

**Alberta Water Council**

**Water Literacy Project Team**

**Water Literacy Assessment Tool and Public Water Literacy Survey in Alberta**

**Final Report**

**Prepared by Feltham Research Services**

**August 22 2015**



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## Introduction

During the summer of 2015, Feltham Research Services with data support from Banister Research & Consulting Inc. worked with the Alberta Water Council’s Water Literacy Project Team to develop and test a valid and reliable survey tool for assessing water literacy levels in Albertans. Tammara Feltham met with the project team to develop a questionnaire evaluating the areas of water literacy identified by the Project Team including awareness, knowledge, attitudes, skills, and actions related to lake management, wetland management, watershed management, water management (supply and allocation), sector water use, and drinking water, wastewater and groundwater. The resulting assessment tool (questionnaire) was then tested on two focus groups of Albertans (20 people) in a face-to-face setting on paper and also tested on 20 additional Albertans via phone (late June). The testing yielded minor alterations to the wording of several questions and the introduction (see Appendices A and B for final tool). The final assessment tool was administered via telephone (See Appendix C) to a representative sample of 100 Albertans (July 24 to early August). In general, the sample obtained was sufficient to provide a confidence interval (margin of error) of +/- 10%. So for a typical calculation, we could say that we were 95% sure that the true value of a response number would be within +/- 10% of the number recorded. The responses were anonymous and no identifying information was collected. The data was analyzed using *SPSS*<sup>1</sup> and *Excel*<sup>2</sup>.

In general, the sample was representative of Alberta. The sample of 100 people ranged in age from 20 to 85, with 11% having children in the household, and two-thirds having post-secondary education (Table 1). The sample was spread out across the province so that half the sample lived north of Red Deer and half lived south, as well as equal numbers in Calgary and Edmonton with one half of the sample living in smaller cities or in rural areas of the province (Table 2). The sample represents a broad cross-section of Alberta residents within the limitations of the number of responses that were obtained. In future, a larger sample would give a smaller margin of error and more precision in examining differences among sectors of the population. In other words, with this sample size, it is hard to draw meaningful conclusions about small differences in behaviour among the respondents based on demographics such as location or age. For many of the questions it is better to look at Albertans in general, as the sample is distributed widely across the province.

Age category	Frequency	Children under 18 in household	Frequency	Highest level of Education	Frequency
20-39	3	Yes	11	High School or less	34
40-49	12	No	89	Tech training or college	25
50-59	16			University	31
60-64	23			Post graduate studies	10
65-69	23				
70-74	12				
75 and older	10				
Not stated	1				
Total	100	Total	100	Total	100

<sup>1</sup> IBM SPSS Statistics, Version 22 – Copyright IBM Corporation and other(s) 1989, 2013.

<sup>2</sup> Microsoft Excel 2013 Part of Microsoft Office 365 – 2012 Microsoft Corporation. All rights reserved.

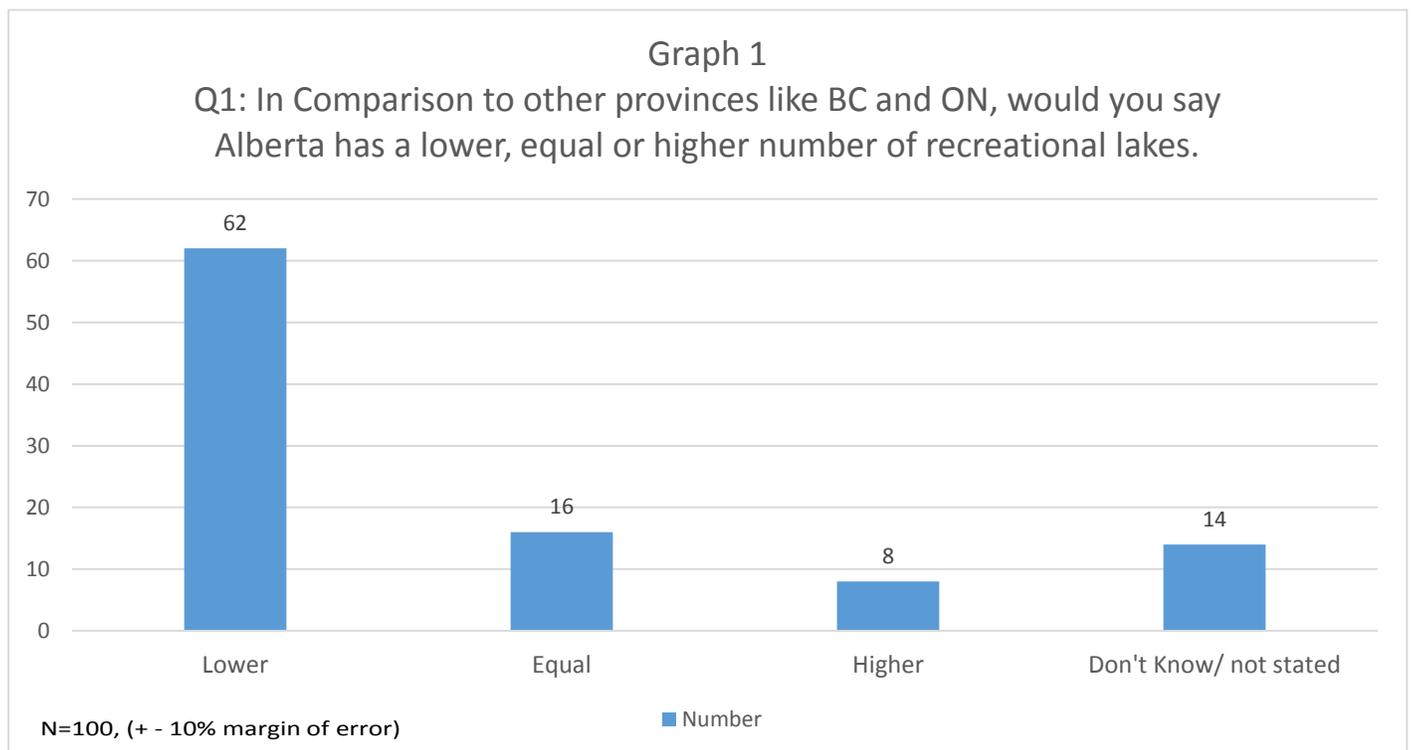
Geographic location	Frequency	North/South of Red Deer	Frequency
Edmonton	25	North of Red Deer	51
Calgary	25	South of Red Deer	46
Other cities*	25	Live in Red Deer	3
Rural Alberta+	25		
Total	100	Total	100

