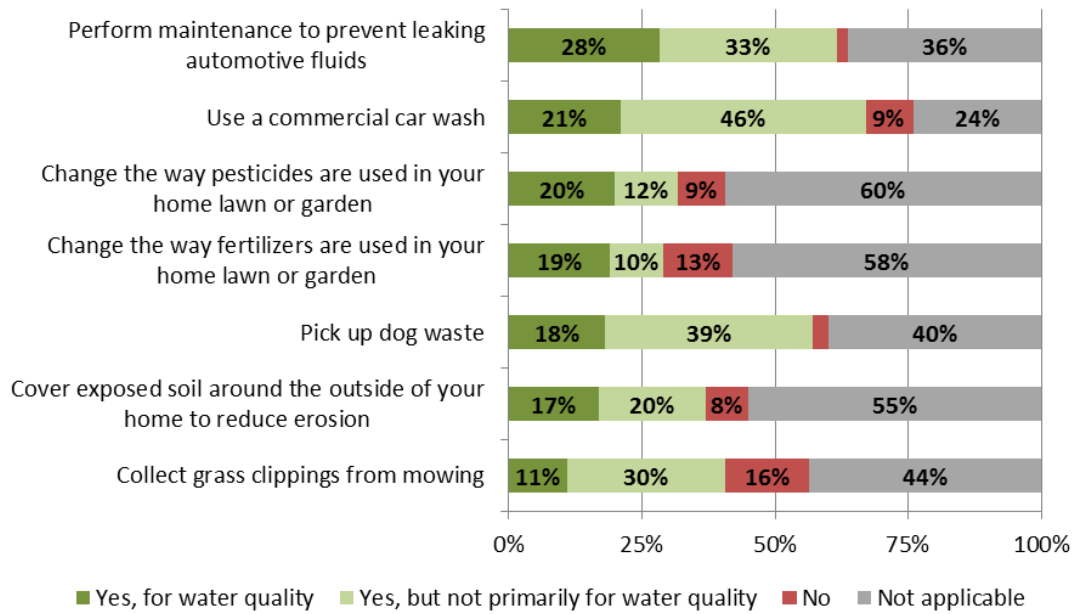
**Exhibit 2-4: Motivations for Improving Water Quality (Q11 by Gender)**





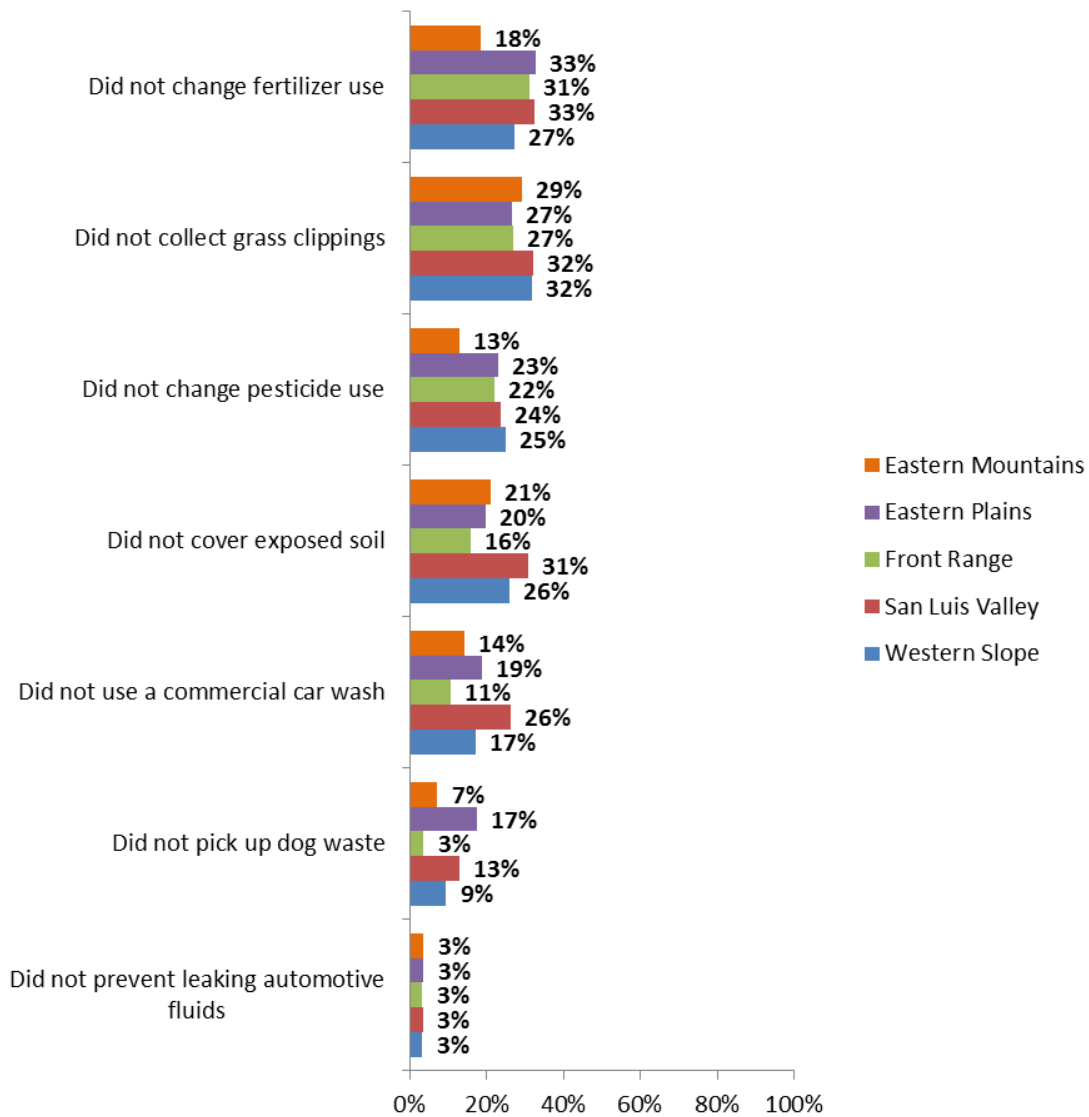
Statewide, respondents were most likely to have used a commercial car wash within the past year, although only 31 percent of those who did use a carwash did so primarily to preserve water quality. Sixty-one percent performed car maintenance to prevent leaking fluids, and 28 percent of these respondents did so primarily to preserve water quality. While 41 percent of residents removed grass clippings, only 11 percent did so for water quality. For various reasons, some behaviors (e.g., using pesticides or fertilizers) were not applicable to a majority of respondents.

**Exhibit 2-5: Actions Taken to Preserve Water Quality (Q12)**



Residents in the Eastern Mountains and Front Range were typically the least likely to not take applicable actions related to water quality (i.e., most likely to take applicable action). Indeed, 18 percent of Eastern Mountain residents did not change fertilizer use, which was much lower than the 33 percent of residents on the Eastern Plains and San Luis Valley. Compared to other regions, Front Range residents were least likely to not pick up dog waste, use a commercial carwash, or cover exposed soil.

**Exhibit 2-6: Actions Not Taken (Q12 by Region)**

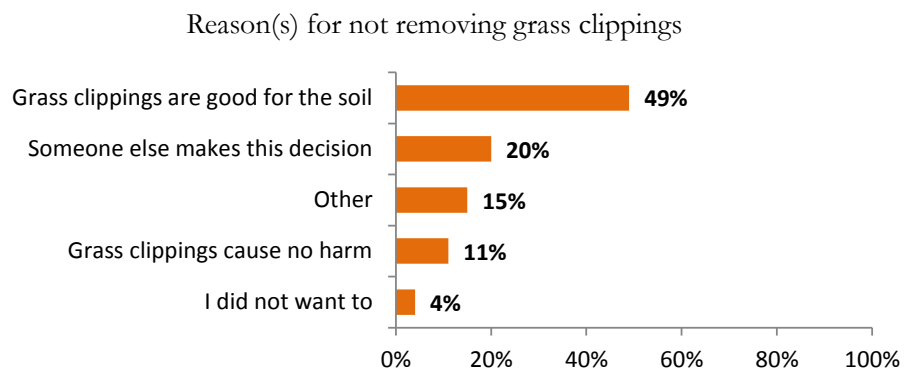
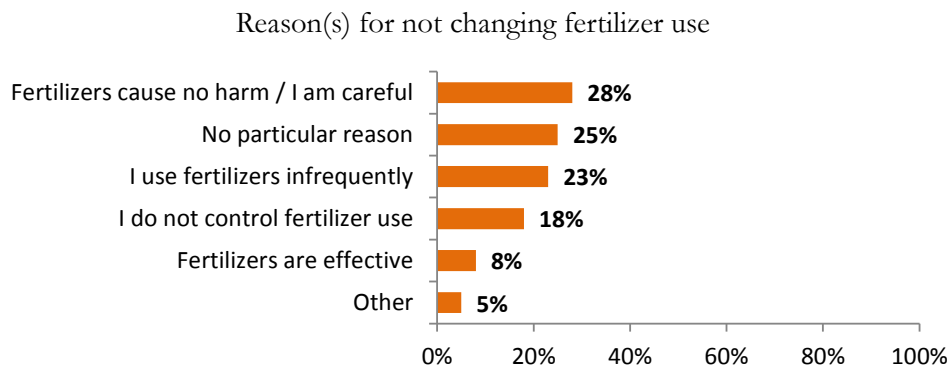


