



# **City of Tukwila**

## **Community Stormwater Research**

### **Findings**

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Prepared by

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## Methodology

The 2020 Tukwila Storm Water research was conducted during the 4<sup>th</sup> quarter of 2020. The team included Greg Villanueva and Ryan Larson, the City of Tukwila and HR2 Research under the direction of Jim Hebert as the Senior Research Director. Given the economic crisis and Corona 19 Global Pandemic and the civil/political unrest this fall the survey launch was delayed until after the national election.

The sampling frame included all residents living within the City of Tukwila. This included those both renting or owning their home. A second sampling procedure consisting of registered voters and non-registered. The head of households named was selected to respond. Respondents were asked to complete a web based online survey requiring an average completion time of 10 minutes. Three separate emails were sent to achieve the sample size which would be statistically representative to those who had not answered. Obviously, multiple responses from one respondent were excluded. A total of 224 respondents were included. Any additional respondent will be added past the sample closing date of 12-16-20.

At the 95% confidence level the margin of error was +/- 0495%. Compared to the previous stormwater survey for the City, this was similar. A total of 7840 variates were processed in the total data set.

# Research Findings

Q1 How many years have you lived in Tukwila?

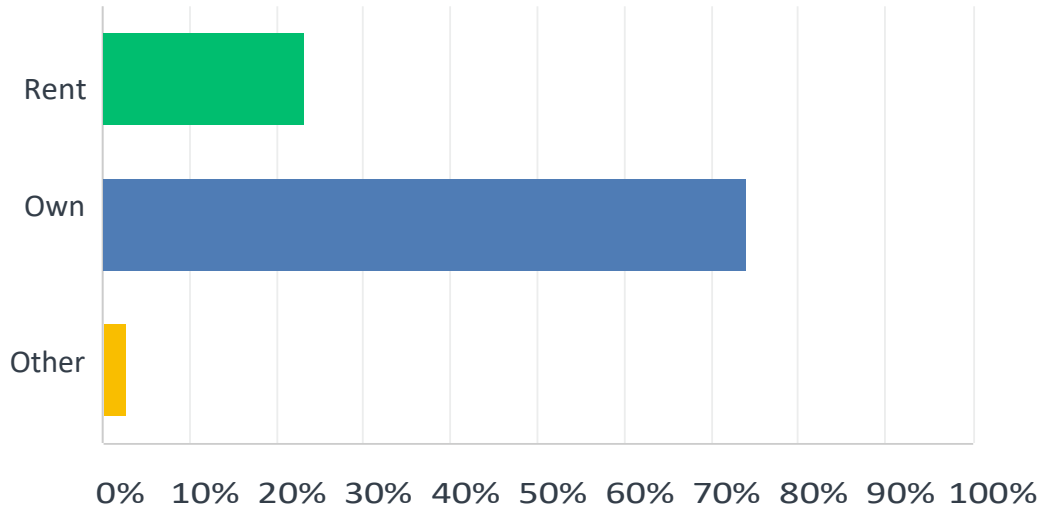
Answered: 220 Skipped: 2

This represents both renters and homeowners. The hypothesis is that the longer-term residents are more engaged in their City’s programs and policies.

5 Yrs., or Less	6Yrs – 20 Yrs.	20 Yrs. and Above
62	85	73

**Q2** Do you rent or own your apartment or home?

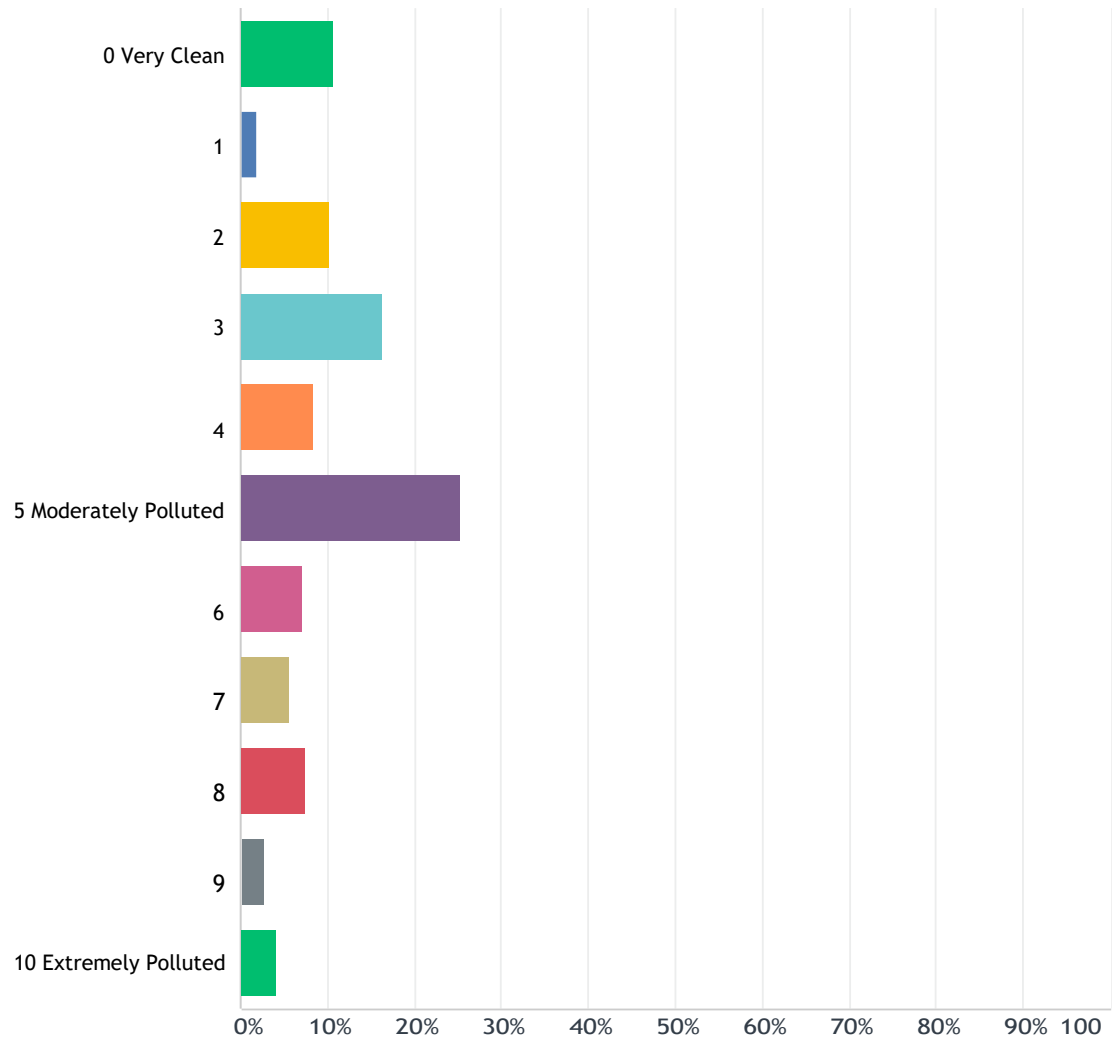
Answered: 219 Skipped: 3



ANSWER CHOICES	RESPONSES	
Rent	23.29%	51
Own	73.97%	162
Other	2.74%	6

**Q3** Please rate your perception of the overall quality of the water in our city’s rivers, wetlands, and lakes. By “quality of water” means how absent it is from pollution. Could you please rate Tukwila’s water quality on a 0 to 10 scale where “0” means the water is “extremely polluted” and 10 means the water is “extremely clean.”

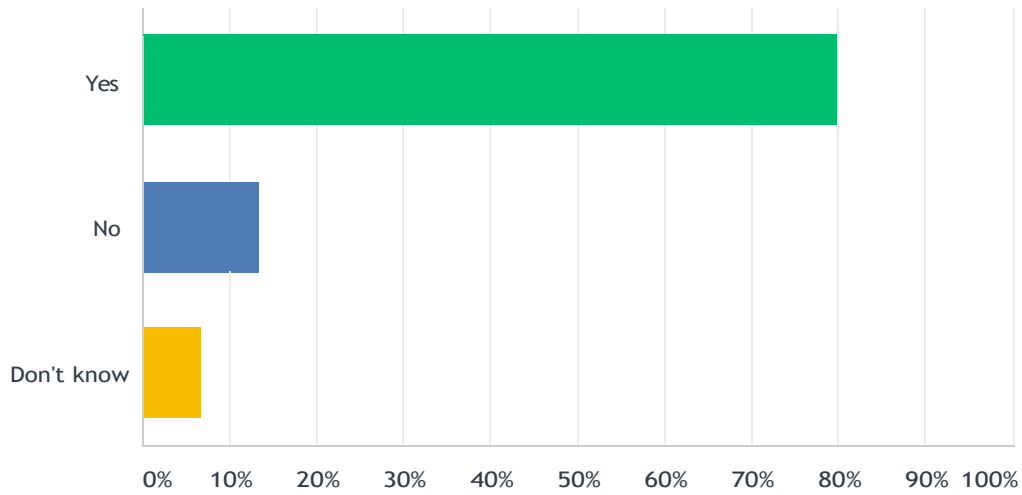
Answered: 214 Skipped: 8



ANSWER CHOICES	RESPONSES	
0 Very Clean	10.75%	23
1	1.87%	4
2	10.28%	22
3	16.36%	35
4	8.41%	18
5 Moderately Polluted	25.23%	54
6	7.01%	15
7	5.61%	12
8	7.48%	16
9	2.80%	6
10 Extremely Polluted	4.21%	9
TOTAL		214

**Q4** Are you familiar with the term 'storm water runoff'?

Answered: 219 Skipped: 3



ANSWER CHOICES	RESPONSES	
Yes	79.45%	174
No	13.70%	30
Don't know	6.85%	15

The analysis of the findings reflects a high awareness of familiarity among the residents of Tukwila. The Public Works outreach largely explains this finding. The verbatim responses further support this inference.