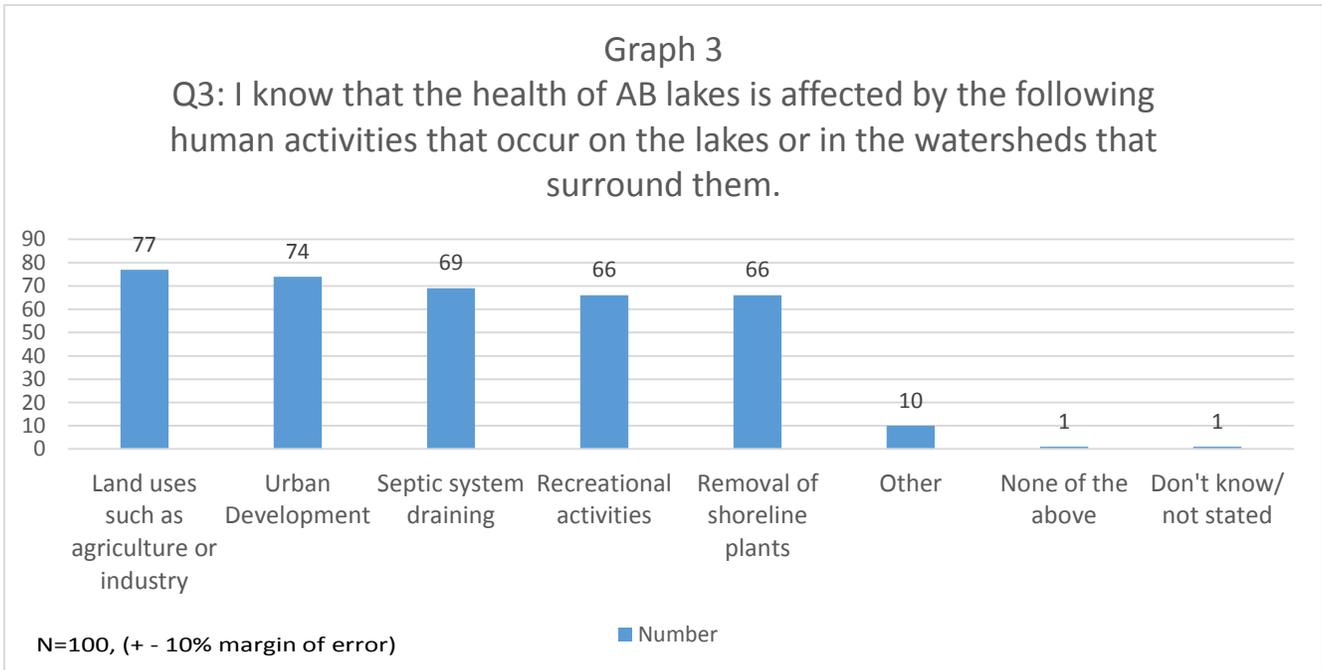
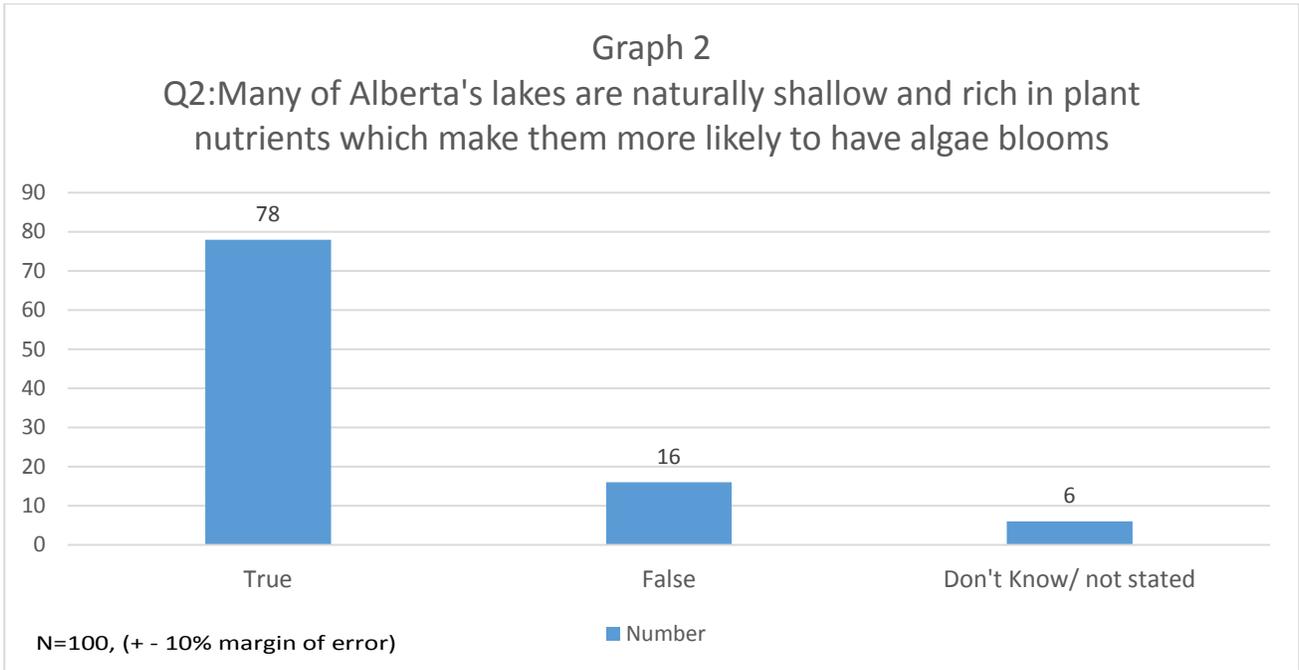
\*Other cities: Airdre, Camrose, Fort McMurray, Grande Prairie (2), Lethbridge (7), Medicine Hat (3), Red Deer (3), Sherwood Park (2), St. Albert (5)  
 +Rural Alberta: Not stated (16), Blackie, Clive, Drapper, Hythe, Mayerthorpe, Mirror, Peace River, Plamondon, Red Cliff

