

2018 Chittenden County Stormwater Awareness Study

Prepared for Chittenden County Regional Planning Commission

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CASTLETON POLLING INSTITUTE

Amplifying the Voices of Vermont



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The Chittenden County Regional Planning Commission (CCRPC) commissioned the Polling Institute at Castleton University to conduct a survey of residents in nine Chittenden County communities to gauge public sentiment about water quality issues and reported behavior regarding various practices related to addressing stormwater runoff. An initial draft of this report was presented to the MS4 Subcommittee of CCRPC’s Clean Water Advisory Committee on April 3, 2018. This report summarizes the primary findings from the 2018 survey, comparing results to a similar survey conducted in 2013 where similar questions are available.

Methodology

On January 5, 2018, Castleton sent an invitation letter via U.S. Postal Service to 2,400 residential households in nine communities in Chittenden County (listed in Table 1). The sampled addresses came from the United States Post Office’s Delivery Sequence File (DSF), containing a complete list of every residential address. Using the nine communities in Chittenden County, we stratified our list to represent each proportionately based on the number of total residences in that community. As Table 1 illustrates, our sample closely matches the region’s distribution; consequently, we do not weight our sample for any response differentials.

Table 1. Comparison of population and sample distribution by community

Community	Total population (2016)	Total households (2016)	Households as a percent of the nine communities	Percent of households in the survey sample	Difference between population and sample
Burlington city	42417	16119	31%	31%	0.7%
Colchester town	17067	6314	12%	12%	0.0%
Essex Junction	9271	3875	7%	11%	-3.2%
Essex town	10316	4012	8%	7%	0.5%
Milton town	10352	3889	8%	6%	1.3%
Shelburne town	7144	2880	6%	7%	-0.9%
South Burlington city	17904	7987	15%	17%	-2.0%
Williston town	8698	3514	7%	5%	1.6%
Winooski city	7267	3197	6%	4%	2.3%

The invitation letter contained a web site (<http://poll.castleton.edu/water>) and an access code to reach the online survey instrument. The original invitation letter was followed by a postcard reminder within a week of the first mailing. Ultimately, 214 people visited the website, and 207 completed the entire survey. On January 26, 2018, a second letter was mailed to all those who had not responded to the survey online; this second letter contained a paper copy of the survey with a business reply envelope. As of March 16, 2018, we received 172 paper surveys returned.

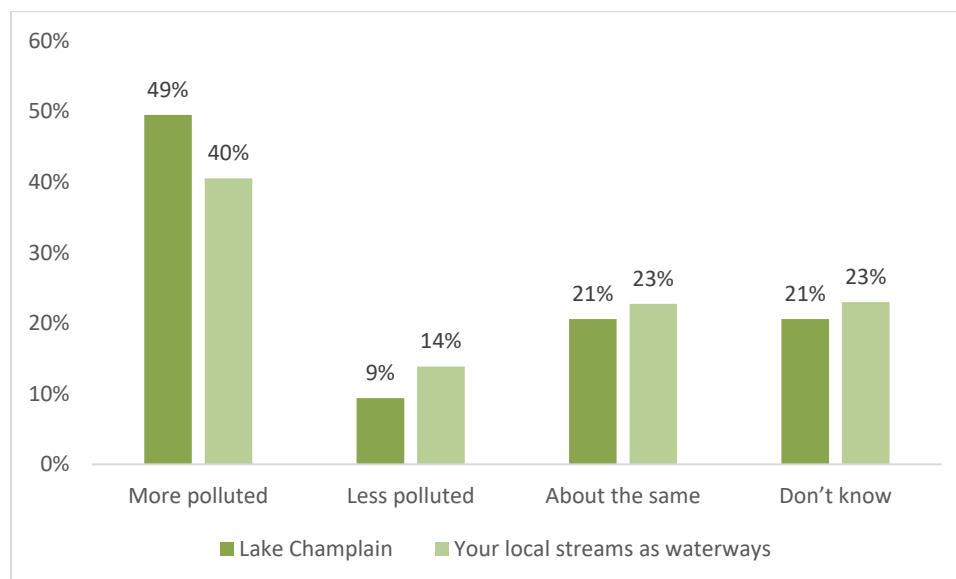
In total, we received 386 responses. The results below can be generalized to the population of residents in the nine town covered in our study with a sampling margin of error at +/- 5 percentage points. The margin of error is greater for sub-group analysis. While sampling error is not the only form of error in survey research, all reasonable steps have been taken to minimize other sources of error in this study.

As we compare results to those from 2013, it is important to keep in mind that the 2013 survey was administered by interviewers, while the 2018 survey as described above was self-administered—either online or on paper. Consequently, differences found between the two surveys can reflect real changes in public views and/or differences in survey administration.

General Views on Pollution in Lake Champlain

Half of the nine-town residents in Chittenden County believe that Lake Champlain has become more polluted in the past 10 years. Only nine percent said the lake was less polluted, and 21 percent said the lake was about the same as it was 10 years ago. In contrast, only 41 percent said that the local streams and waterways were more polluted today than 10 years ago. Fourteen percent said that local streams and waterways were less polluted than 10 years ago, and 23 percent said that they were about the same. It would appear that residents have a greater level of concern about the lake than about those waterways feeding into the lake.

Figure 1. Compared to 10 years ago, are Lake Champlain and local streams and waterways ...



The percent who believe that Lake Champlain is more polluted has increased slightly since a 2013 survey asking the same question, while the percent thinking it is less polluted has remained steady. An even smaller percentage thinks that their local streams and waterways are more polluted (see Figures 2 and 3).