To understand why residents did not take relevant action to protect water quality, we analyzed open-ended responses to Question 13 and coded responses into categories. For example, a participant who said he did not change the way fertilizers were used in his home lawn or garden because “*The maintenance company does that*” was assigned to the category “I do not control fertilizer use.” The following graphs represent the percentage of respondents assigned to each category for each question, among all respondents who could have but did not take that action. Because we assigned some responses to multiple categories, some graphs sum to greater than 100 percent.

Reasons for not taking action differed, to an extent, by specific behavior, although some reasons were common across several behaviors. For example, beliefs that a behavior caused no harm was commonly mentioned regarding changing fertilizer use, removing grass clippings, changing pesticide use, and picking up dog waste. Other common themes that overlapped several behaviors included feeling a lack of control, positive attitudes towards the outcome of not taking action (e.g., leaving grass clippings on the lawn is good for the soil), and infrequent engagement in the behavior (e.g., I wash my car infrequently). Respondents also commonly mentioned having no particular reason for not taking action.

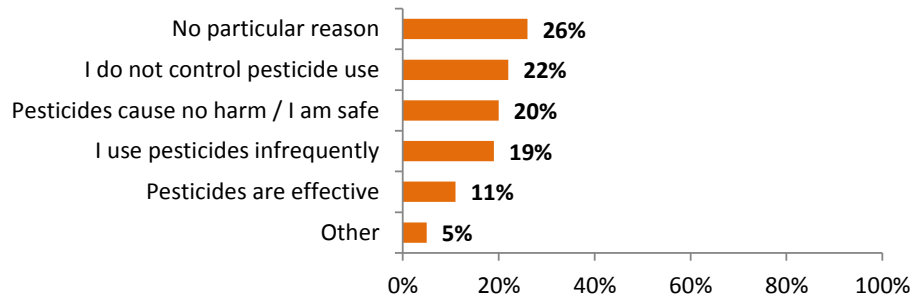
Negative attitudes towards a behavior were not generally mentioned, with the exception of using a commercial car wash (e.g., cost and too far away), and to a lesser extent, picking up pet waste (e.g., it is gross) or covering exposed soil (e.g., cost and too much land to cover). About one-quarter of respondents who did not cover exposed soil were unaware it caused a water quality problem. Because very few respondents indicated they did not perform maintenance to prevent automotive leaks, we did not analyze these open-ended responses.

### Exhibit 2-7: Reasons for Not Taking Actions (Q13)

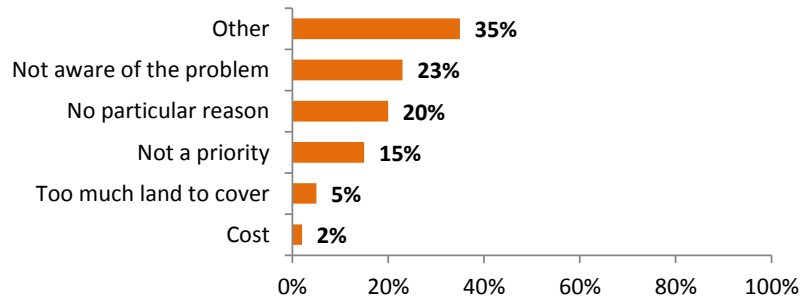


**Exhibit 2-6 Continued: Reasons for Not Taking Actions (Q13)**

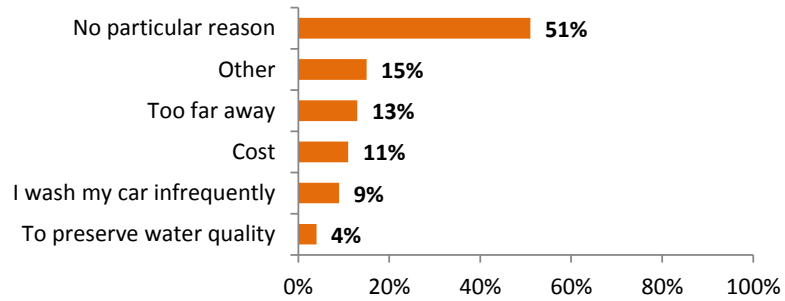
Reason(s) for not changing pesticide use