## Results

### Lake Management

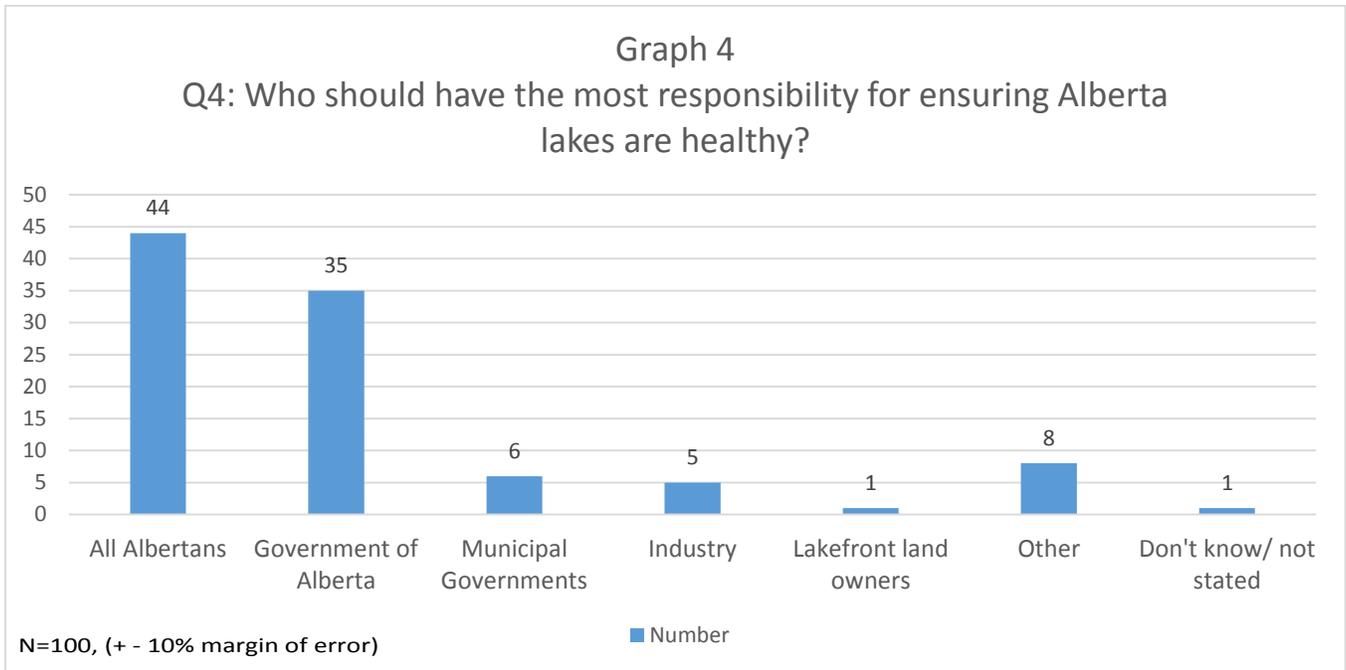
Two-thirds of respondents answered correctly that Alberta has a lower number of recreational lakes as compared to other provinces like British Columbia and Ontario (Graph 1). The remaining third either got it wrong or answered that they did not know. There is a significant difference between those choosing correctly and all other answers ( $Z$ -score = 3.39;  $p < 0.05$ ), but no urban/rural significant differences.