**Q5** If yes, how would you describe storm water runoff to your neighbor?

It should be noted that 82.6% of the community members provided a written answer to the question. Specific answers, which are illustrative of all answers, were:

“rain/water flushes contaminants on the ground and streets into local waterways. It’s been clean of debris.

“Poor drains are often clogged and there is shine on the water”

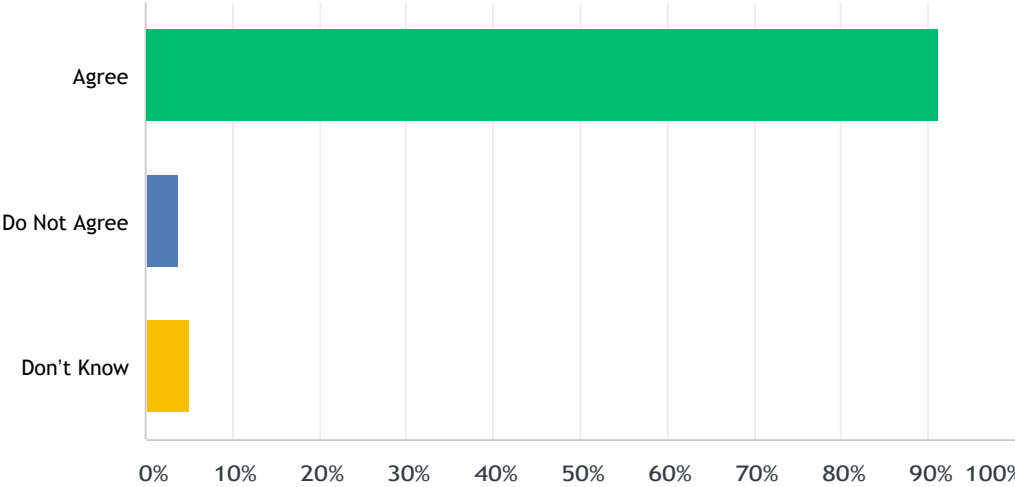
“It is the rainwater that flows down the street and into the drains”

Answered: 185 Skipped: 37



**Q6** Storm water runoff is rain that falls on streets, parking areas, sports fields, gravel lots, rooftops or other developed land and flows through pipes or other water conveyance into nearby lakes, rivers, and Puget Sound.

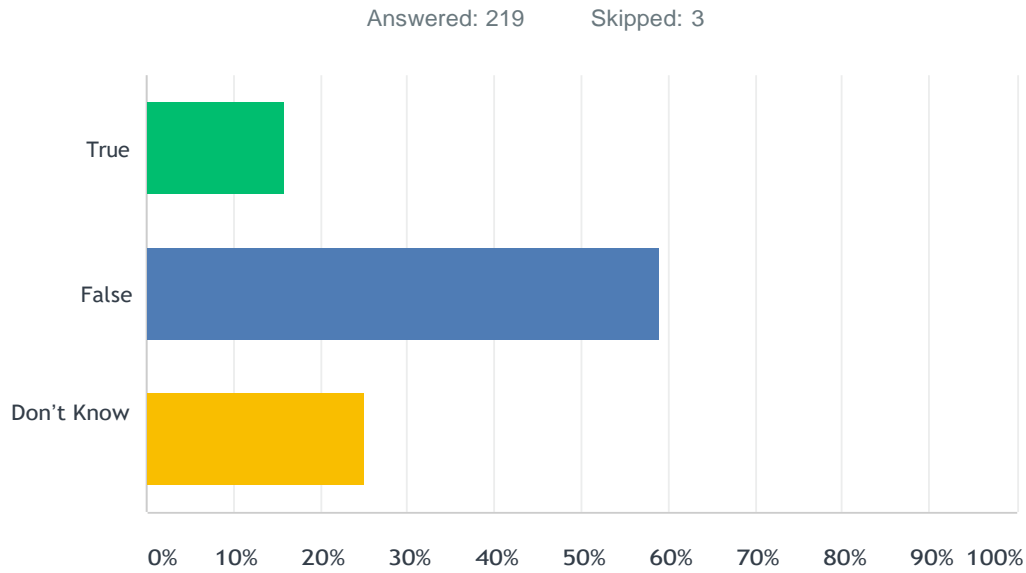
Answered: 217 Skipped: 5



ANSWER CHOICES	RESPONSES	
Agree	91.24%	198
Do not agree	3.69%	8
Don't know	5.15%	13

**Q7** The following are several statements regarding storm water. Some of these statements may be true, some may be false, they all may be true they all may be false. Unless indicated otherwise, the response for each question are as follows:

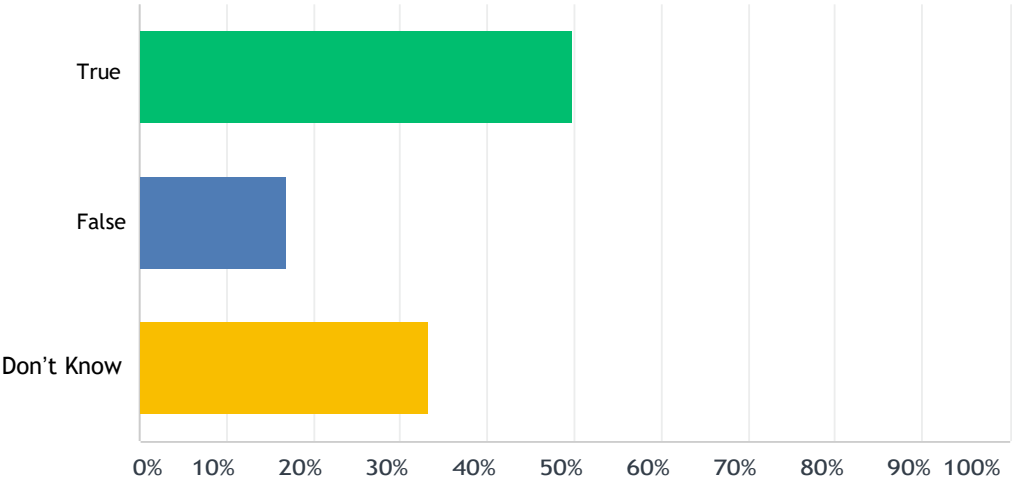
**True or False:** Drains on city streets for storm water are connected to the same sewage system and treatment centers as for regular household wastewater.



ANSWER CHOICES	RESPONSES	
True	15.98%	35
False	58.90%	129
Don't know	25.11%	55

**Q8** Non-point storm water runoff, or polluted water that cannot be traced to specific sources, is the leading cause of polluted wetlands, rivers, lakes, and streams.

Answered: 219 Skipped: 3



ANSWER CHOICES	RESPONSES	
True	49.77%	109
False	16.89%	37
Don't know	33.33%	73

**Q9** What do you think are the major causes of pollution in Tukwila?

Answered: 214 Skipped: 8

“Construction and the incredulity of citizens regarding their role in a clean city.”

“people throwing things into the water that they shouldn't. Like homeless people living near the water.”

“automobiles”

“industrial manufacturing and improper/unregulated waste disposal; Duwamish River is an EPA superfund site with the pollution largely attributed to Boeing.”

“People dumping chemicals (paint, car oil etc) into storm drains. Garbage like appliances, tires and plastics being dumped in park areas.”

**Q10** What is the acceptable method to clean up spilled oil on driveways?

Answered: 207 Skipped: 15

“industrial manufacturing and improper/unregulated waste disposal; Duwamish River is an EPA superfund site with the pollution largely attributed to Boeing.”