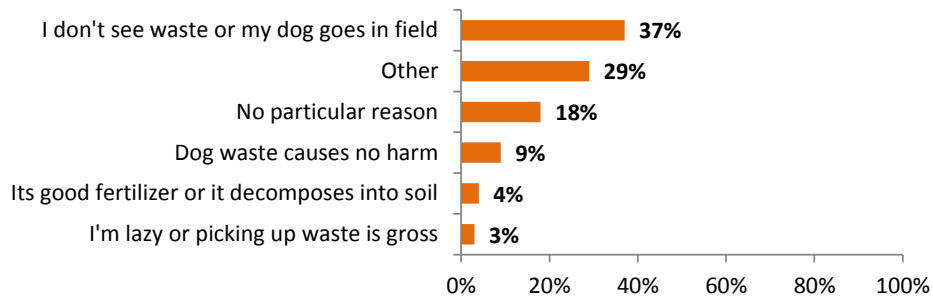
Reason(s) for not covering soil at home



Reason(s) for not using car wash

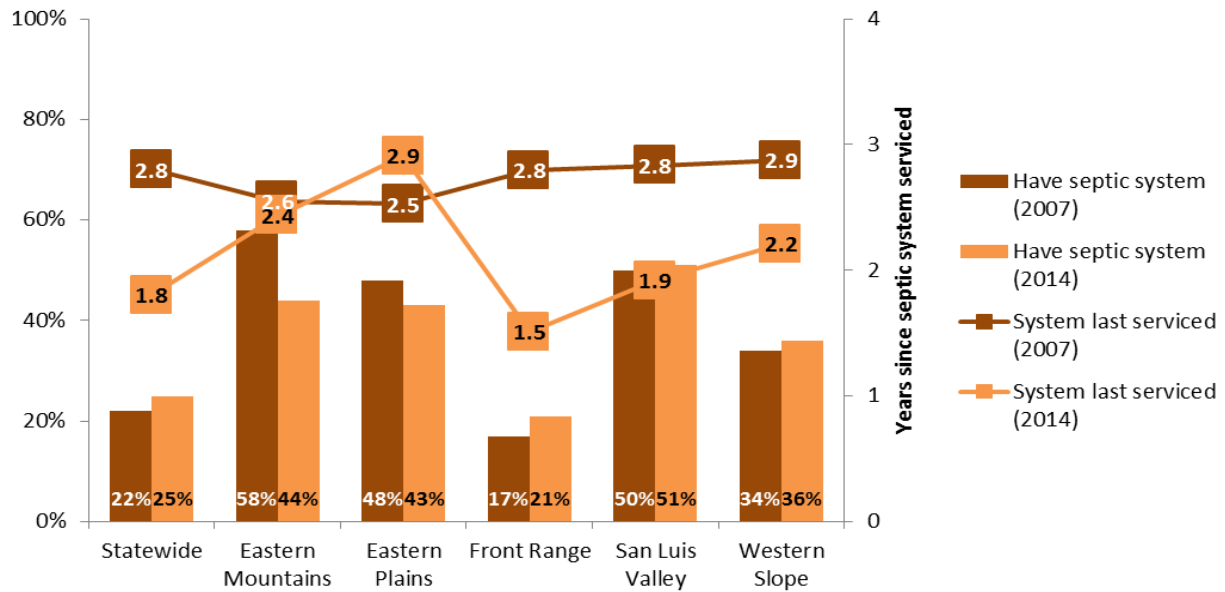


Reason(s) for not picking up dog waste



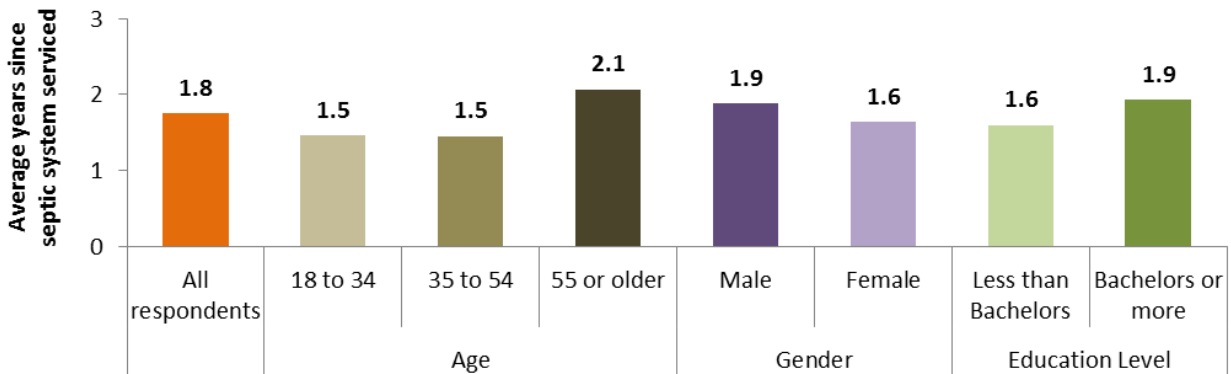
Statewide, about 25 percent of households had a septic system. On average, Colorado householders serviced their septic systems every 1.8 years (compared to every 2.8 years in 2007), and half of householders serviced them within the past 12 months (compared to the past 20 months in 2007). The percentage of septic systems in rural regions was much higher than the statewide average: 51 percent in the San Luis Valley, 44 percent in the Eastern Mountains, and 43 percent in the Eastern Plains. The percentage of Front Range households with a septic system increased since 2007, but the average time since the system was last serviced dramatically decreased. We found an opposite pattern on the Eastern Plains, where the percentage of septic systems decreased since 2007, but the average time since the system was last serviced increased.

**Exhibit 2-8: Households with Septic System and Average Years since Service (Q14 and Q15 by Year)**



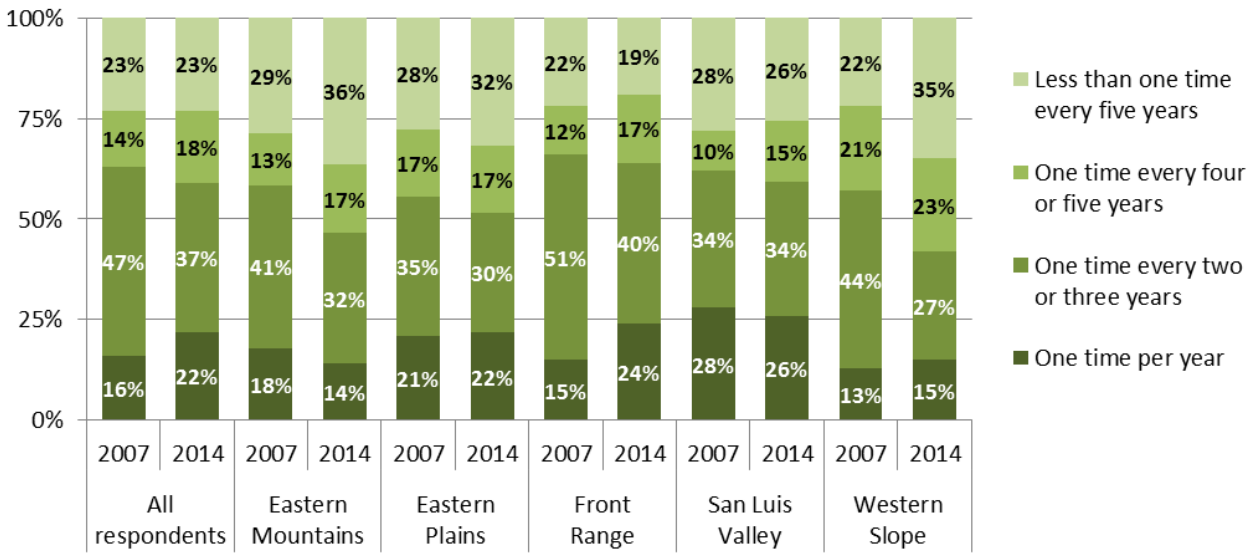
Among all respondents with a septic system, those who were older, male, or had at least a bachelor's degree reported the greatest amount of time, on average, since they last serviced their septic system.

**Exhibit 2-9: Average Years since System was Last Serviced (Q15 by Age, Gender, and Education)**



Statewide, about three-fifths of those with a septic system serviced their system at least once every two or three years. The percentage of those who serviced about one time per year increased since 2007, which mostly explains the decrease in the percentage of people who serviced their system every two or three years. In the Western Slope and Eastern Mountains, we found large increases in the percentage of householders who serviced their system less than once every five years. Conversely, there were decreases in householders who serviced their systems less than once every five years in the Front Range and San Luis Valley.

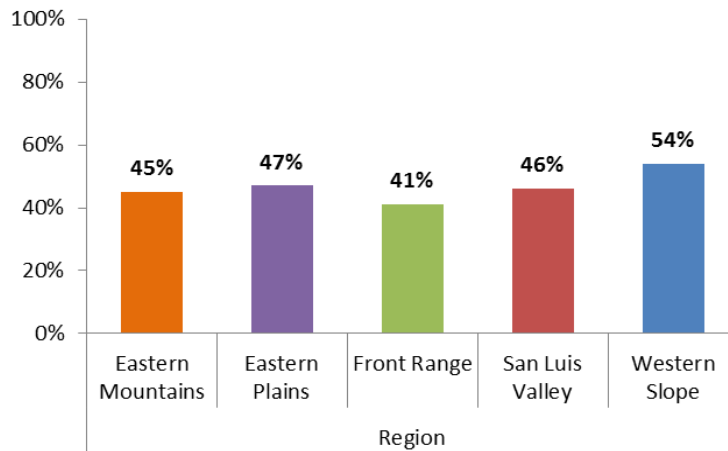
**Exhibit 2-10: Frequency of Servicing Septic System (Q16 by Year and Region)**



## SECTION 3: PUBLIC EDUCATION AND COMMUNICATION

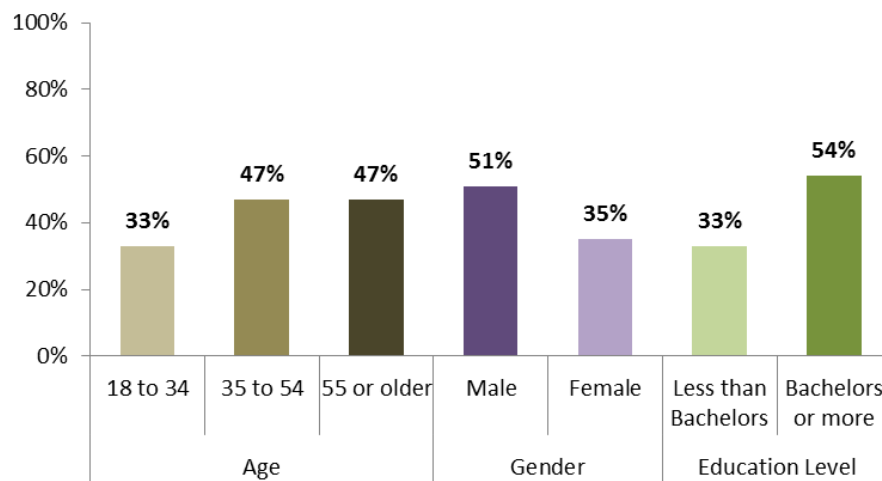
Within the past three months, about 43 percent of all respondents read, saw, or heard a message about water quality. Compared to the statewide average, the percentage of people exposed to a water quality message was lower in the Front Range but higher in all other regions. More than half of Western Slope residents were exposed to a water quality message.