Figure 2. Comparing sense of increased pollution in Lake Champlain, from 2013 study and 2018 study

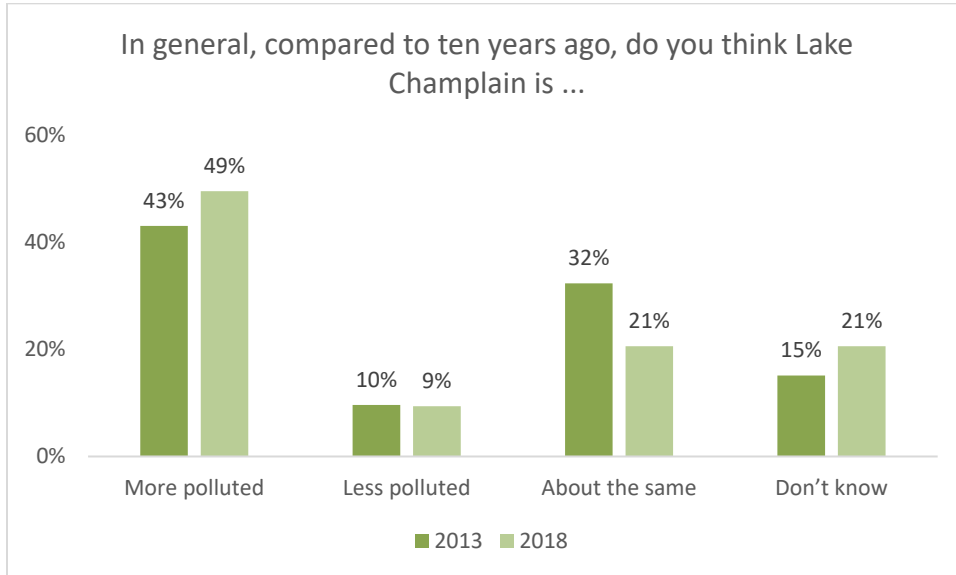
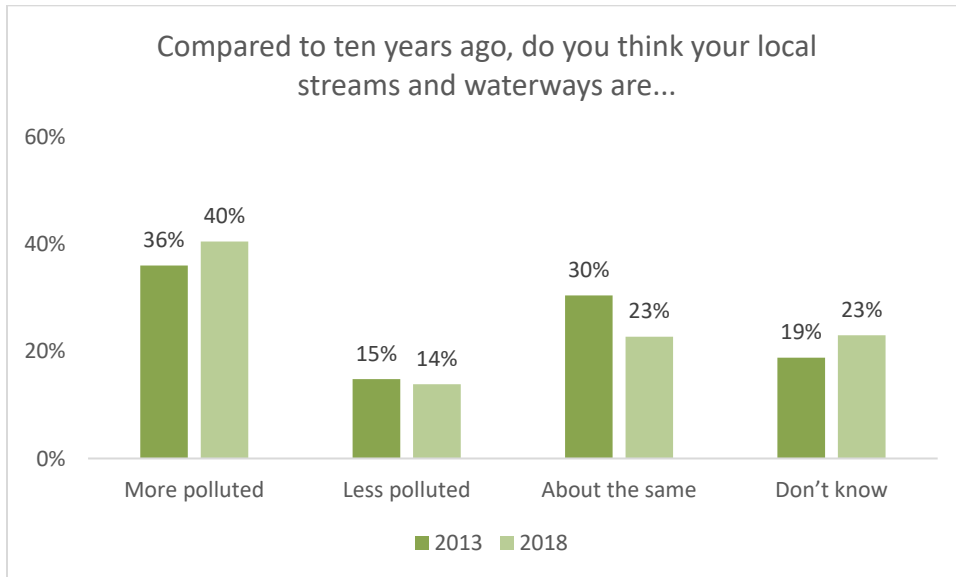


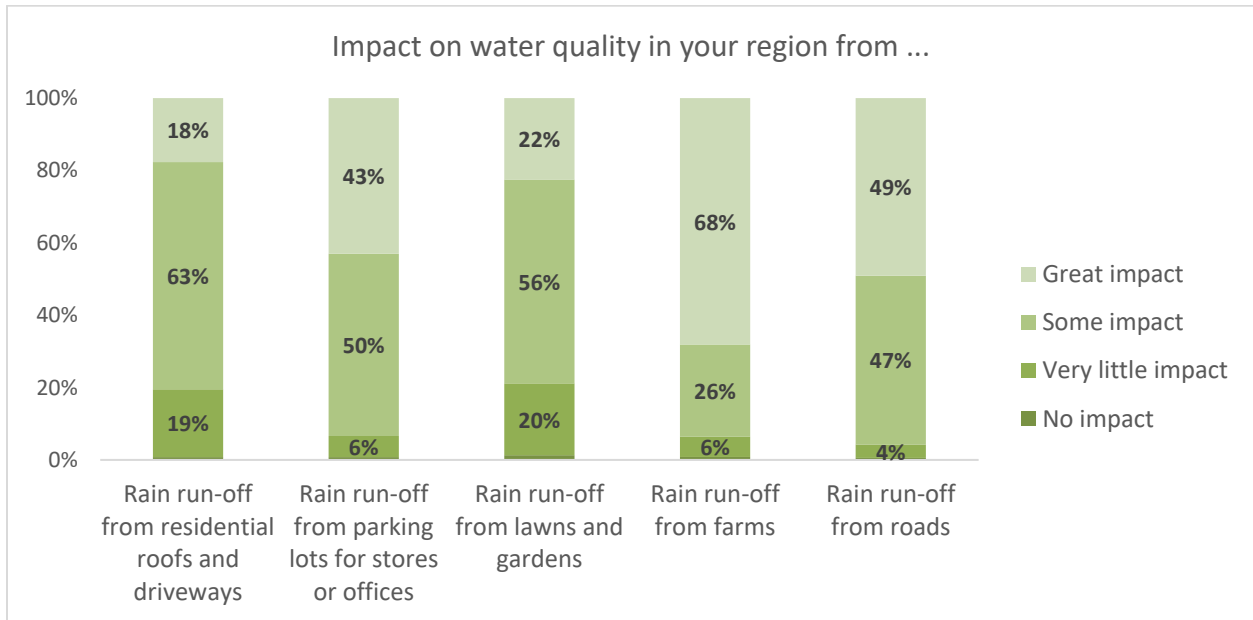
Figure 3. Comparing sense of increased pollution in local streams and waterways, from 2013 study and 2018 study



Most residents (60 percent) believe that stormwater runoff from streets, parking lots, roofs, and other hard surfaces goes into the nearest body of water untreated, while 24 percent believe that the runoff goes to a sewage treatment plant.