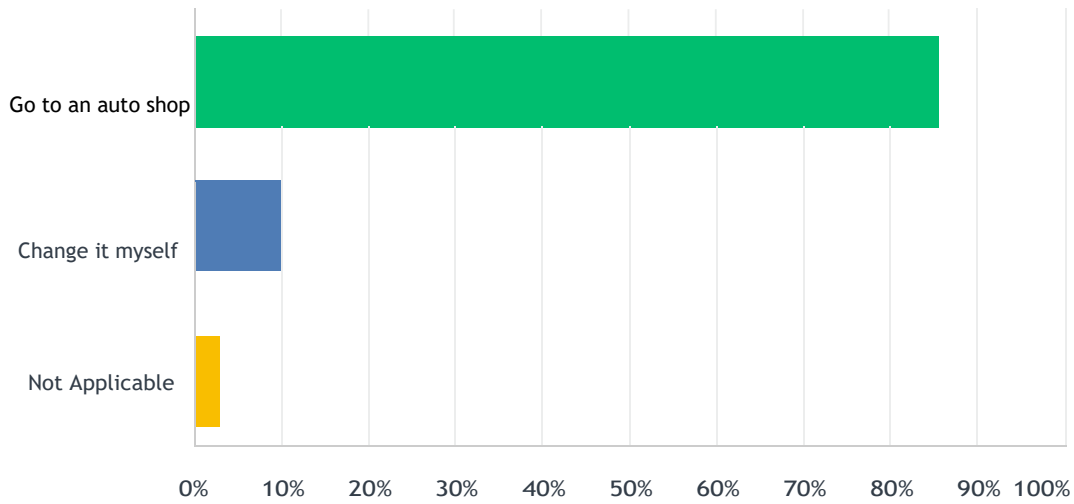
“People being careless with garbage and waste”

“Illegal dumping of chemicals into drainage.”

“Homeless, residents and visitors”

**Q11** Do you get your oil changed at an auto shop or do you change it yourself?

Answered: 219 Skipped: 3



ANSWER CHOICES	RESPONSES	
Go to an auto shop	85.84%	188
Change it myself	10.96%	24
Not Applicable	3.20%	7
<b>TOTAL</b>		<b>219</b>

**Q12** If you change it yourself, how do you dispose of the used oil.

Answered: 159 Skipped: 63

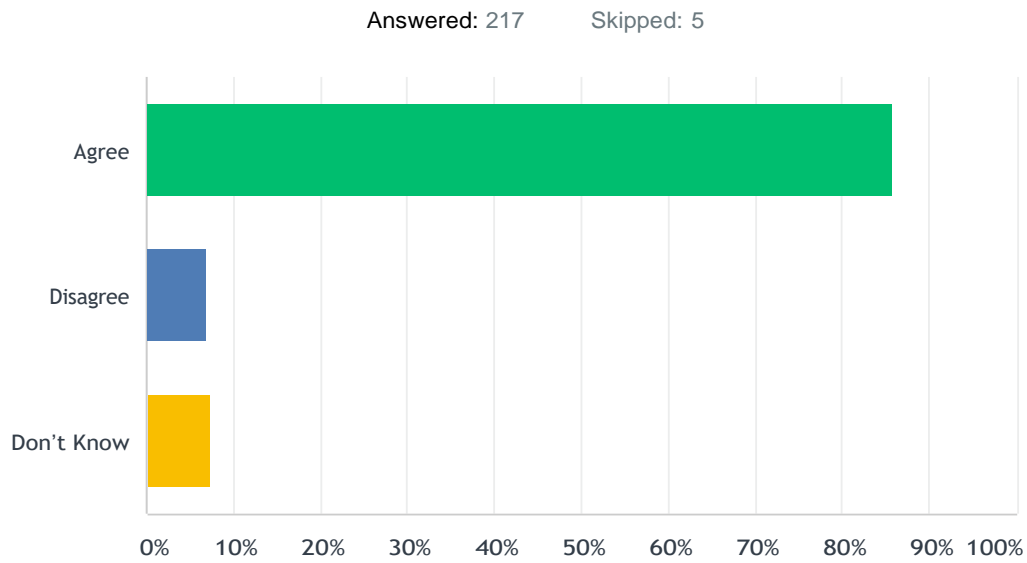
"Auto parts store recycle"

"I take it to auto parts store and dump my used oil. "

"Take it to the dump"

"Don't know- transfer station?"

**Q13** My family stores all containers holding oil, antifreeze, transmission oil or other chemicals under a cover away from the weather.

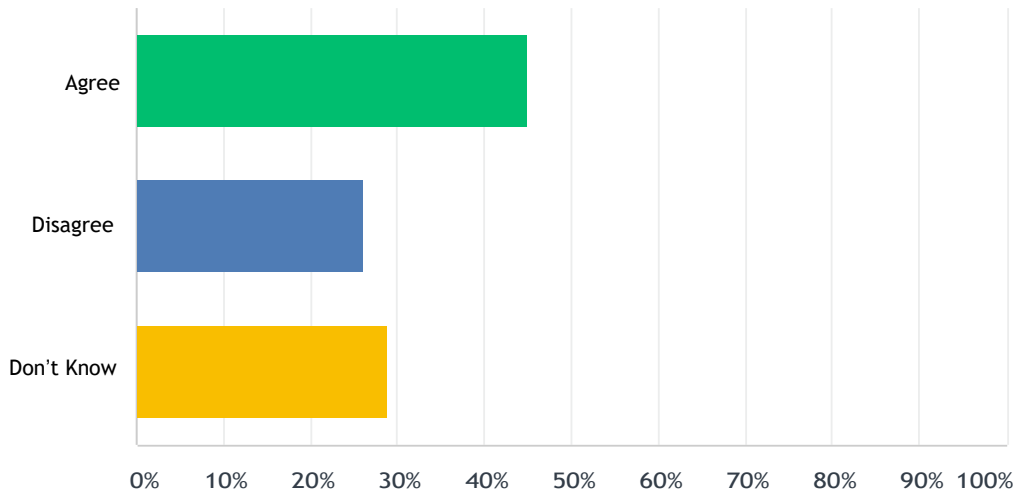


Other research findings of HR2 Research find that the SW Public Information policy is very efficient communication regarding potential pullulation issues.

ANSWER CHOICES	RESPONSES	
Agree	85.71%	186
Disagree	6.91%	15
Don't Know	7.37%	16
<b>TOTAL</b>		<b>217</b>

**Q14** The runoff from washing a vehicle with biodegradable soap is safe in storm water drains.

Answered: 218 Skipped: 4

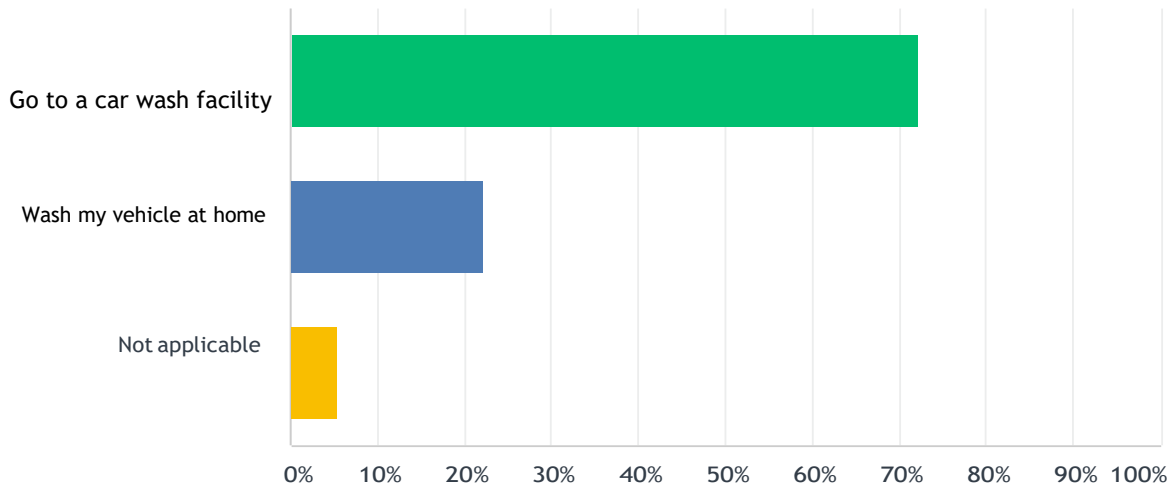


ANSWER CHOICES	RESPONSES	
Agree	44.95%	98
Disagree	26.15%	57
Don't Know	28.90%	63
<b>TOTAL</b>		<b>218</b>



**Q15** Do you wash your car at home, or do you go to a car wash facility?

Answered: 220 Skipped: 2



There was high proportion who used car wash facilities because of the convenience cost or preserving the environment. Also, there is less from our Car washing research because of on site used water recycling and cleaning of the impurities.