**Exhibit 3-1: Exposed to Water Quality Message (Q17 by Region)**



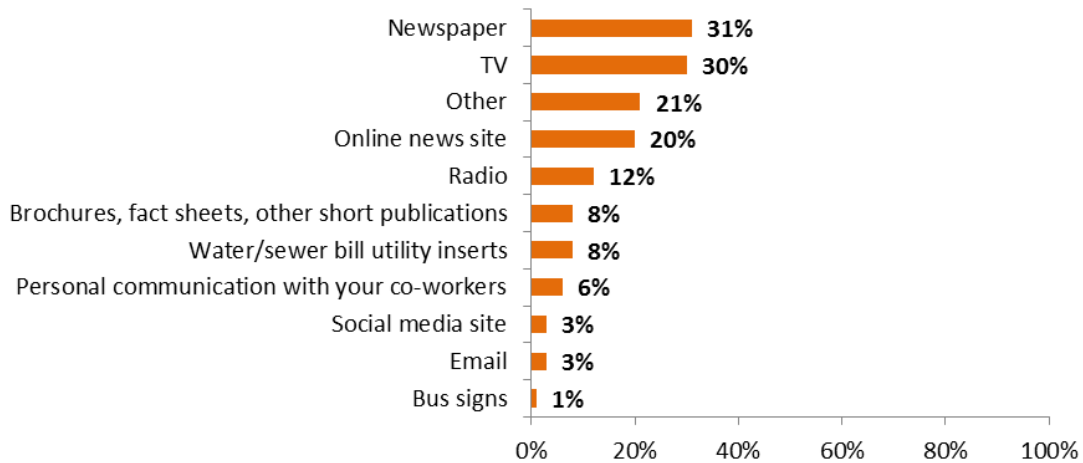
Younger respondents (i.e., 18 to 34 years old) were much less likely than others to have been exposed to a water quality message. Females and those with less than a bachelor's degree were also less likely than males or those with a bachelor's degree to have been exposed to a water quality message. Although females were less likely than males to be exposed to a message about water quality, females were more likely to be worried about water quality (see Exhibit 1-8).

**Exhibit 3-2: Exposed to Water Quality Message (Q17 by Age, Gender, and Education)**



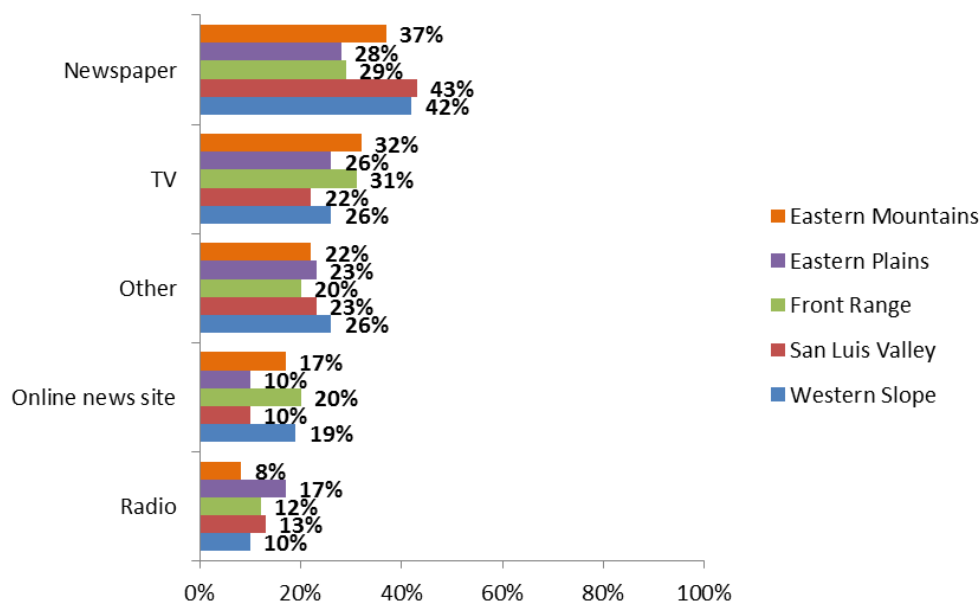
Of respondents who were exposed to a message about water quality in the past three months (i.e., answered yes to question 17), about 30 percent received the message from a newspaper or television, followed by another source, online news sites, and radio.

**Exhibit 3-3: Source of Water Quality Message (Q18)**



Message sources were not similar across regions; the biggest difference was regarding newspaper as a source. The Front Range and Eastern Plains residents were much less likely than San Luis Valley and Western Slope residents to have read a water quality message in a newspaper. The Eastern Mountains and Front Range residents were most likely to have seen a message on television.

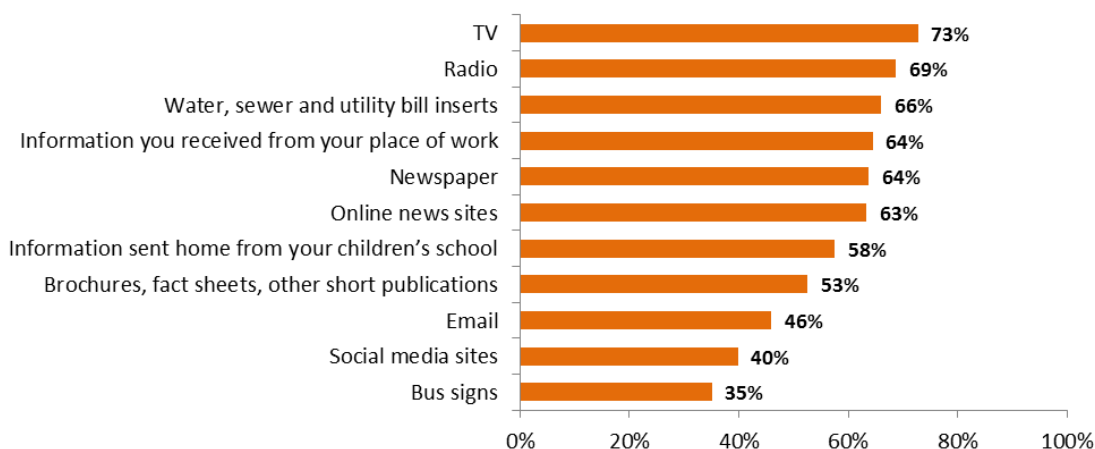
**Exhibit 3-4: Source of Water Quality Message (Q18 by region)**





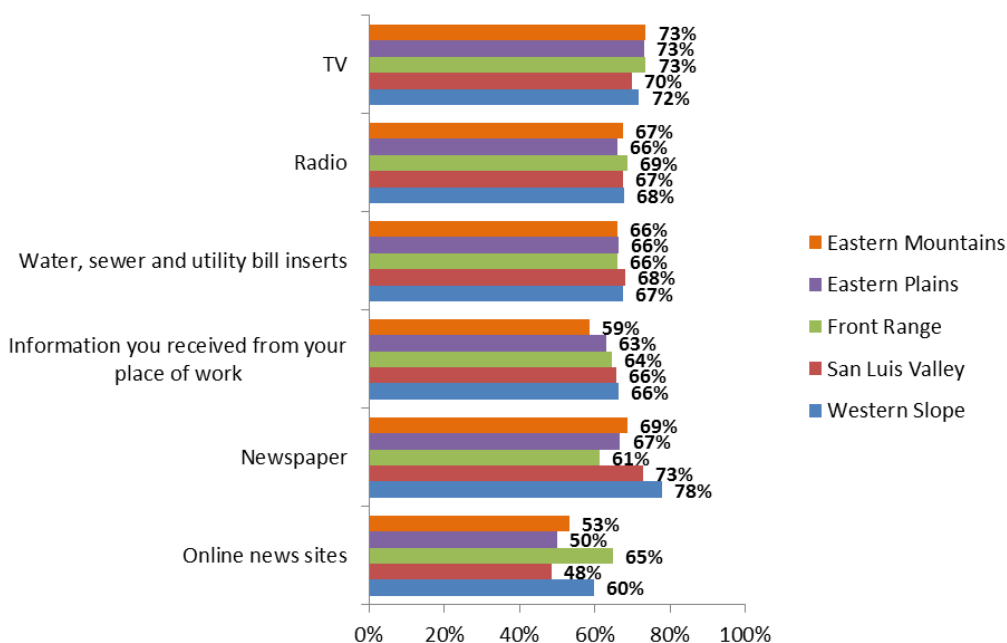
Residents were asked if they would read, watch, or listen to information about water quality if it came from the following sources. Statewide, potentially effective sources for water quality messages were television, radio, utility bills, place of work, newspapers, and online news sites. Less than half of respondents said they would attend to water quality messages from email, social media sites, or bus signs.