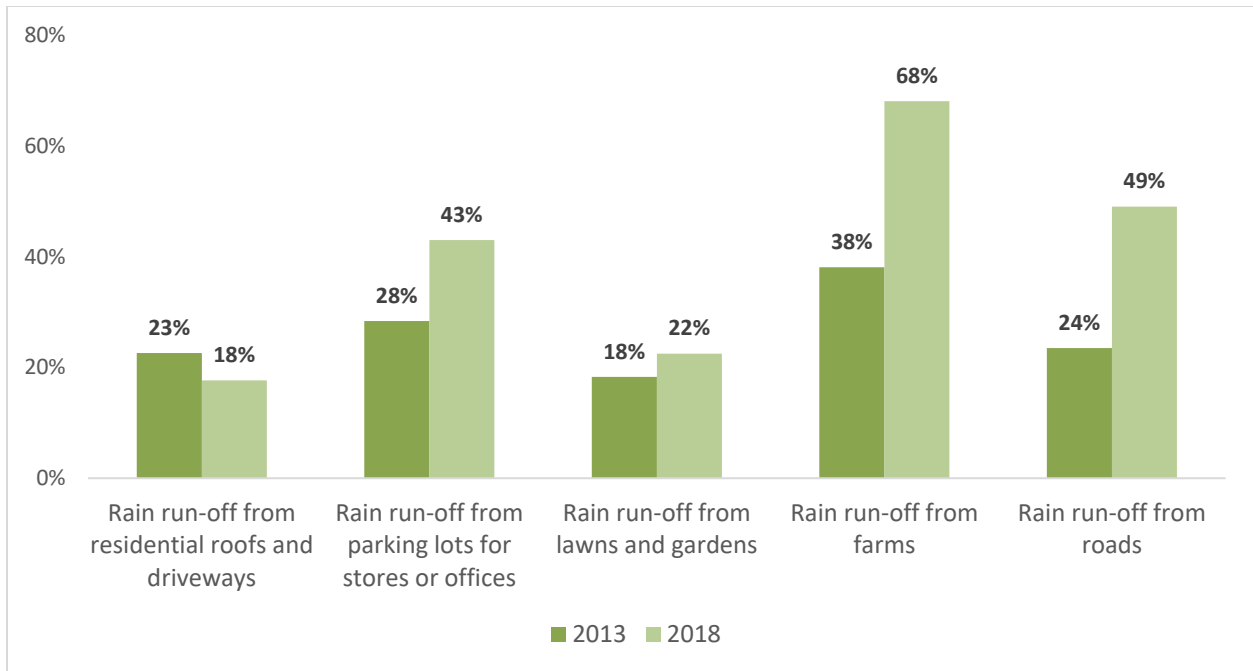
As Figure 4 illustrates, the sense of the impact from various sources of stormwater pollution focuses mostly on agriculture. Sixty-eight percent of residents think that rain runoff from farms has a great impact on the region’s water quality. Nearly half of all residents think that runoff from roads has a great impact on water quality, while only 18 percent think that rain runoff from residential roofs and driveways has a great impact, although a majority (63 percent) says that this source does have some impact on water quality.

Figure 4. Comparing sense of impact on water quality, by source of stormwater pollution



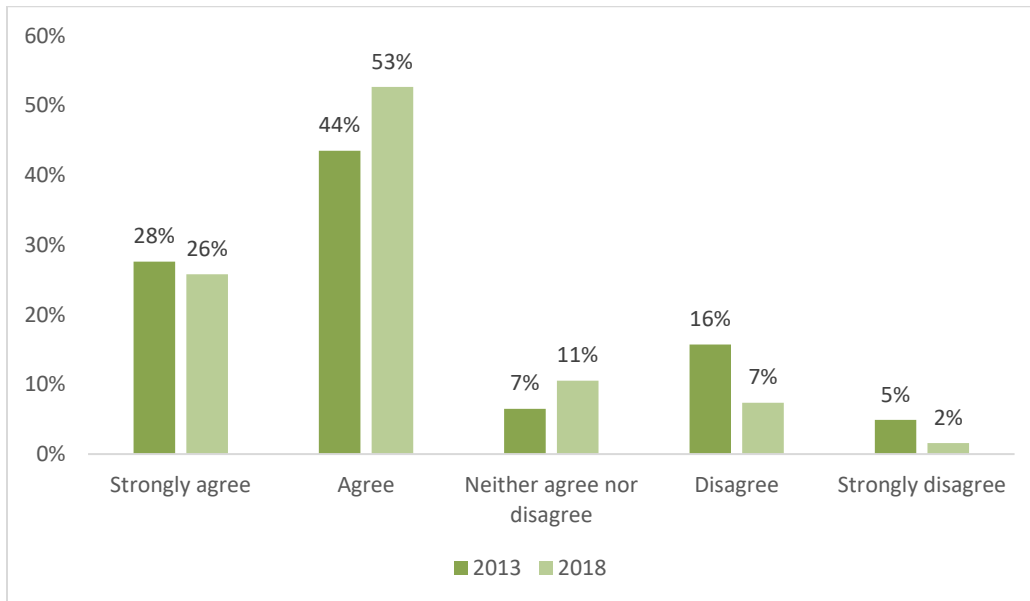
In the 2018 survey, residents are more likely to assume that almost all sources of stormwater pollution have a great impact on the lake’s water quality than those surveyed in 2013, as illustrated in Figure 5. Most tellingly, the percent believing that farm runoff has a great impact has increased by 30 percentage points from 2013 to 2018. On the other hand, a smaller percent of the public believe that runoff from residential roofs and driveways has a great impact on water quality in 2018 than they did in 2013.