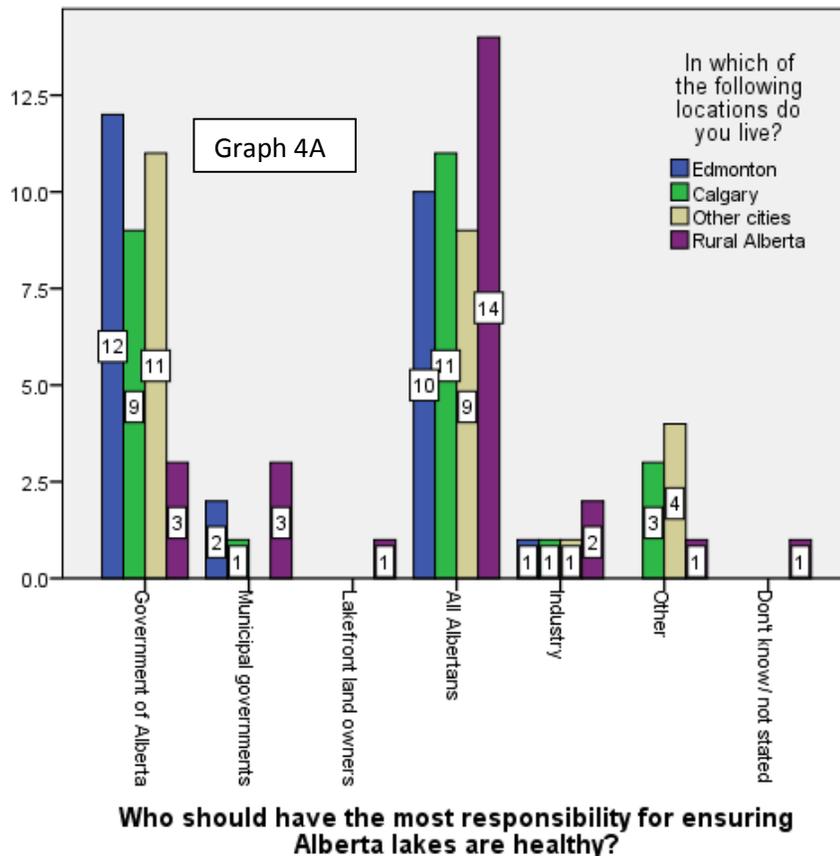


Seventy-eight percent of respondents knew that Alberta lakes are naturally shallow and more likely to have algae blooms, clearly a significant margin over those who did not (Graph 2) ( $Z$ -score = 7.92;  $p < 0.05$ ), with no significant urban/rural differences. When asked which human activities affected the health of lakes and surrounding watersheds, the five choices were all equally known (Graph 3). There were no choices that received significantly less responses; i.e., there were no statistically significant differences between any of the columns or by urban/rural location. The responses for “other” included: aerial spraying, commercial fishing,