**Exhibit 3-5: Would Attend to Messages about Water Quality if from Source (Q19)**



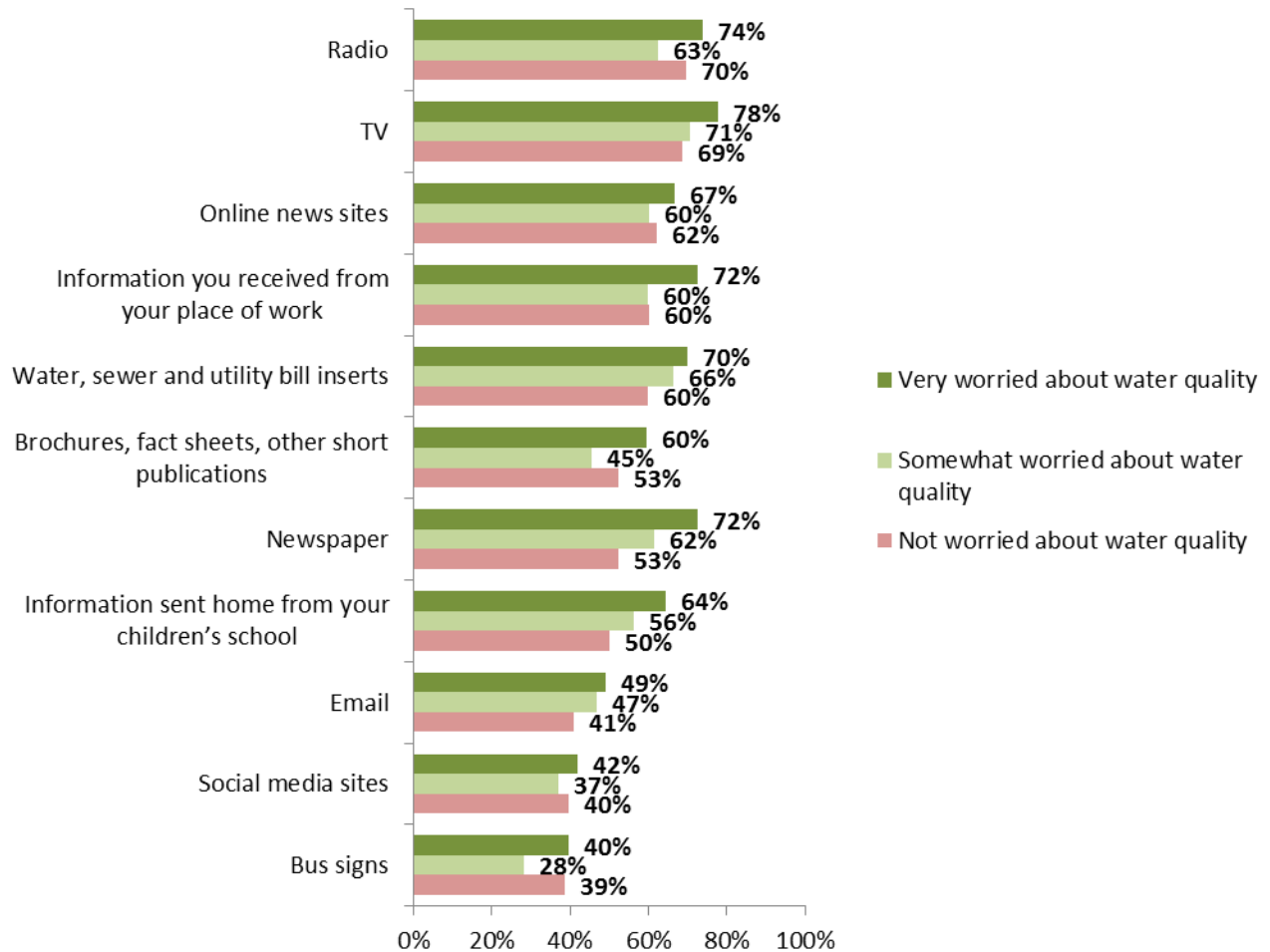
Generally, we did not find many differences in potential message sources across regions, with the exceptions of newspapers and online news sites. Western Slope residents were 27 percent more likely than Front Range residents to attend to messages in newspapers, and Front Range residents were 33 percent more likely than San Luis Valley residents to attend to a message on an online news site.

**Exhibit 3-6: Would Attend to Messages about Water Quality if from Source (Q19 by Region)**



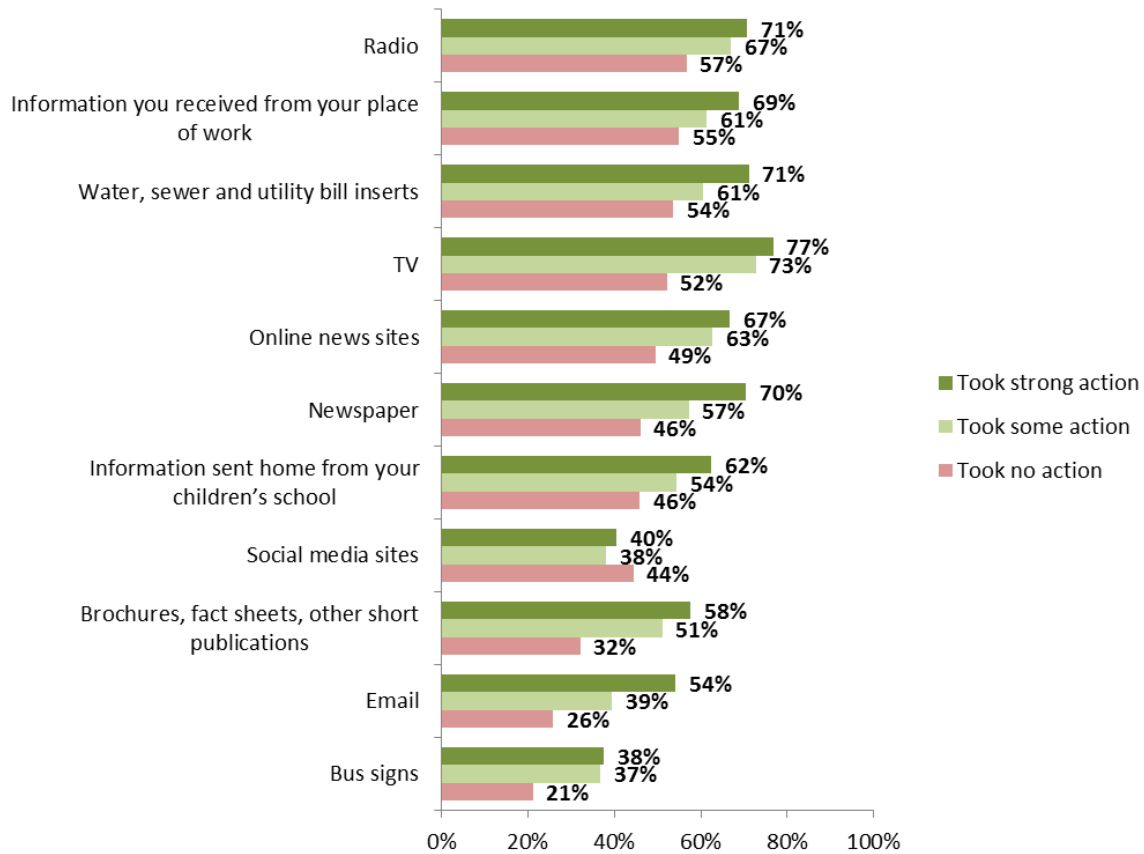
Respondents who were very worried about water quality were most likely to indicate they would attend to messages from all sources. Messages aimed at those who are not worried about water quality should move through radio, TV, online news sites, work, and utility bills. Bus signs, social media sites, and email appear to be the least effective channels.