Figure 5. Comparing the public's sense that _____ has a "great impact" on water quality, by year of survey



A vast majority of the region's residents either strongly agree (26 percent) or somewhat agree (53 percent) that their personal actions have an effect on the quality of water in Lake Champlain. Only 9 percent either disagree (7 percent) or strongly disagree (2 percent) that their personal actions affect Lake Champlain's water quality. Those who think Lake Champlain is more polluted than it was 10 years ago are also far more likely to believe that their personal actions contribute to the quality of the lake's water. The percent who disagree with the proposition that their personal actions affect water quality in Lake Champlain has declined from the measure taken in the 2013 iteration of the survey, as illustrated in Figure 6.

Figure 6. Percent agreeing and disagreeing that their personal actions affect the quality of Lake Champlain's water, by year of survey



Lawn care

Sixty percent of all respondents (n=228) maintain their own lawns; 29 percent have a lawn care company, and another 9 percent have no lawn to maintain. Of those who care for their own lawn, the majority (57 percent) leave lawn clippings on the lawn, and another 36 percent compost the clippings on their property. As for leaves, the majority of respondents (58 percent) compost or mulch leaves on the lawn, and 34 percent bag the leaves for the dump, while only 6 percent simply let the leaves lie.

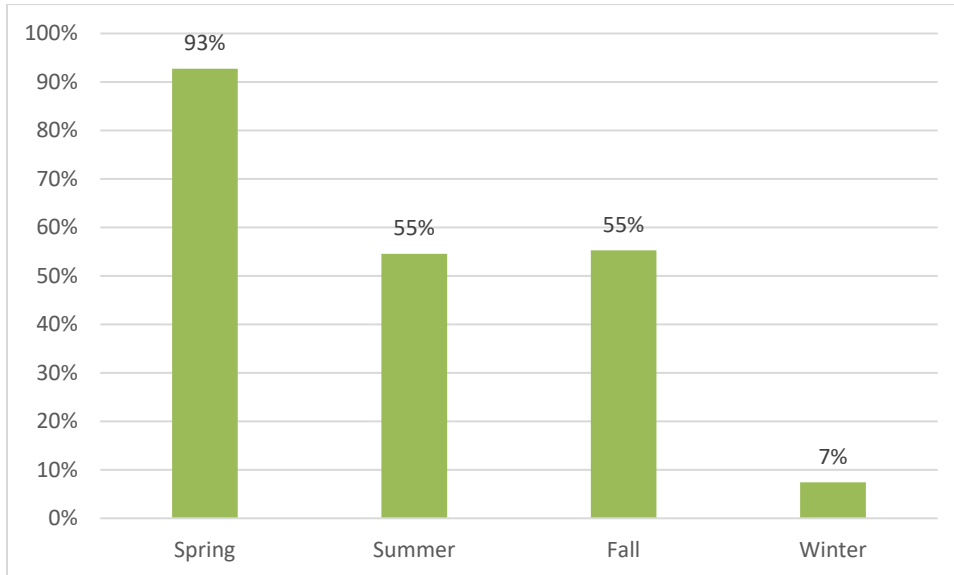
In the 2013 survey, 70 percent said that they maintained their own lawn. The respondents in the 2018 survey were more likely to compost grass clippings and leaves than those in 2013, as seen in the following table.

Table 2. Methods of disposing lawn clippings and leaves, by survey year

	2013	2018
Leave (mower) clippings on lawn	68%	57%
Compost (mower) clipping on property or mulch on lawn	23%	36%
Bag (mower) clippings for pickup or take to dump	6%	5%
Leave (raked) leaves on the lawn or ground	18%	6%
Compost (raked) leaves on property or mulch on lawn	40%	58%
Bag (raked) leaves for pickup or dump	36%	33%

Only 21 percent of respondents in the 2018 survey use commercial fertilizers on their lawns (compared with 29 percent in 2013), and they are most likely to apply fertilizer in the spring, although just over half also apply in the summer and fall as well.

Figure 7. Time of year when fertilizer is applied to lawns (n=55)



Walking the dog

Twenty-nine percent (n=110) of the respondents in the 2018 study said that they own a dog, approximately the same as found in the 2013 survey. The vast majority (83 percent) said that they put the dog's waste in a bag and then into the trash when they walk dogs on sidewalks or streets. Similarly, a majority (78 percent) of those walking dogs on trails are likely to put the dog's waste in the trash, although 12 percent toss the waste into the brush or woods. In the winter, 81 percent put the dog waste into the trash. When the dog is in the respondent's yard, about a two-thirds (68 percent) still put the waste in the trash, but 16 percent pick it up and toss it into the woods, and another 8 percent simply leave it on the ground.

Comparing the 2018 results to those from 2013, it is clear that residents are more likely to put pet waste in the trash when walking their dogs on trails, as shown in Table 3.¹

¹ Apart from methodological differences, we should be cautious about making too much of the relatively small differences between 2013 and 2018 because of the small sub-sample sizes in both years.