ANSWER CHOICES	RESPONSES	
Go to a car wash facility	72.27%	159
Wash my vehicle at home	22.27%	49
Not applicable	5.45%	12
<b>TOTAL</b>		<b>220</b>

**Q16** What happens to the soapy water when you wash your car at home?

Answered: 190

Skipped: 32

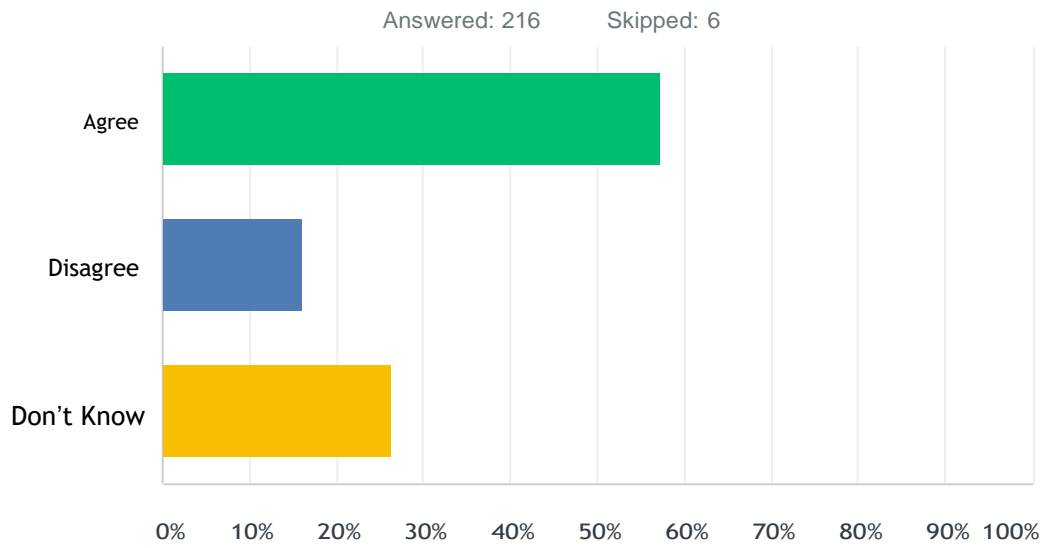
“absorbed in the lawn”

“Drains into the groundwater and/or storm drains”

“Direct to the grass for absorption into my yard.”

“It goes down the driveway”

**Q17** The best place to dispose of wastewater is in a sink inside, not outdoors.

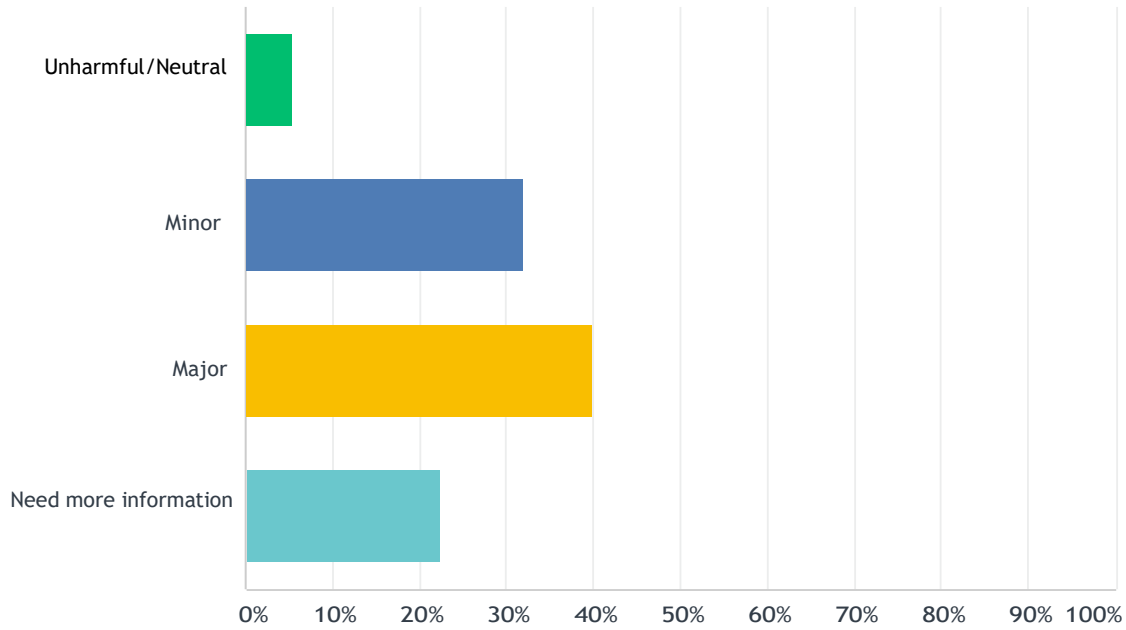


ANSWER CHOICES	RESPONSES	
Agree	57.41%	124
Disagree	16.20%	35
Don't Know	26.39%	57

Additional community education is needed.

**Q18** Do you consider chemical treatments used to kill moss on roofs, decks, driveways or walks to be unarmful, a minor or a major cause of storm water pollution?

Answered: 218 Skipped: 4

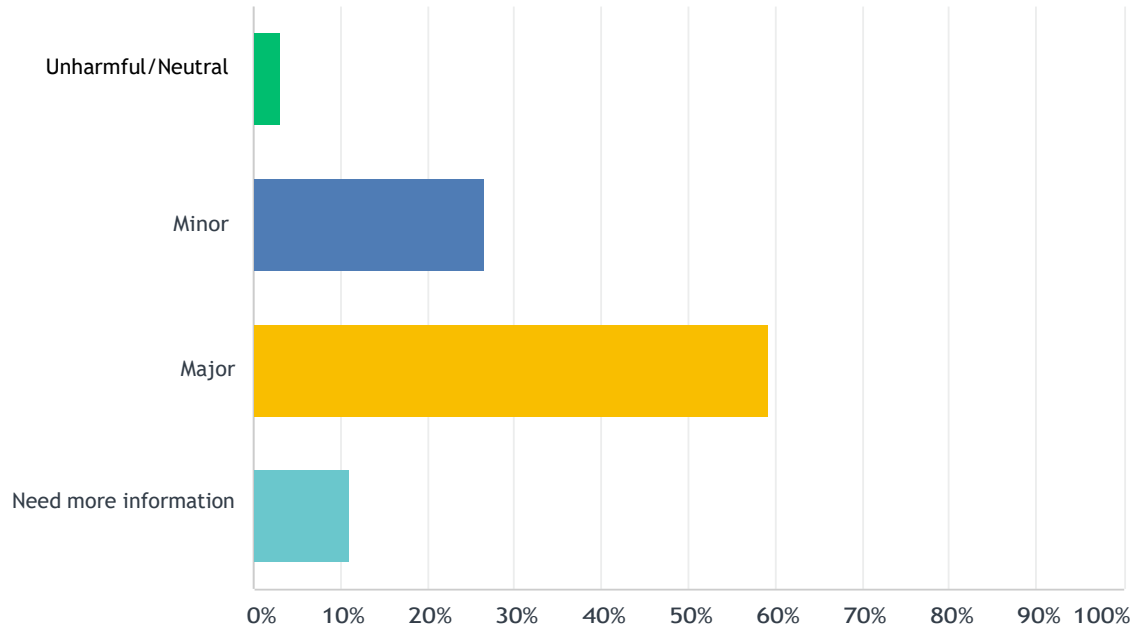


Additional community education may be necessary.

ANSWER CHOICES	RESPONSES	
Unharmful/Neutral	5.50%	12
Minor	32.11%	70
Major	39.91%	87
Need more information	22.48%	49
<b>TOTAL</b>		<b>218</b>

**Q19** Do you consider pesticides, fertilizers and weed control chemicals used in lawn care and landscaping to be unharmful, a minor, or a major cause of storm water pollution?

Answered: 218 Skipped: 4

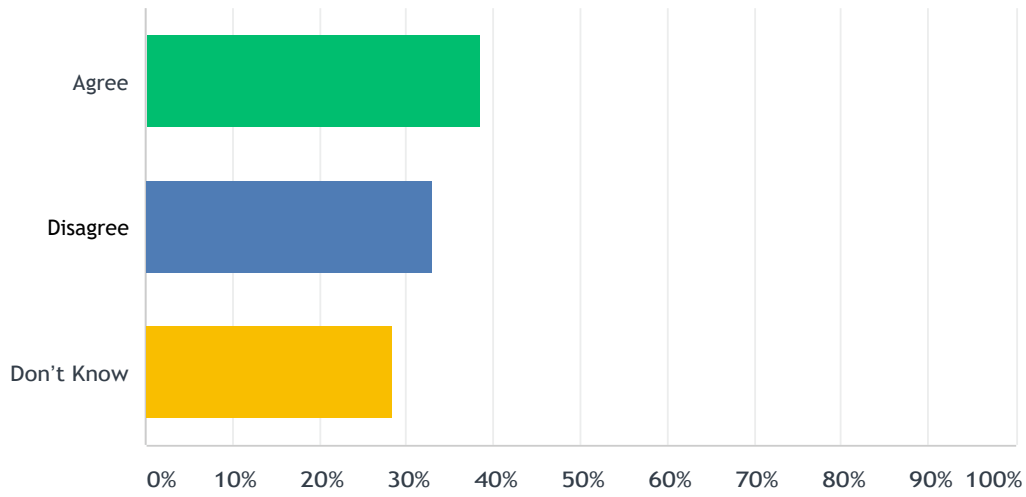


ANSWER CHOICES	RESPONSES	
Unharmful/Neutral	3.21%	7
Minor	26.61%	58
Major	59.17%	129
Need more information	11.01%	24

The Tukwila residents need additional information regarding the use of chemicals for their yards.