**Exhibit 3-7: Would Attend to Messages about Water Quality if from Source (Q19 by Q3b)**



Again, those who took strong action to preserve water quality were most likely to attend to messages from all sources, with the exception of social media sites. Compared to others, those who took no action were much less open to receiving messages from brochures, fact sheets, television, newspapers, and email.

**Exhibit 3-8: Would Attend to Messages about Water Quality if from Source (Q19 by Q3c)**



# APPENDIX A: METHODOLOGY

## SURVEY INSTRUMENT DESIGN

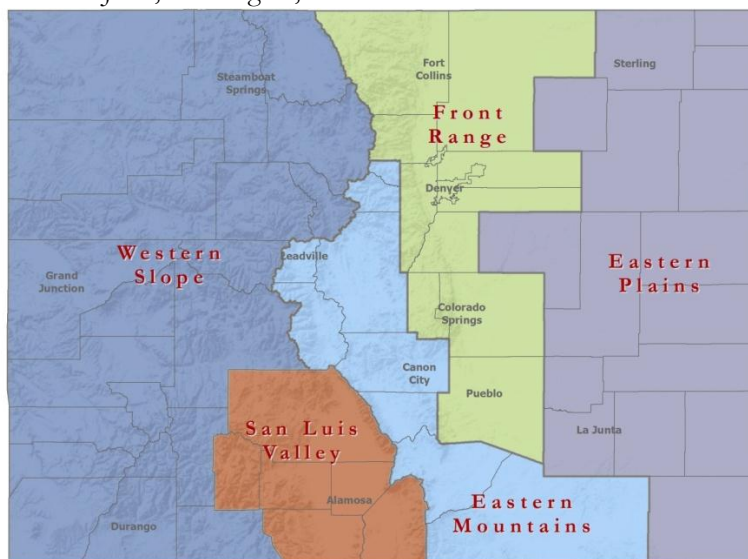
This study in 2014 is an update to the 2007 study, where the public’s awareness, attitudes, and behaviors as they relate to water quality in Colorado were measured. Survey questions remained largely the same in order to maximize our ability to analyze differences from seven years ago. The survey was updated, where appropriate, to reflect current needs and topics (as determined by the Colorado Watershed Assembly); take into account findings from the last survey; and to make other adjustments based on current best practices.

The survey length was targeted at 12 minutes; however, the final survey was just over 17 minutes.

## SAMPLING

We divided the state into five county-based regions, as was done in 2007:

<b>Region</b>	<b>Counties</b>
<i>Eastern Mountains</i>	Chaffee, Clear Creek, Custer, Fremont, Gilpin, Huerfano, Lake, Las Animas, and Park
<i>Eastern Plains</i>	Baca, Bent, Cheyenne, Crowley, Elbert, Kiowa, Kit Carson, Lincoln, Logan, Morgan, Otero, Phillips, Prowers, Sedgwick, Washington, and Yuma
<i>Front Range</i>	Adams, Arapahoe, Broomfield, Boulder, Denver, Douglas, El Paso, Jefferson, Larimer, Pueblo, Teller, and Weld
<i>San Luis Valley</i>	Alamosa, Conejos, Costilla, Mineral, Rio Grande, and Saguache
<i>Western Slope</i>	Archuleta, Delta, Delores, Eagle, Garfield, Grand, Gunnison, Hinsdale, Jackson, La Plata, Mesa, Moffat, Montezuma, Montrose, Ouray, Pitkin, Rio Blanco, Routt, San Juan, San Miguel, and Summit



The survey was conducted via telephone in September and October, 2014, using a randomly generated sample of telephone numbers. The telephone sample included both landlines and cell phones. The specific quotas for the survey included:

- ➔ State residents who were at least 18 years old
- ➔ Minimum 384 residents living within each region
- ➔ No fewer than 60 percent of responses gathered from the cell phone sample
- ➔ No more than 55/45 gender split

The proportion of cell phone to landline surveys was determined based on the most recent NHIS (National Health Interview Survey) data for “cell only” and “cell mostly” households. Dual users (i.e., households who have both cell phones and landlines) were not excluded from the cell sample, nor were they from the landline sample.

The 2007 survey exclude residents who lived in a household with someone who worked at a company, organization, or agency that was directly related to natural resources, or water, in particular. We did not filter these participants from participating in the present survey. Initial analysis found little difference between results when including or excluding these natural resource professionals. Therefore, we include their responses with the rest of the population. The 2007 survey did not include any cell phone numbers in the sample. Considering the increasing percentage of households that are cell only, we included cell numbers in the sample this year.

## **WEIGHTING**

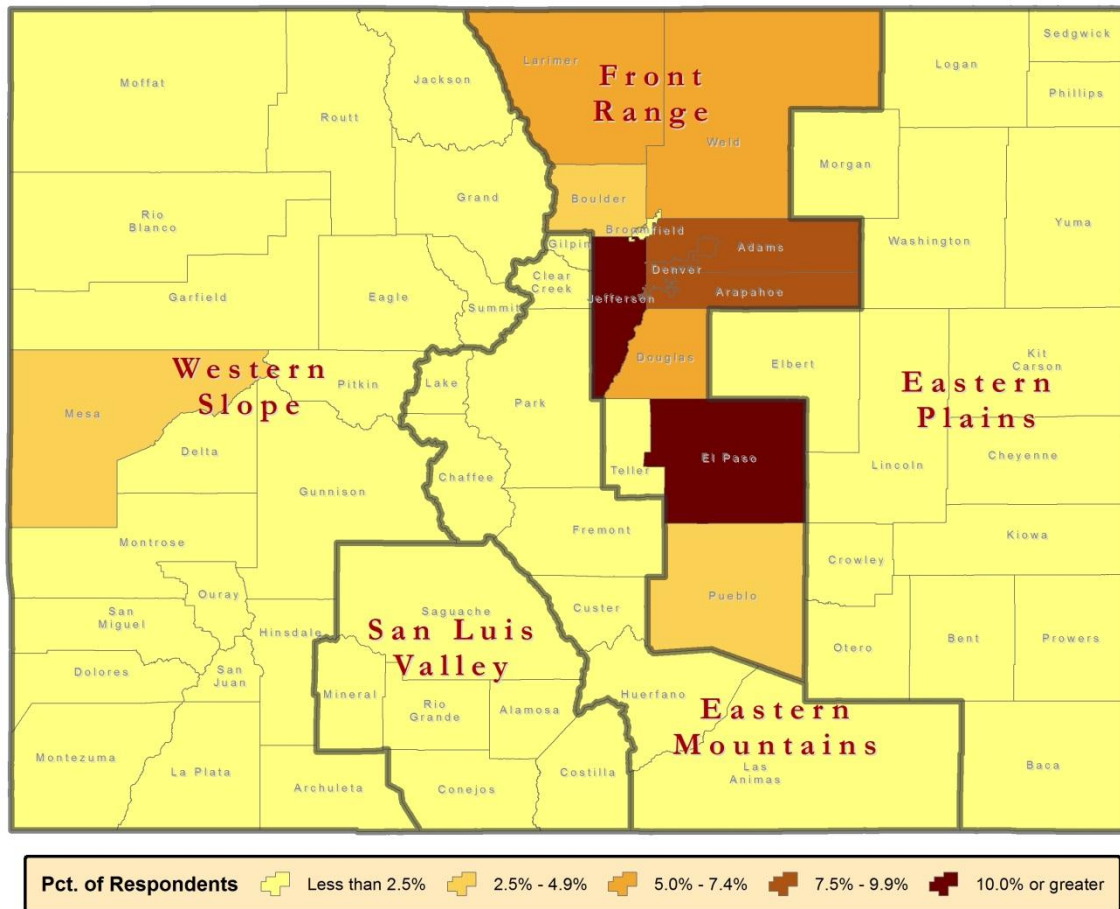
Telephone surveys, like any other type of survey, do not precisely reflect the entire population when merely summed and totaled. Older residents, for example, are more likely to respond to telephone surveys than are younger residents. Generational differences in cell phone and landline usage further complicate representativeness. To decrease response bias, we weighed the data based on known population estimates of gender, age (three categories: 18 to 34, 35 to 54, 55 or older), and telephone service (landline-only, dual, cell-only). Traditional weighting (i.e., cell weighting) was not possible because estimates of telephone service by gender and age were not available. Therefore, we used a process of iterative marginal weighting (i.e., raking or RIM weighting) to develop weights for each respondent.