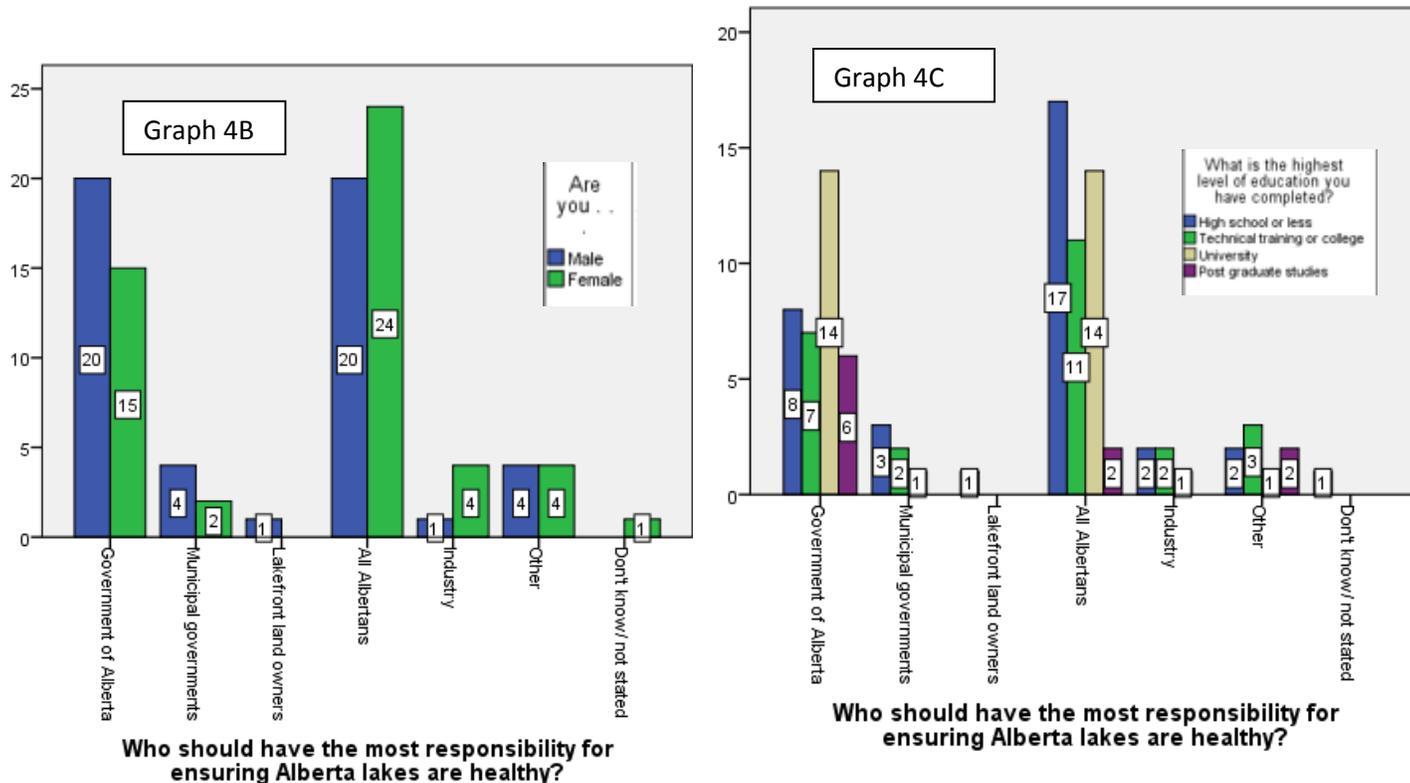
factories, global warming, lack of rain, oil and gas, pollution in general, and sewer water draining into the lakes (see Appendix D).



Respondents were divided on who had the most responsibility for ensuring the health of Alberta lakes (Graph 4, Appendix D for “other”). A large segment (44%) felt that all Albertans had responsibility, while another



substantial segment felt that the Government of Alberta had the most responsibility (35%). There was little support for other alternatives. Looking at the demographics, there was a significant difference between urban and rural dwellers in their belief preferences. A significantly larger percentage of urban dwellers (43%) chose “Government of Alberta” than did rural dwellers (12%) ( $Z = 2.78; p < 0.05$ ). However, both groups chose “All Albertans” at a similar rate (See Graph 4A). Though not significant, women were slightly more likely to choose