**Q20** Sediment or dirt in storm water is natural and not regarded as pollution.

Answered: 218 Skipped: 4

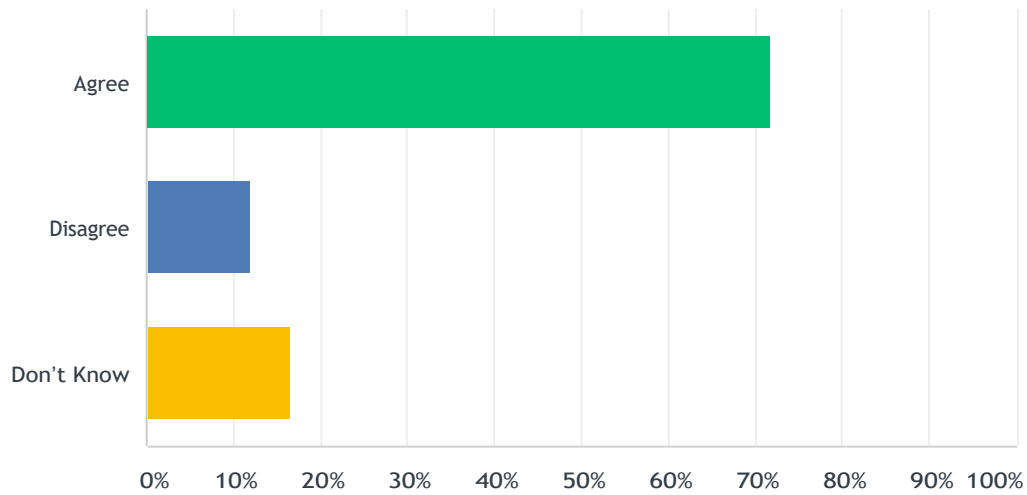


Additional community education may be necessary.

ANSWER CHOICES	RESPONSES	
Agree	38.53%	84
Disagree	33.03%	72
Don't Know	28.44%	62
<b>TOTAL</b>		<b>218</b>

**Q21** The downspouts at my home convey the water to an area where it is absorbed by the ground, so it doesn't flow into the road.

Answered: 219 Skipped: 3

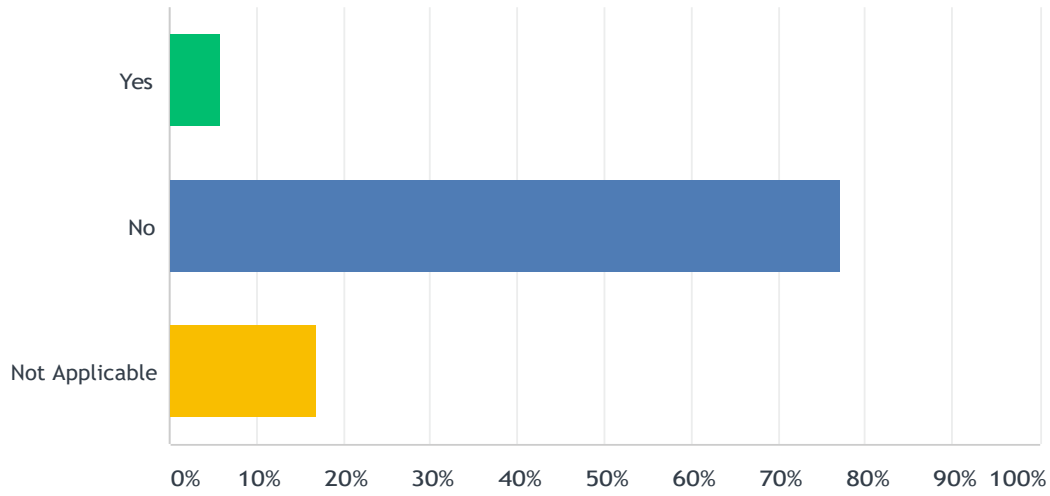


ANSWER CHOICES	RESPONSES	
Agree	71.69%	157
Disagree	11.87%	26
Don't Know	16.44%	36

The community reported a high level of 71.69% of understanding of this issue.

**Q22 Do you get your lawn professionally fertilized?**

Answered: 219 Skipped: 3



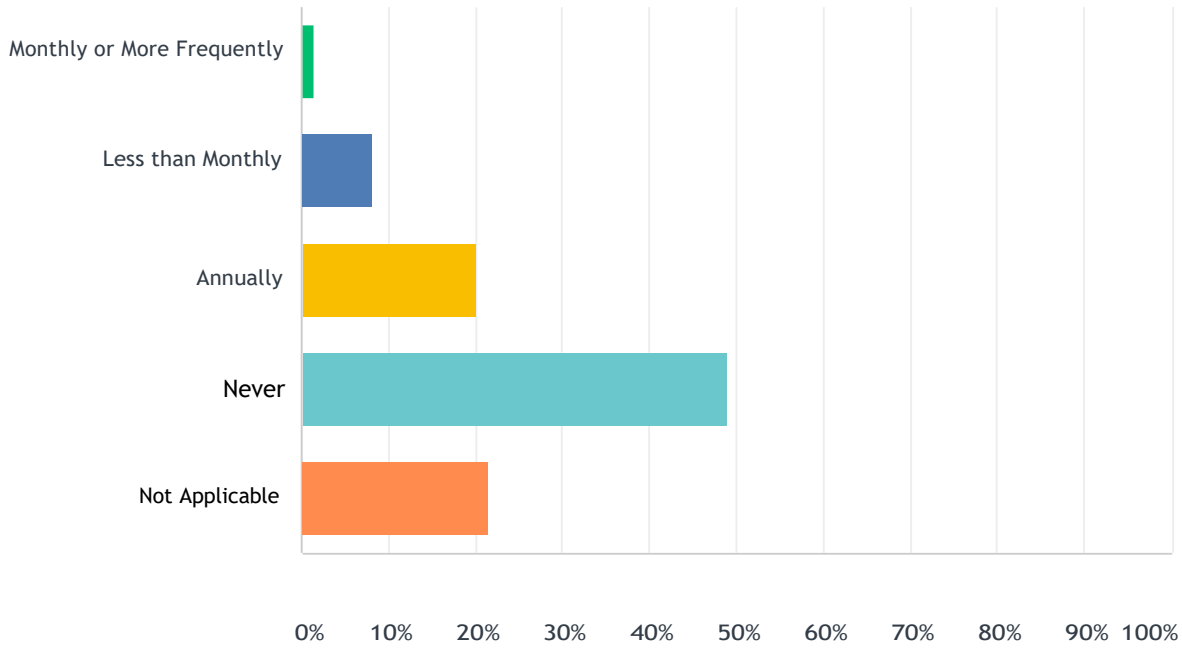
ANSWER CHOICES	RESPONSES	
Yes	5.94%	13
No	77.17%	169
Not Applicable	16.89%	37

The community residents tend not use professional services. Those who rented were not asked this question.



**Q23** How often do you fertilize your own lawn?

Answered: 219 Skipped: 3



ANSWER CHOICES	RESPONSES	
Monthly or more frequently	1.37%	3
Less than monthly	8.22%	18
Annually	20.09%	44
Never	48.86%	107
Not applicable	21.46%	47
<b>TOTAL</b>		<b>219</b>

**Q24** If you fertilize your lawn, the last time you used fertilizer, how did you determine the amount to apply to your lawn?

Answered: 166

Skipped: 56

The respondents most frequent responds were:

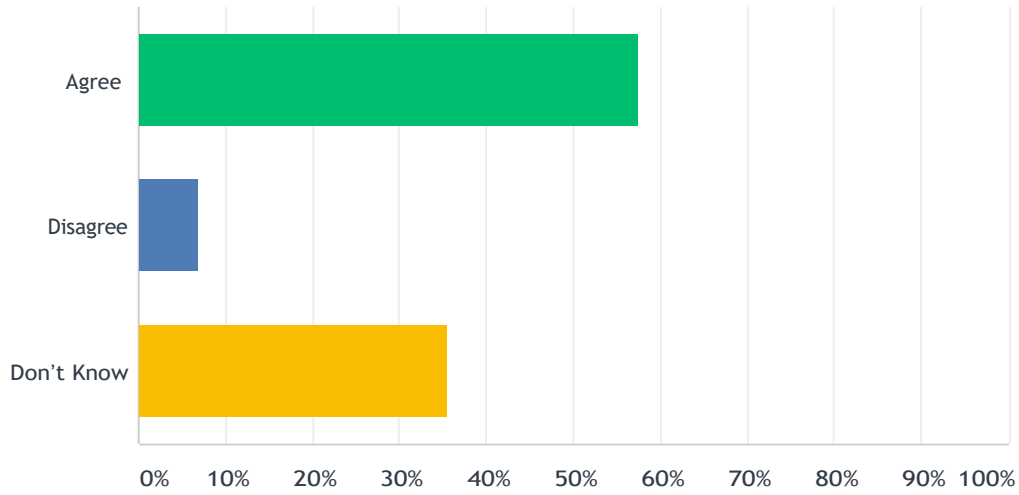
“read the manufacturer’s instructions”

“Gardner determined” the amount of fertilizer

“Grass lawns are bad for the environment. People should let the grass grow. No chemicals (or mowing) needed”

**Q25** Illicit or unlawful storm water discharge is primarily defined as anything that enters a storm drain system that is not made up entirely of storm water.