Because of different response probabilities among single-users and dual-users (i.e., individuals who use only cell or landline phones vs. those who use both) within our sample, we weighed each sample individually for single-users and dual-users using NHIS population data. We then calculated a compositing estimator (another kind of weight to account for selection probability of single- and dual-users) to combine data from landline and cell samples. After those initial weighting and combining steps, we performed sixteen iterations of error adjustments to develop a final unique weighting factor for every respondent.

We obtained population estimates for gender and age from the 2008-2012 American Community Survey 5-Year Estimates. We obtained population estimates for telephone service in Colorado from the 2013 National Health Statistics Report.

In our analysis, weights adjusted each respondent’s representation in the survey data. Respondents with traits that were underrepresented in the group of survey participants were weighted more heavily than the responses of people whose traits were overrepresented among the survey participants. This weighting process results in our survey findings representing a much more complex, but also more accurate analysis than would a mere tabulation of the raw data.

The map below shows the percent of weighted responses by county.



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 ➔ [NPScolorado.com](http://NPScolorado.com)
- ➔ Statewide Water Quality Management Plan – 2011  
 ➔ [Colorado.gov/pacific/cdphe/statewide-water-quality-management-plan](http://Colorado.gov/pacific/cdphe/statewide-water-quality-management-plan)
- ➔ 2012 NPS Management Plan  
 ➔ [NPScolorado.com/program-documents/management-plan](http://NPScolorado.com/program-documents/management-plan)

## APPENDIX B: SURVEY INSTRUMENT

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The survey instrument used in the 2014 study is provided on the following pages. Programming notes are in [RED] and research design notes and explanation are in [BLUE].

## INTRO

Hello, my name is \_\_\_\_\_ and I am calling on behalf of the Colorado Department of Public Health and Environment, and we are conducting a survey about water quality.

Your responses will help the Division better serve the community. The survey is completely anonymous and should take about 12 minutes to complete. [IF RESPONDENT INQUIRES TO WHO WITHIN THE STATE OF COLORADO GOVERNMENT IS CONDUCTING THIS SURVEY, YOU MAY TELL THEM THE “WATER QUALITY CONTROL DIVISION”]

## SCREENER

First, I'd like to ask you a few quick questions to ensure that you are eligible for the survey.

- I. [CELL ONLY] Before I continue, are you in a safe place to talk on your phone, specifically not currently driving? [INTERVIEWER NOTE: EVEN IF THE RESPONDENT IS OK WITH TAKING THE SURVEY WHILE DRIVING, WE CANNOT CONTINUE WITH THE SURVEY.]
  - a. Yes – in safe place/not driving [Continue]
  - b. No – not safe/driving [Arrange callback]
  
- II. [CELL ONLY] Are you in a place where you can speak freely? [INTERVIEWER NOTE: WE WANT TO ENSURE THEY CAN ANSWER HONESTLY ABOUT THESE TOPICS AND ARE NOT INFLUENCED BY OTHERS LISTENING.]
  - a. Yes – can speak freely [Continue]
  - b. No – cannot speak freely [Arrange callback]
  
- III. [LANDLINE ONLY] For this survey, I'd like to speak with the person in your household, 18 years of age or older, who had the last birthday. Is he or she available?
  - a. Yes [Continue]
  - b. No [ASK FOR 2<sup>ND</sup> MOST RECENT BIRTHDAY. IF HE/SHE IS ALSO NOT AVAILABLE, CONTINUE WITH PERSON ON PHONE IF THEY ARE AT LEAST 18 YEARS OLD].

Is the person with the second most recent birthday available?

    - i. Yes [Continue]
    - ii. No [Continue if person on the phone is at least 18]
  
- IV. [CELL ONLY] Are you 18 years old or older?
  - a. Yes [Continue]



b. No [IF NO, ask for someone 18 or older]

Is there an adult over 18 years of age or older in the household that I could speak with?

i. Yes

ii. No [IF NO ONE IN THE HOUSEHOLD IS OVER 18, SAY “I’m sorry. We can’t include your household in the survey, but thank you for your time.”  
ABORT THE SURVEY]

V. What county do you live in? [Do not read list. Quotas based on region defined by county.]

a. Adams	y. Gilpin	vv. Park
b. Alamosa	z. Grand	ww. Phillips
c. Arapahoe	aa. Gunnison	xx. Pitkin
d. Archuleta	bb. Hinsdale	yy. Prowers
e. Baca	cc. Huerfano	zz. Pueblo
f. Bent	dd. Jackson	aaa. Rio Blanco
g. Boulder	ee. Jefferson	bbb. Rio Grande
h. Broomfield	ff. Kiowa	ccc. Routt
i. Chaffee	gg. Kit Carson	ddd. Saguache (Pronounced “sa- watch”)
j. Cheyenne	hh. La Plata	eee. San Juan
k. Clear Creek	ii. Lake	fff. San Miguel
l. Conejos	jj. Larimer	ggg. Sedgwick
m. Costilla	kk. Las Animas	hhh. Summit
n. Crowley	ll. Lincoln	iii. Teller
o. Custer	mm. Logan	jjj. Washington
p. Delta	nn. Mesa	kkk. Weld
q. Denver	oo. Mineral	lll. Yuma
r. Dolores	pp. Moffat	mmm. Don’t Know/Refused
s. Douglas	qq. Montezuma	
t. Eagle	rr. Montrose	
u. El Paso	ss. Morgan	
v. Elbert	tt. Otero	
w. Fremont	uu. Ouray (Pronounced “u-ray”)	
x. Garfield		

[INTRO: IF RESPONDENT PASSED ALL QUESTIONS, SAY “Great. You’re eligible for the survey, and this will only take about 12 minutes of your time.”]

## GENERAL OPINIONS ON ENVIRONMENTAL ISSUES

First, we would like to ask you some questions related to your general opinions on environmental issues.

1. I'm going to read five types of environmental issues. Please tell me your top two regarding the level of importance for these as they apply to your local area. [Asked in 2007]
  - a. Which of the following is the most important to you? [Randomize list]
    - i. Air pollution
    - ii. Climate change
    - iii. Water pollution
    - iv. Threatened or Endangered species
    - v. Habitat loss
  - b. Which of the following is the next or the second most important to you? [Do not read previous answer]
    - i. Air pollution
    - ii. Climate change
    - iii. Water pollution
    - iv. Threatened or Endangered species
    - v. Habitat loss
2. I will now read a list of entities that may be responsible for oversight of water quality in your local area? Please tell me which ones you believe hold responsibility in your area. You can choose all that apply. [Choose all that apply. Randomize order read. Do not read "Don't know" or "Other"] [Asked in 2007 as a "select one"]
  - a. Federal Government
  - b. State Government
  - c. Local Government
  - d. Individuals
  - e. Industry
  - f. Nonprofit Organization
  - g. Don't Know
  - h. Other Please Specify: \_\_\_\_\_

## WATER QUALITY PERCEPTIONS AND OPINIONS

Next, we would like to ask you some questions about water quality. When thinking about different actions a person could take to preserve water quality for the following questions, consider steps such as reducing potential contamination or supporting a nonprofit with donations of time or money.

3. Please respond to each of the following statements in terms of whether you strongly agree, somewhat agree, somewhat disagree or strongly disagree. [\[Randomize order, but anchor item “d” last. Do not read “Don’t know”\]](#) [\[New question\]](#)

	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know
a. People in my local area take actions to preserve water quality.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. I personally take action to preserve water quality.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. I am worried about water quality in Colorado.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. I am willing to pay more in taxes or fees to protect water quality. <a href="#">[Anchor last]</a>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Please respond to each of the following statements in terms of whether you strongly agree, somewhat agree, somewhat disagree or strongly disagree. [\[Randomize order. Do not read “Don’t know”\]](#) [\[Asked in 2007\]](#)

	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	Don't know
a. The quality of water in my local area is affected by upstream sources of pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Actions that I take can affect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

water quality in my local area					
c. Actions that I take can affect water quality in downstream areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Actions that I take can affect the quality of my drinking water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Water quality in my household is affected by the quality of water in local lakes, rivers, streams, or groundwater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. From what source does your drinking water originate? [Open-ended, record verbatim] [Asked in 2007]

a. \_\_\_\_\_

6. Where does storm or rainwater runoff go after it enters a storm drain in your community? Does it go: [Randomize. Read responses, select one. Do not read “Don’t know”] [Asked in 2007. Updated categories.]

a. To a treatment facility

b. To a body of water, such as a lake, stream, or reservoir

c. Don’t know

d. Other: [Do not read. Record verbatim.]