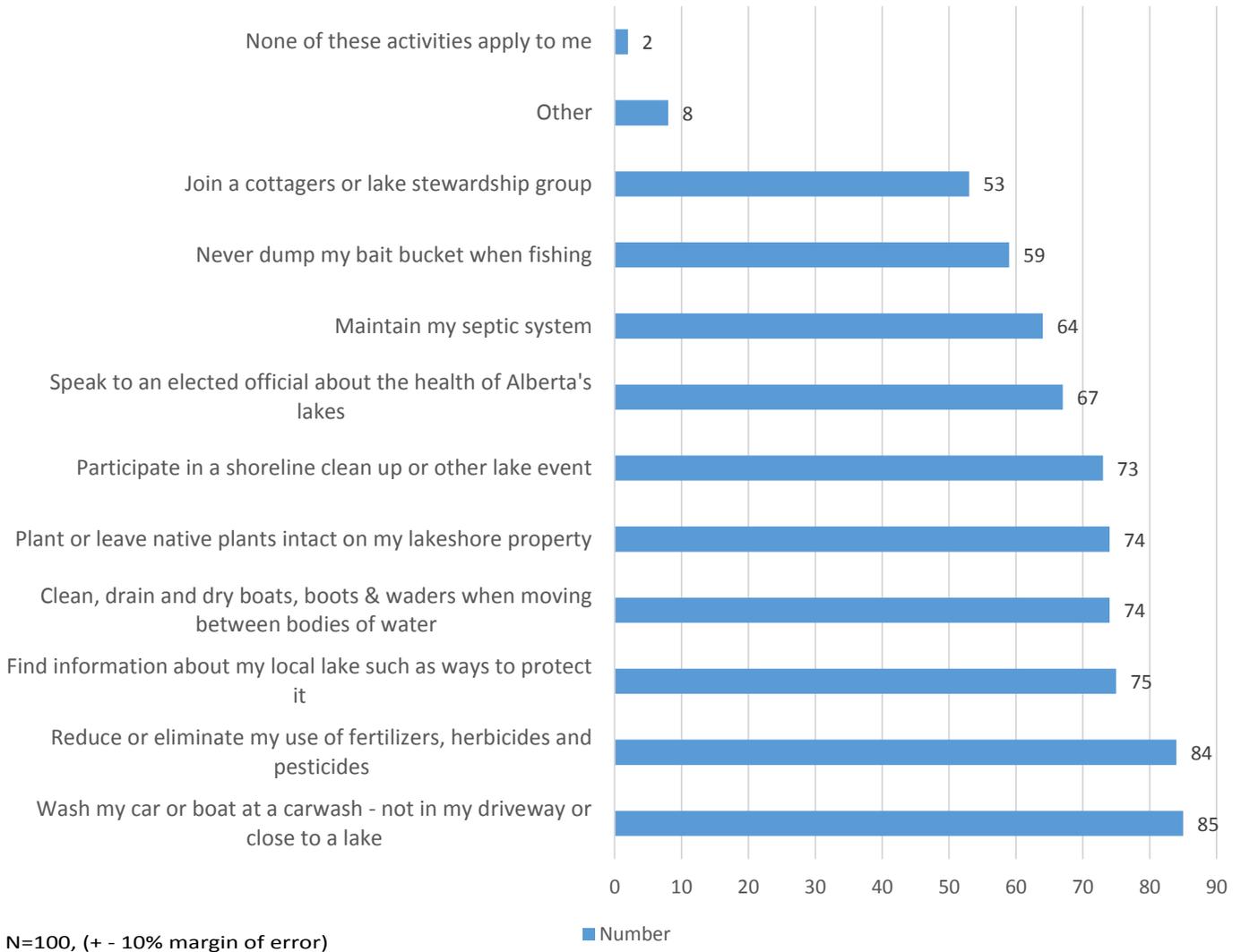


“All Albertans” over “Government of Alberta,” while men were split evenly (Graph 4B). The presence of children in the household did not make a difference in the response, perhaps due to the low number of respondents with children in the household. There also appeared to be a trend (not significant) for those with no post-secondary to favor “All Albertans” as opposed to those with post graduate studies to favor “Government of Alberta” (Graph 4C).

Albertans possess skills which they could employ to help protect our lakes (Graph 5, Appendix D for “other”). The most popular skills appear to be proper washing of cars and reducing the use of fertilizers, herbicides and pesticides (no urban/rural differences). However, more than 50% of the respondents felt that they had the skills to accomplish all of the activities listed. When it came to those activities they had taken action on in the last 12 months (Graph 6, Appendix D for “other”), there was high follow through on proper car washing and lower pesticide use, but much lower levels of action on the remaining activities, with planting or leaving native plants intact on shorelines a distant third at 42%. The only significant difference by location was that 56% of rural dwellers versus 12% of urban dwellers had maintenance done on their septic system ( $Z = 4.53; p < 0.05$ ). So while Albertans believe they possess the skills to act, for many, this has not translated into action yet.