Table 3. Practices related to pet waste, by survey year

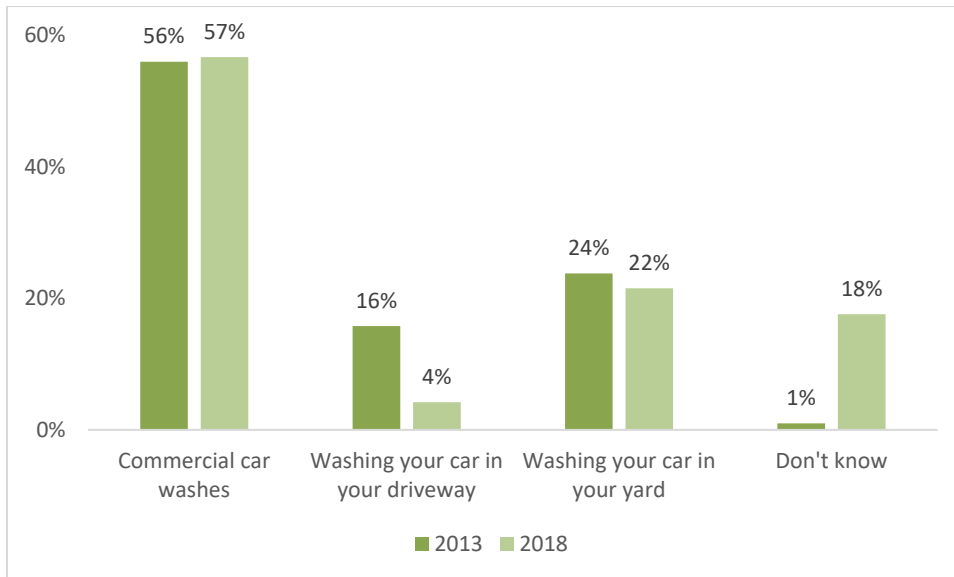
	2013	2018
When you take your dog(s) for a walk on the streets and sidewalks of your neighborhood, what do you typically do with the dog's waste?		
Leave it on the ground/street	6%	2%
Put it in the trash	81%	83%
Pickup and toss it into the brush/woods	4%	4%
When you take your dog(s) for a walk in a park or along a trail what do you typically do with the dog's waste?		
Leave it on the ground/street	25%	2%
Put it in the trash	48%	78%
Pickup and toss it into the brush/woods	10%	12%
When you take your dog(s) for a walk in the winter, what do you typically do with the dog's waste?		
Leave it on the ground/street	16%	2%
Put it in the trash	72%	81%
Pickup and toss it into the brush/woods	7%	5%
When your dog(s) leaves waste in your yard, what do you typically do with the dog's waste?		
Leave it on the ground/street	21%	8%
Put it in the trash	66%	68%
Pickup and toss it into the brush/woods	9%	16%
Do not have a yard	1%	1%

About three-quarters of those surveyed in 2018 believe that the best method of dog waste disposal, in terms of reducing pollution into streams, is to put it in the trash, although 15 percent said that they do not know what the best method may be.

Residential Runoff

A majority of respondents (57 percent) believe that the best method of car washing to reduce pollution into streams is to use a commercial car wash. Twenty-two percent of respondents say that washing one's car on the lawn is the best method of reducing pollution into streams. Only 4 percent believe that washing cars in one's driveway is the least polluting method. In 2013, a higher percentage of residents thought that washing one's car in the driveway was the best method, as illustrated in Figure 8.²

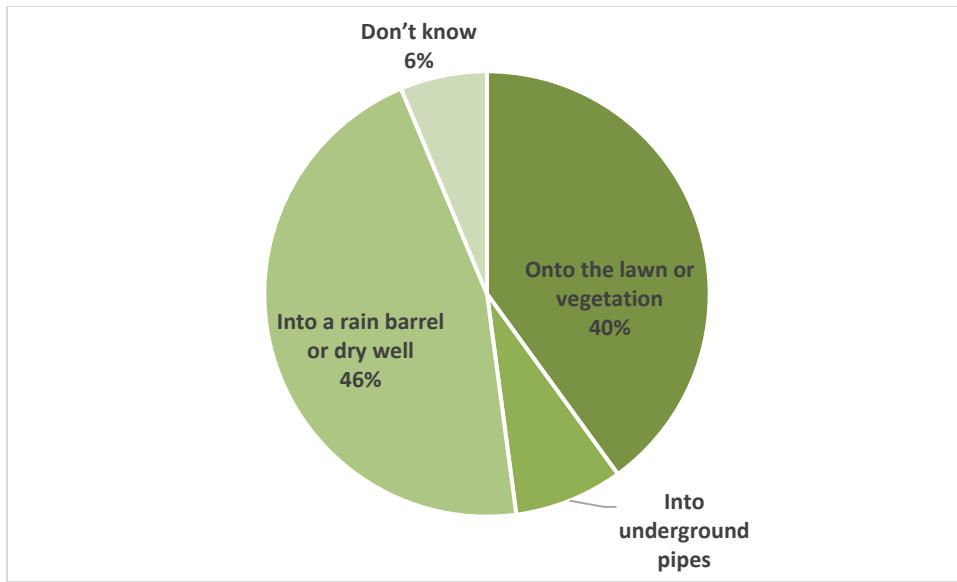
Figure 8. Least polluting method of car washing, by survey year



In 2018, 70 percent of residents report that the rain runoff from their roofs flows into gutters and downspouts; in 2013, that figure was a comparable 66 percent. As in 2013, the majority say that runoff from the downspout is directed onto the lawn or vegetation—73 percent in 2018 and 70 percent in 2013. Only six percent in both the 2013 and the 2018 surveys, say that they run the water into a rain barrel; however, 46 percent believe that using a rain barrel produces the least amount of pollution into local streams, as illustrated below.

² It is likely that the level of “don’t know” responses increased greatly from 2013 to 2018 as a result of changes in survey administration. It is much easier to admit not knowing something when there is no person on the other end of a conversation. Additionally, there was an additional response option (“Washing car at home in the road”) in the 2013 survey that was not present in the 2018 survey.