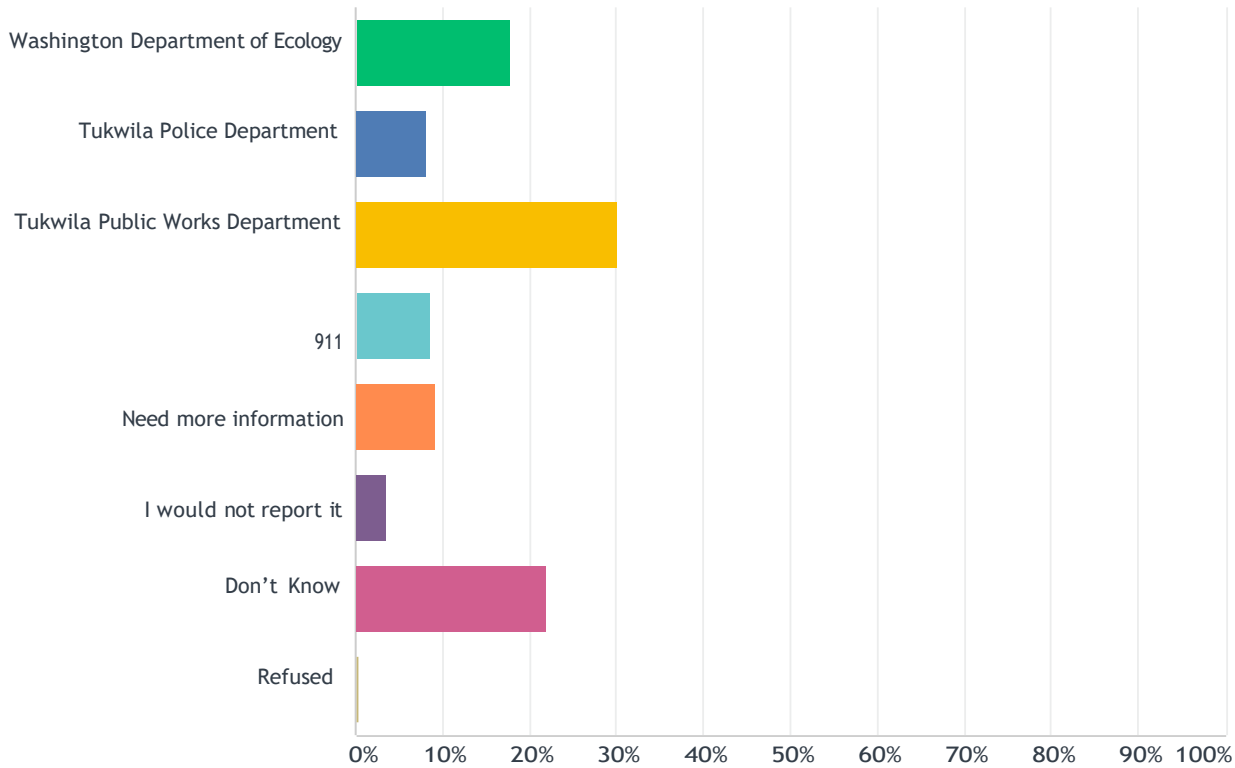
Answered: 217 Skipped: 5



ANSWER CHOICES	RESPONSES	
Agree	57.60%	125
Disagree	6.91%	15
Don't Know	35.48%	77

**Q26** If you witnessed someone pouring waste materials into a storm water drain, which agency would you call first to report it?

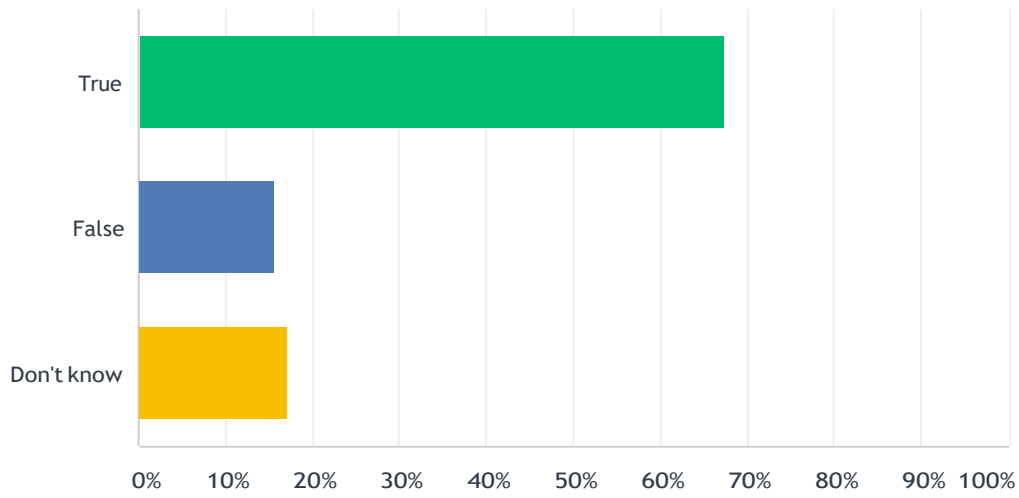
Answered: 219 Skipped: 3



ANSWER CHOICES	RESPONSES	
The Washington Department of Ecology	17.81%	39
The police department	8.22%	18
The city Public Works Department	30.14%	66
911	8.68%	19
Need more information	9.13%	20
I would not report it	3.65%	8
Don't Know	21.92%	48
Refused	0.46%	1
<b>Total</b>		<b>219</b>

**Q27** Unlike porous surfaces such as gravel and brick, impervious surfaces such as concrete and asphalt prevent water from passing through to be absorbed by the underlying soil.

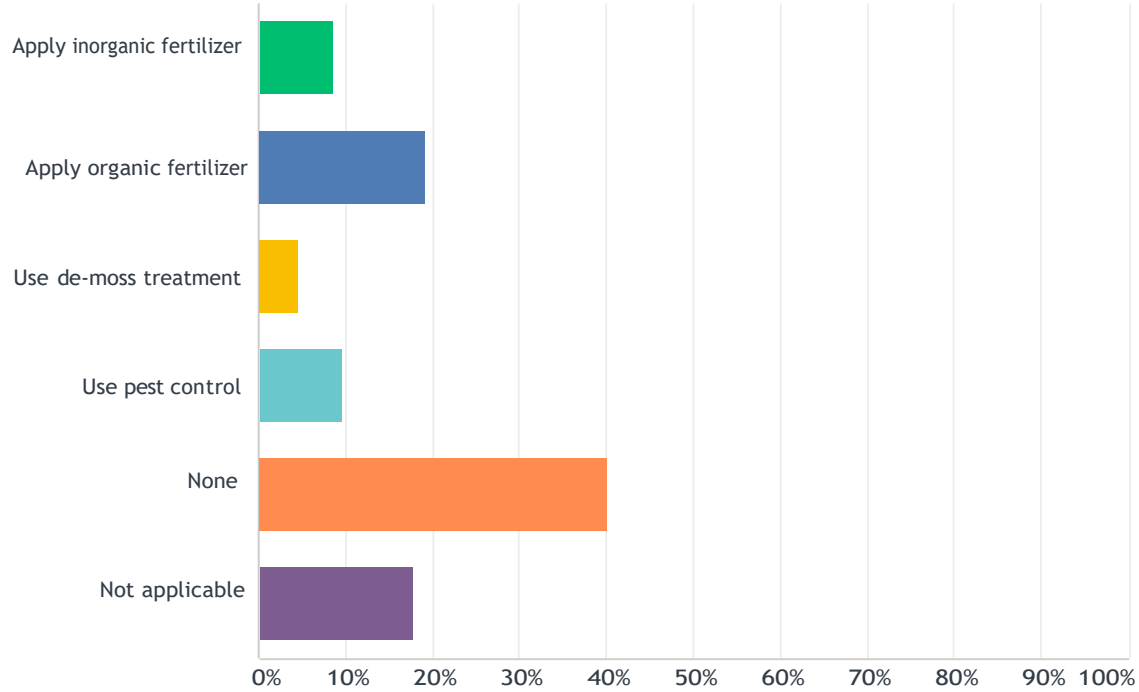
Answered: 217 Skipped: 5



ANSWER CHOICES	RESPONSES	
True	67.28%	146
False	15.67%	34
Don't know	17.05%	37
<b>TOTAL</b>		<b>217</b>