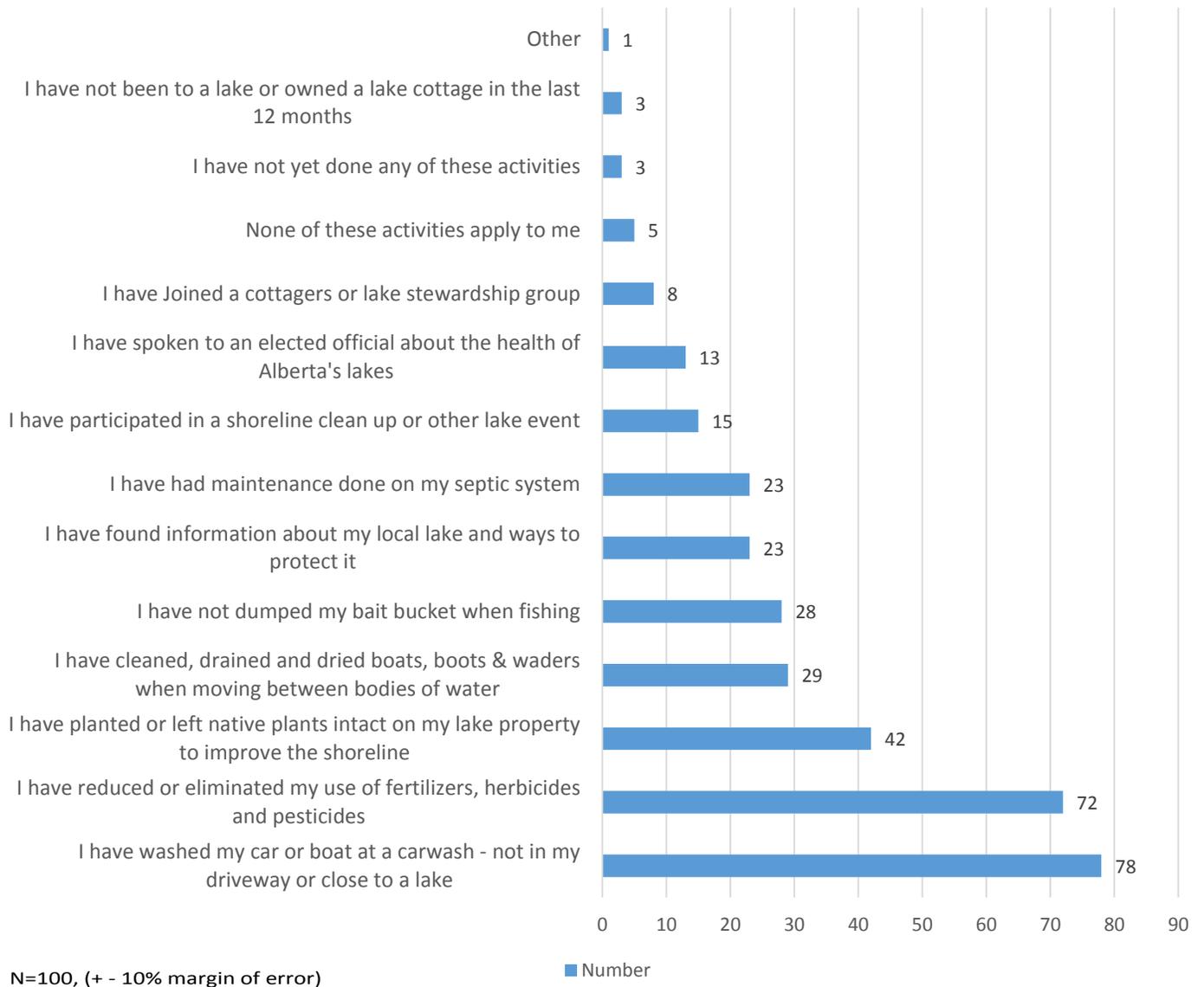
Graph 5

Q5: Whether or not you own lakeshore property, which of the following activities could you personally do to help protect our lakes? (Choose all that apply)