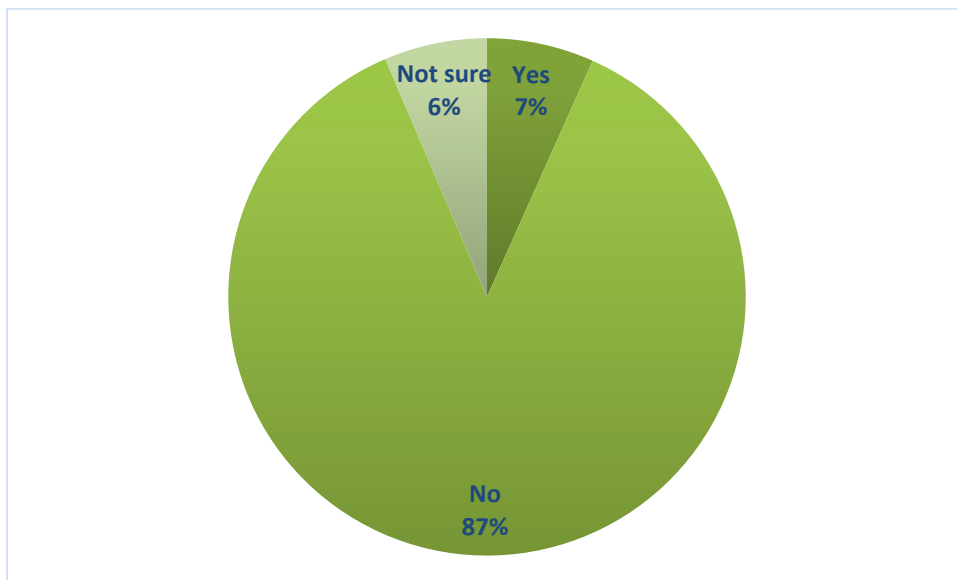
Figure 9. Residents' opinions on the method of handling rain runoff that puts the least amount of pollution into local streams



Sources of information

Twenty percent of the residents surveyed in 2018 report seeing or hearing education information about stormwater from the Regional Stormwater Education program of Chittenden County. Only 7 percent of respondents (n=25) recall seeing or hearing any information from Rethink Runoff.

Figure 10. Percent of respondents recalling having seen or heard information from Rethink Runoff



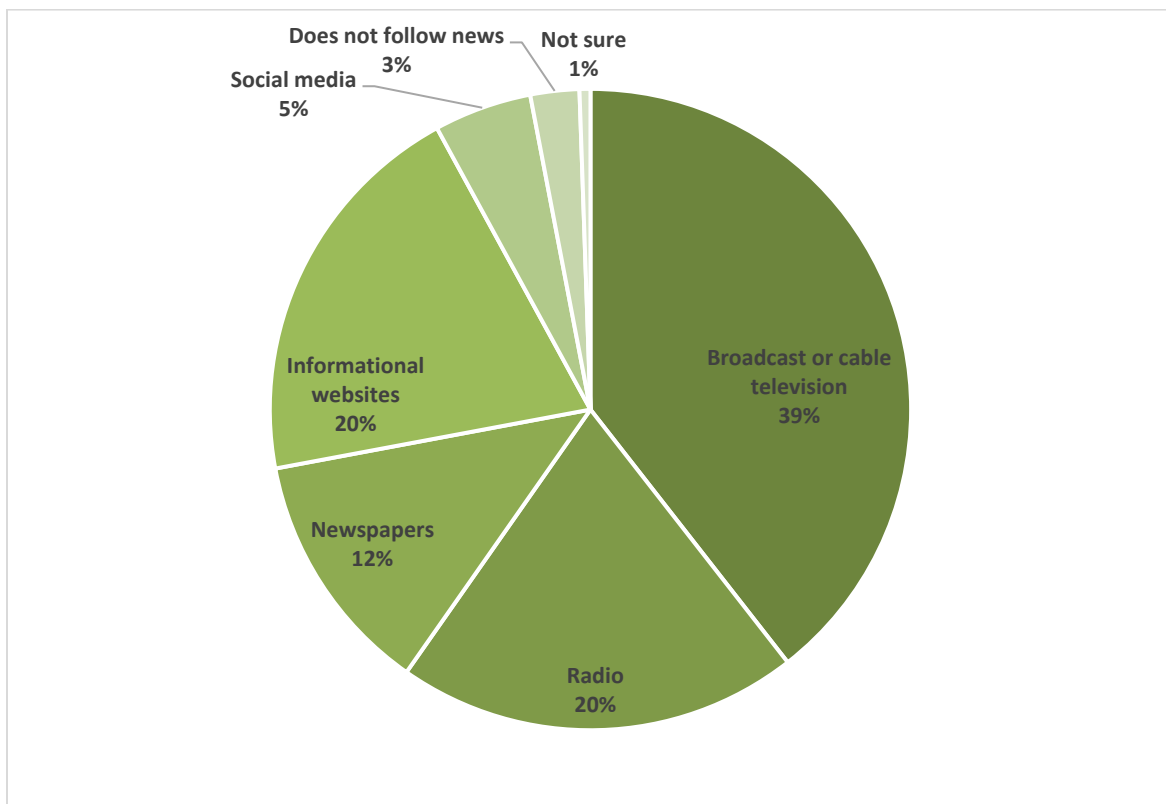
Of the 7 percent who recall getting information from Rethink Runoff, 40 percent saw something on TV, and another 40 percent saw a post online or on Front Page Forum; 24 percent heard something on the

radio, and an additional 16 percent heard from Rethink Runoff at a public meeting. Only one percent of the respondents said that they visited the rethinkrunoff.org website before the survey.

Four percent of respondents heard or saw information about “the Stream Team.” Like with Rethink Runoff, TV and online advertisement is the most common means for seeing or hearing about the Stream Team.