**Q28** Select from the list all the yard care methods you use.

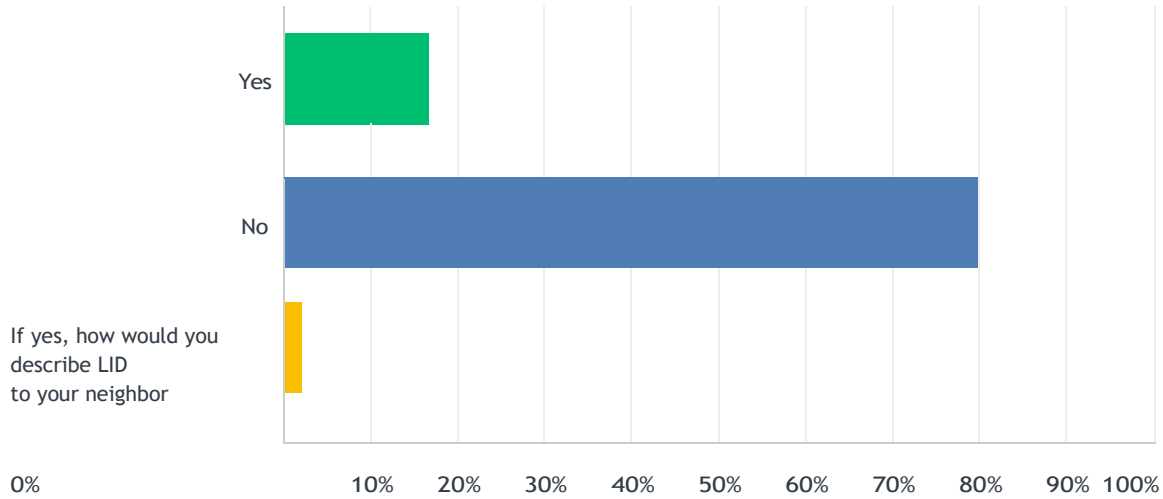
Answered: 219 Skipped: 3



ANSWER CHOICES	RESPONSES	
Apply inorganic fertilizer (standard commercial)	8.68%	19
Apply organic fertilizer	19.18%	42
Use de-moss treatment	4.57%	10
Use pest control	9.59%	21
None	40.18%	88
Not applicable	17.81%	39
<b>TOTAL</b>		<b>219</b>

**Q29** To conclude the survey, we would like to include questions about your knowledge of Low Impact Development. Have you heard of Low Impact Development, also known as LID?

Answered: 218 Skipped: 4

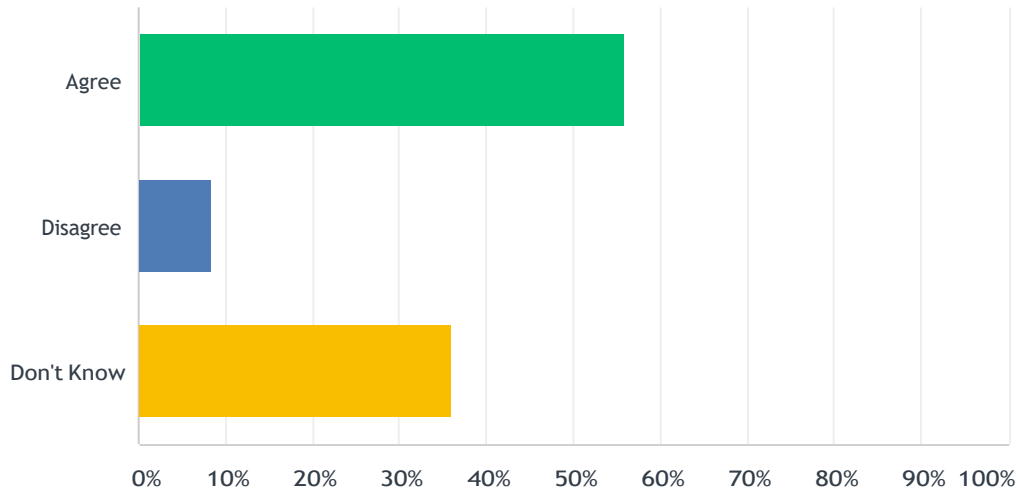


The public clearly needs more information on low impact development.

ANSWER CHOICES	RESPONSES	
Yes	16.97%	37
No	80.73%	176
If yes, how would you describe LID to your neighbor?	2.29%	5
<b>TOTAL</b>		<b>218</b>

**Q30** Low Impact Development (LID) is a term used to describe land planning and design approaches to manage storm water runoff. LID emphasizes conservation and the use of on-site natural features to minimize downstream runoff. Installing brick, pavers, impervious pavement is a low impact development technique.

Answered: 217 Skipped: 5

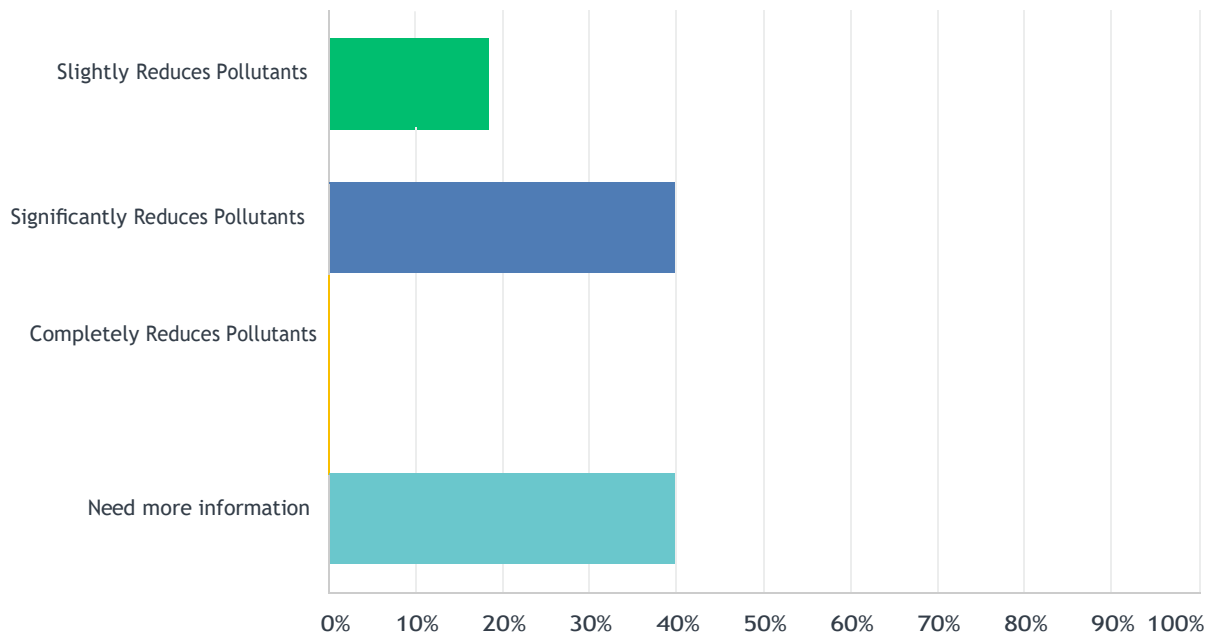


ANSWER CHOICES	RESPONSES	
Agree	55.76%	121
Disagree	8.29%	18
Don't Know	35.94%	78
<b>TOTAL</b>		<b>217</b>



**Q31** To what degree does storm water collection through rain gardens reduce the amount of pollutants absorbed into the ground?

Answered: 216 Skipped: 6

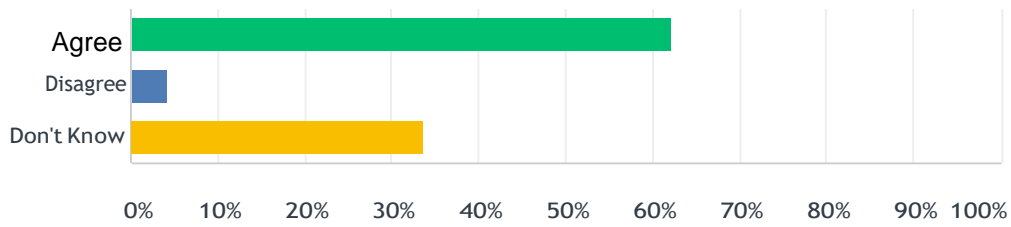


There is a need for increasing the communication to the residents.

ANSWER CHOICES	RESPONSES	
Slightly Reduces Pollutants	18.52%	40
Significantly Reduces Pollutants	39.81%	86
Completely Reduces Pollutants	1.39%	3
Need more information	40.28%	87
<b>TOTAL</b>		<b>216</b>

**Q32** Infiltration trenches, drywells, and other features store rainwater runoff and allow it to soak into the ground over time.