7. Please respond to each of the following statements in terms of whether it is very desirable, somewhat desirable, somewhat undesirable, or very undesirable. [Randomize order. Do not read “Don’t know”] [New question. Matched to previous question statements to better understand attitudes of these actions.]

	Very desirable	Somewhat desirable	Somewhat undesirable	Strongly undesirable	Don’t know
a. Taking action to protect water quality in your local area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

b. Taking action to protect water quality in downstream areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Taking actions to protect the quality of drinking water in your home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Taking action to protect the quality of water in local lakes, rivers, streams, or groundwater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. How important are each of the following to you? Please respond very important, somewhat important, somewhat NOT important, or not important at all. [Randomize order. Do not read “Don’t know”] [Asked in 2007]

	Very important	Somewhat important	Somewhat not important	Not important at all	Don't know
a. The quality of water in lakes, rivers and streams as a source of drinking water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. The quality of groundwater as a source of drinking water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. The quality of water in lakes, rivers and streams for swimming, boating, and fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Please answer yes or no to each of the following. [Randomize. Do not read “Don’t know”]  
[Asked in 2007]

	Yes	No	Don’t know
a. Is your home drinking water safe?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Are ponds, lakes, and streams in your local area clean enough to swim in?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Are fish caught from lakes or streams in your local area safe to eat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. Now, I will read a list of possible pollution sources from individual households that may or may not affect water in your local area. Please tell me for each of the following whether you think each has a major effect, minor effect, or no effect on water quality in your local area [Randomize order] [Asked in 2007. Updated categories.]

	Major effect	Minor effect	No effect	Don’t know
a. Pesticides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Fertilizers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Uncollected dog waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Runoff from washing a car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Fluids leaking from vehicles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Uncollected grass clippings from mowing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Faulty septic systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Exposed soil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## PERSONAL ACTIONS, BENEFITS, AND BARRIERS

11. When thinking about reasons to improve water quality in Colorado, how motivating would each of the following factors be to you? Please respond very motivating, somewhat motivating, somewhat NOT motivating, or not at all motivating. [\[Randomize order. Do not read “Don’t know”\]](#) [\[Asked in 2007\]](#)

	Very motivating	Somewhat motivating	Somewhat not motivating	Not at all motivating	Don’t know
a. The impact on public health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. The odor of bodies of water, such as ponds and lakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. The health of your pets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. The ability to recreate in public waters, such as swimming, boating, or fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Improved wildlife and fish habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Now, we would like to ask you questions regarding your personal actions related to water quality.

12. Did you take any of the following actions in the past year, and if so, was the action primarily motivated to preserve water quality? Please respond "Yes, to preserve water quality", "Yes, but NOT primarily for preserving water quality", "No", or "Not applicable" to each of the following. In the past year, did you... [\[Randomize.\]](#) [\[Asked in 2007. Updated categories, matched to previous question, except for “Septic”\]](#)

	Yes, to preserve water quality	Yes, but not primarily for preserving water quality	No	N/A
a. Change the way pesticides are used in your home lawn or garden?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Change the way fertilizers are used in your home lawn or garden?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Pick up dog waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

d. Use a commercial car wash?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Perform maintenance to prevent leaking automotive fluids?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Collect grass clippings from mowing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Cover exposed soil around the outside of your home to reduce erosion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. [For each response above that respondent indicated they do not do (NO)] Why did you not... [Action from previous question]? [Record under A, B, C, etc for corresponding to A, B, C... above.] [Asked in 2007]

- a. \_\_\_\_\_ [Open-ended, record verbatim]
- b. \_\_\_\_\_ [Open-ended, record verbatim]
- c. \_\_\_\_\_ [Open-ended, record verbatim]
- d. \_\_\_\_\_ [Open-ended, record verbatim]
- e. \_\_\_\_\_ [Open-ended, record verbatim]
- f. \_\_\_\_\_ [Open-ended, record verbatim]
- g. \_\_\_\_\_ [Open-ended, record verbatim]
- h. \_\_\_\_\_ [Open-ended, record verbatim]

14. Do you have a septic system? [Asked in 2007]

- a. Yes
- b. No [Proceed to next section]
- c. Don't Know [Proceed to next section]

15. How long ago-in number of months-was it last serviced? [Asked in 2007]

- a. \_\_\_\_\_ months [Enter 999 if respondent does not know]

16. How often do you typically pump your septic tank? You may stop me when I reach the correct category. [Asked in 2007]

- a. One time per year
- b. One time every two or three years
- c. One time every four or five years
- d. Greater than five years



## PUBLIC EDUCATION AND COMMUNICATION

17. In the past 3 months, have you read, seen or heard anything about water quality? [\[New question\]](#)
- a. Yes
  - b. No
  - c. Don't know
  - a. Refused **[Do not read]**
18. **[IF YES TO PREVIOUS]** Where did you see or hear these messages? **[Do not read. Multiple response.]** [\[New question. Same list as next question\]](#)
- a. TV
  - b. Radio
  - c. Newspaper
  - d. Email
  - e. Online news site
  - f. Social media site
  - g. Bus signs
  - h. Water/sewer bill utility inserts
  - i. Brochures, fact sheets, other short publications
  - j. Personal communication with your children
  - k. Personal communication with your co-workers
  - l. Other: **[Record]** \_\_\_\_\_
  - m. Don't know
  - n. Refused
19. Would you read, watch, or listen to information about water quality if it came from the following sources? Please answer Yes or No to each. [\[Asked in 2007; updated categories\]](#)

	Yes	No	Not applicable <b>[Do not read]</b>
a. TV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>b. Radio</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>c. Newspaper</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>d. Email</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>e. Online news sites</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>f. Social media sites</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>g. Bus signs</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>h. Water, sewer and utility bill inserts</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>i. Brochures, fact sheets, other short publications</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>j. Information sent home from your children's school</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>k. Information you received from your place of work</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## DEMOGRAPHICS

We're almost done! The final questions are for classification purposes only. We would like to remind you that this survey is confidential.

20. Does anyone in your household work at a company, organization or agency whose primary business is directly related to natural resources, or water, in particular? [Do not read list] [Previously asked as screener.]
- a. Yes
  - b. No
  - c. Don't know
  - d. Refused
21. [Cell only] Which of the following best describes your personal telephone status?
- a. I only have a cell phone and no landline.
  - b. I have a landline, but mostly use my cell phone.
  - c. I use my cell phone and landline equally.
  - d. I mostly use a landline, though I have a cell phone.
22. [Landline only] Which of the following best describes your personal telephone status?
- a. I only have a landline and no cell phone.
  - b. I have a cell phone, but mostly use my landline.
  - c. I use my cell phone and landline equally.
  - d. I mostly use a cell phone, though I have a landline.
23. Approximately how long have you lived in your current county?
- b. Less than one year
  - c. 1 to 5 years
  - d. 6 to 10 years
  - e. Longer than 10 years
  - f. Refused [Do not read]

24. Do you rent or own your home?
- Rent
  - Own
  - Other
  - Refused
25. [If “Own”] Do you have a yard, lawn, or outside garden at your home?
- Yes
  - No
  - Other
  - Refused
26. Do you own or lease a car?
- Yes
  - No
  - Other
  - Refused
27. What is your home zip code? [Potentially use in analysis to further refine watersheds]
- \_\_\_\_\_ [Record 5-digit zip, 99999 for refused]
28. What is the highest level of education that you have obtained? You may stop me when I reach the appropriate category.
- Some high school, no diploma or GED
  - High school diploma/GED
  - Some college, no degree
  - Associate degree
  - Bachelor’s degree
  - Graduate/Professional degree
  - Refused [Do not read]

29. In what year were you born?\_\_\_\_\_ [4 digit year. 9999=Refused]
30. [Record by observation, if needed read:] This may sound weird, but I'm required to ask your gender.
- a. Male
  - b. Female

**That is all of the questions I have for you today. Thank you for your time.**