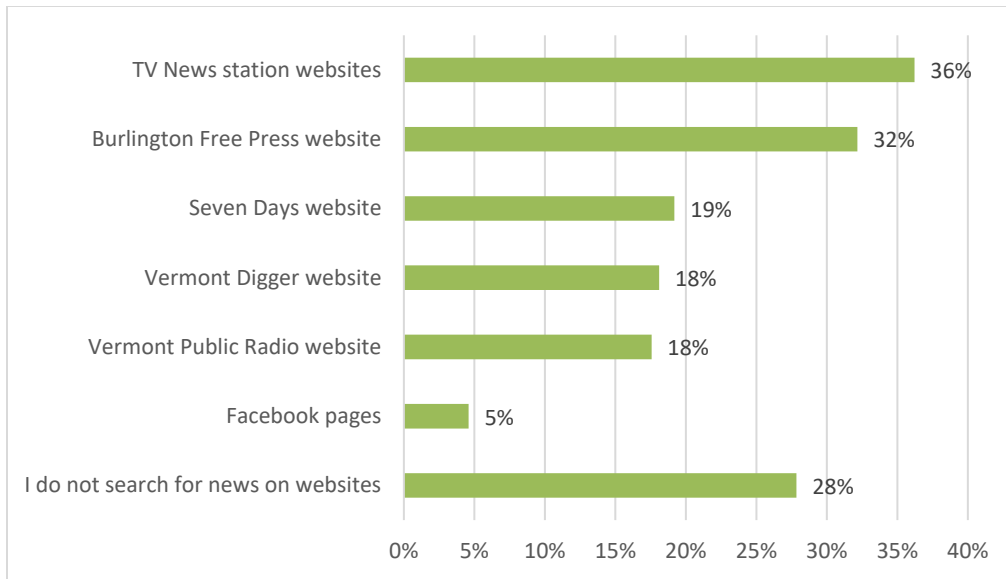
In general, a plurality of respondents (39 percent) claim that television, either broadcast or cable, is their primary source of daily news. An equal number of respondents primarily get their news from radio (20 percent) or informational web sites (20 percent). Newspapers are the primary source of news for only 12 percent of survey respondents.

Figure 11. Primary sources of news



Respondents were asked where they search online for local news. The *Burlington Free Press* site fell just below local television sites as the most popular resources, illustrated in Figure 12.

Figure 12. Websites used for local news information

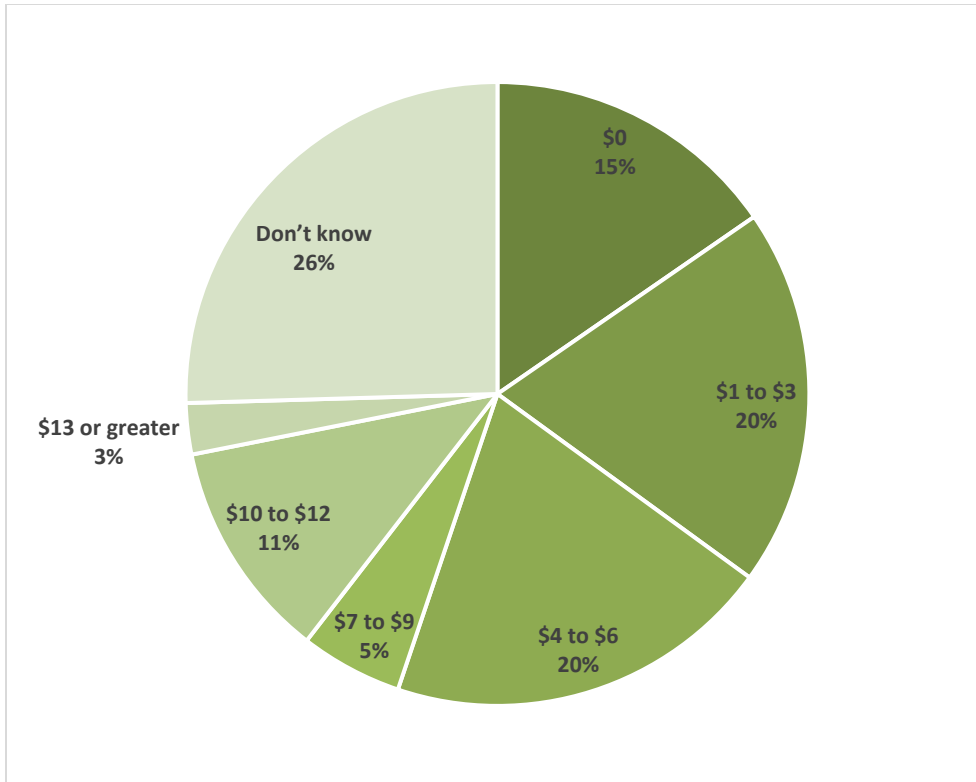


Level of Concern

Almost no one (2 percent) thinks that their town or city is paying too much on water quality; 28 percent say that their municipality is not spending enough, and 15 percent say that their municipality is spending about the right amount. The majority of respondents (55 percent) simply have no opinion on the matter. It is likely that the majority know neither how much their municipality spends on water quality improvements nor how much is needed; thus, they are not able to register an opinion.

As illustrated in Figure 13, a majority of respondents say that they would be willing to pay something on a monthly basis to address stormwater concerns. Twenty percent say that they would pay between one and three dollars, and another 20 percent say that they would pay between four and six dollars. Eleven percent say that they are willing to pay \$10 to \$12 a month for stormwater problems. The fact that 26 percent say that they do not know how much they would be willing to pay probably reflects uncertainty about the extent of the problem.