Answered: 217 Skipped: 5

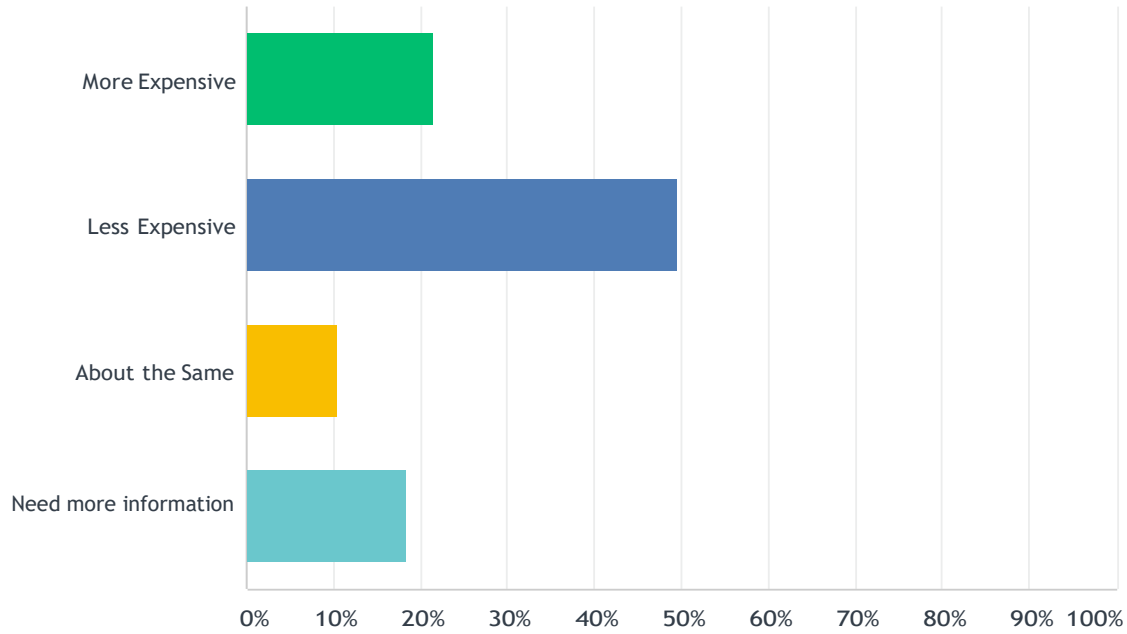


Additional public information on this issue could produce significant results among homeowners.

ANSWER CHOICES	RESPONSES	
Agree	62.21%	135
Disagree	4.15%	9
Don't Know	33.64%	73

**Q33** Do you think that protecting our streams, rivers and the Puget Sound from pollutants is less expensive, more expensive or about the same as cleaning contaminated waters.

Answered: 218 Skipped: 4

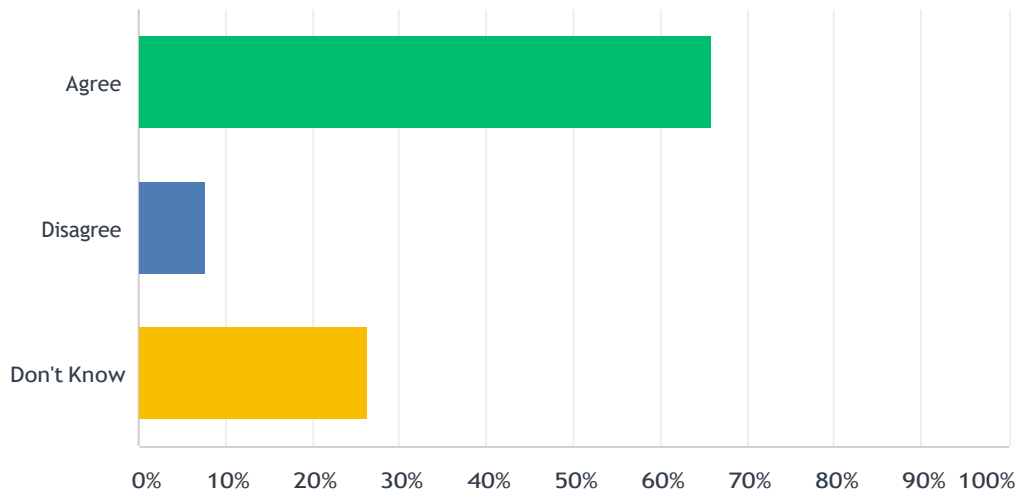


Additional community knowledge and understanding should be considered.

ANSWER CHOICES	RESPONSES	
More Expensive	21.56%	47
Less Expensive	49.54%	108
About the Same	10.55%	23
Need more information	18.35%	40
<b>TOTAL</b>		<b>218</b>

**Q34** Disconnecting roof drains from the storm water system and allowing the runoff to flow into rain gardens and the landscape are a low impact development technique.

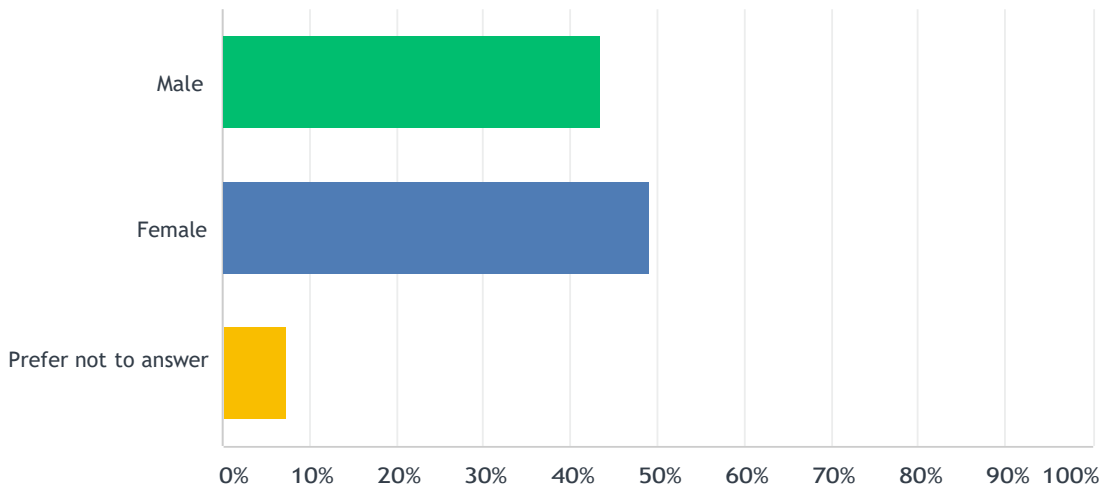
Answered: 217 Skipped: 5



ANSWER CHOICES	RESPONSES	
Agree	65.90%	143
Disagree	7.83%	17
Don't Know	26.27%	57
<b>TOTAL</b>		<b>217</b>

### Q35 Gender

Answered: 216 Skipped: 6



ANSWER CHOICES	RESPONSES
Male	43.52% 94
Female	49.07% 106
Prefer not to answer	7.41% 16
<b>TOTAL</b>	<b>216</b>

## Conclusions

The residents of Tukwila had a strong diligence in providing their responses to the Stormwater Research. This represents the important of the City's Stormwater quality. The research found that there was a high level of awareness of the community education regarding the City's Stormwater Program. This was reflected in the community's interest in non-point pollution causes and solutions. There were findings, however, that indicate the importance of the community education. These included:

1. Enhancing the perception of the level of pollution.
2. There was a strong familiarity with the term water runoff. There was the need for better understanding of the connection of stormwater and residential wastewater treatment facilities.
3. The understanding of nonpoint runoffs as a leading cause to the pollution of wetland, rivers, and lakes.
4. Residents needed an increased knowledge of washing their vehicles with biodegradable products, stormwater drain, and disposal of wastewater in inside sinks.
5. The incorrect overuse of chemical treatment for moss control, pesticides, and lawn care and sediments or distends to enhanced in the education outreach in the storm needs to be continued in the education program.
6. The use of downspouts for roof runoff that is absorbed into the ground and not allowed to streets. Found a high level of awareness.
7. 77.17% the Tukwila residents do not have their lawns professionally thermalized and those who do it is minimal.
8. Both knowing what illicit storm water is discharging, and where it should be reported needs improvement.
9. Several questions were asked regarding LID's. An estimated 80.73 have not heard of them.
10. Of these there was a much higher awareness of the use of LID's involving impervious surfaces. Drywells and infiltration trenches as a LID had a significantly higher level of understanding.
11. The use of rain gardens as a LID method reflected a high level of agreement. Half of the residents believed that protecting ground surfaces was less than cleaning contaminated water.
12. Rain garden use needs a higher level of understanding.
13. Nearly half of the Tukwila residents believe that the use of LID was less expensive than current stormwater solutions.