Figure 13. Amount respondents are willing to be charged on a monthly basis to deal with the problems caused by stormwater



The percent that said they would be willing to spend nothing to address stormwater concerns dropped by half from 2013 to 2018, and the number that said they did not know enough to respond increased by 10 percentage points, as illustrated in the following table.³

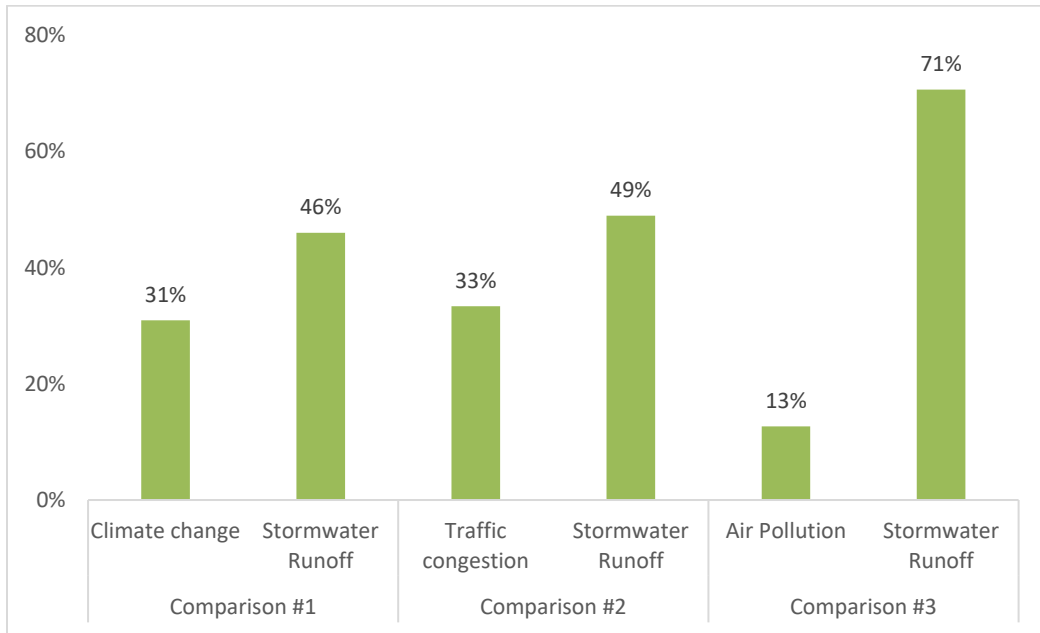
Table 4. Amount respondents are willing to be charged on a monthly basis to deal with the problems caused by stormwater, by survey year

Amount	Survey Year		Difference
	2013	2018	
\$0	30%	15%	-15%
\$1 to \$3	19%	20%	0%
\$4 to \$6	14%	20%	7%
\$7 to \$9	5%	5%	1%
\$10 to \$12	9%	11%	2%
\$13 or greater	8%	3%	-6%
Don't know	15%	25%	10%

³ Again, it is possible that the increase in “don’t know” responses may be attributable to the differences in survey administration, from interviewer-administered to self-administered.

Asked to compare stormwater runoff to other “critical concern(s) for Chittenden County,” stormwater is a greater concern than climate change (by 15 percentage points), traffic congestion (by 16 percentage points), and air pollution (by 58 percentage points). We should be cautious in overestimating this difference since respondents had been primed to consider stormwater issues in the survey process and not the other critical issues. That being noted, in the 2013 survey, respondents favored traffic congestion to stormwater runoff.

Figure 14. Comparing stormwater runoff to other critical issues facing Chittenden County



Apart from traffic congestion, concern about stormwater runoff was greater than concern about climate change and air pollution in 2013 as well (see Table 5). While we want to take into account the priming effect when considering the comparisons between stormwater and other issues facing the county, it is instructive to look at the relative differences in differences between the 2013 and 2018 studies to gain understanding of the degree to which concern for stormwater runoff relative to other issues has changed.

Table 5. Comparing stormwater runoff to other critical issues facing Chittenden County, by survey year

Survey year	Comparison #1		Comparison #2		Comparison #3	
	Climate change	Stormwater Runoff	Traffic congestion	Stormwater Runoff	Air Pollution	Stormwater Runoff
2013	40%	56%	55%	40%	33%	61%
2018	31%	46%	33%	49%	13%	71%

The 2018 survey presented respondents with a list of four practices that they could do to reduce the impact of stormwater runoff and asked which, if any, they were likely to do in the next 2 years. Between 12 and 16 percent said that they would definitely adopt the practices listed. Forty-five percent will either definitely (12 percent) or maybe install a rain barrel to catch rainwater from the roof, and 40 percent will either definitely (14 percent) or maybe (26 percent) plant a rain garden to capture rainwater runoff. Table 6 shows the relative stated commitment to these practices.

Table 6. Potential adoption of practices to address stormwater runoff

	Unlikely	Maybe	Definitely	Someone else makes these decisions	N/A
Install a rain barrel to catch rainwater from my roof	33%	33%	12%	16%	6%
Plant a rain garden to capture rainwater from my roof, driveway and/or walkway	37%	26%	14%	16%	8%
Have my lawn care company use natural lawn care practices	11%	9%	16%	21%	43%
Plant more trees on my property	38%	20%	14%	20%	8%

Survey Comments

Of the 108 responses that gave comments in the 2018 survey, approximately 20 comments were focused mainly on the survey itself, touching upon the length and what they felt was bias in the questions. A larger number of people offered possible solutions to help mitigate pollution to the lake, such as establishing a clean water tax or a ban on certain fertilizers that can be used on lawns. Some comments voiced concerns about other possible sources of pollution that were not as prominent in the questionnaire in the survey like farm runoff and sewage. Most comments were about the importance of clean water, with only a few comments saying that the lake is not being polluted badly or that humans are not affecting the lake's water quality. Many comments also talk about how more Vermonters need education about this topic or even that the respondent his or her self needs more education about this topic. Overall, most comments seemed to be concerned about the quality of the water in the lake.

Top Line Frequency Tables