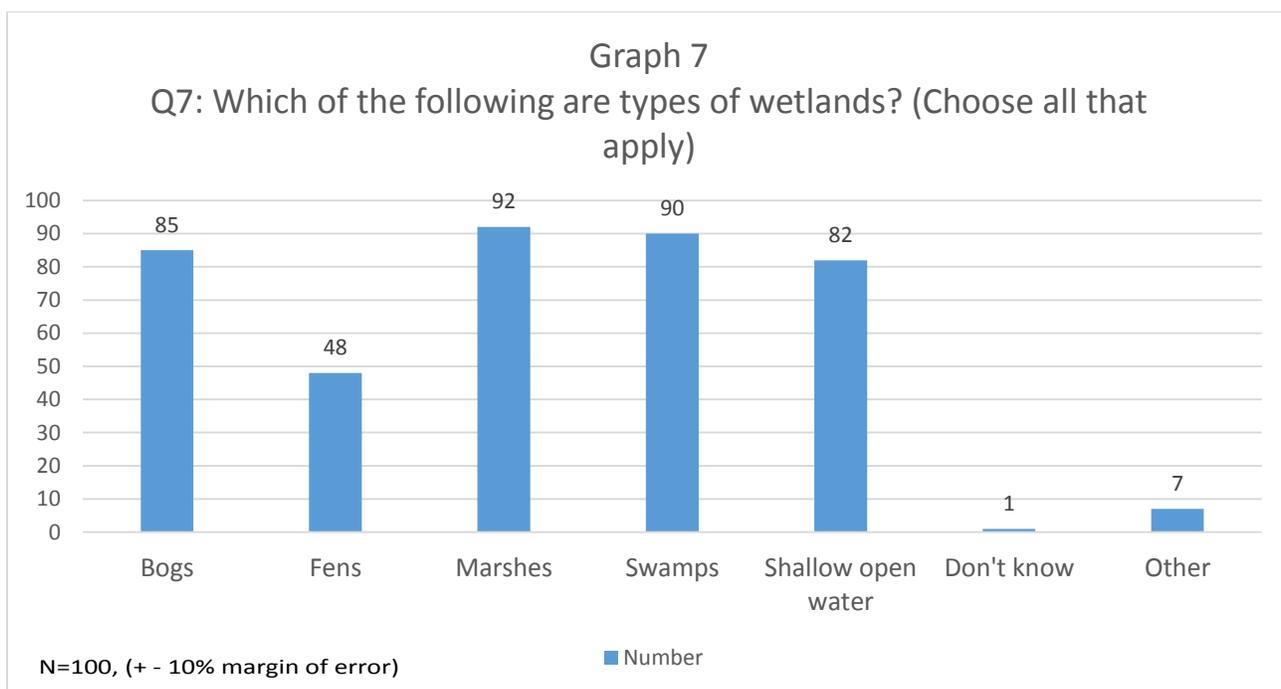
Graph 6

Q6: Whether or not you own lakeshore property, which of the following activities to improve lake health have you done in the last 12 months?  
(Choose all that apply)



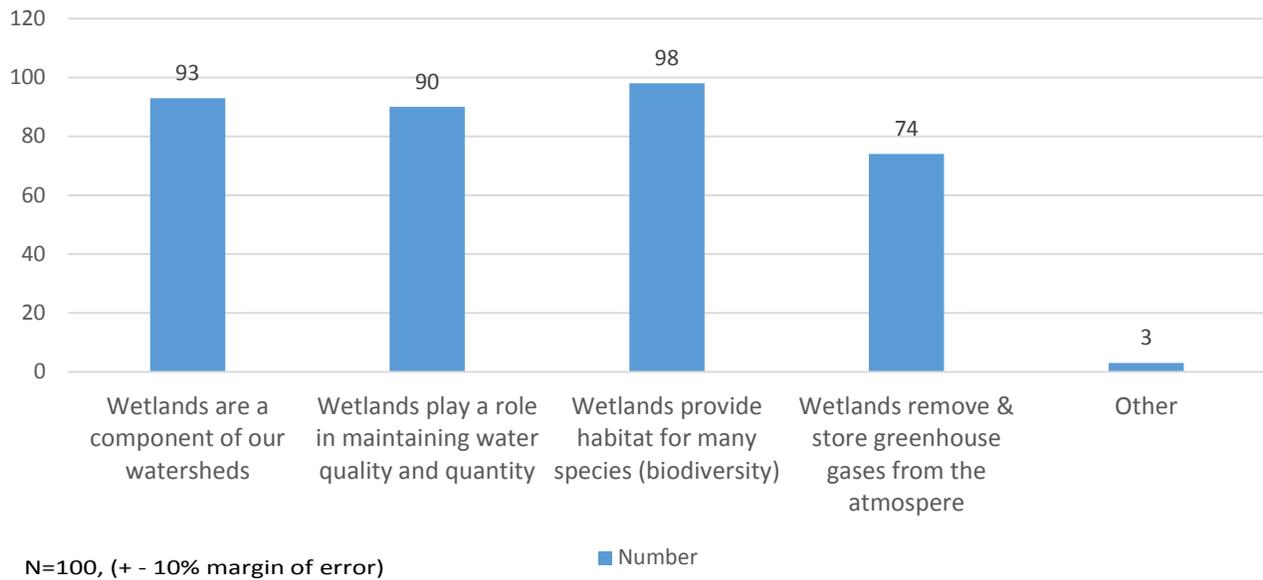
## Wetland Management

When asked to identify types of wetlands, less than half identified a fen (Graph 7, Appendix D for “other”). Otherwise, awareness ranged from 82% to 92% (with no urban/rural differences). The reason that wetlands are important to most people was that they provide habitat for many species and they are a component of our watersheds (Graph 8, Appendix D for “other”). Chosen less often was wetlands role in maintaining water quality and quantity – the response level to this reason was significantly lower than the top reason (habitat) ( $Z=2.38$ ;  $p < 0.05$ ). As well, “wetlands remove & store greenhouse gases from the atmosphere” was chosen significantly fewer times than all other answers ( $Z = 2.95$ ;  $p < 0.05$ ). The implication is that there is a lower awareness of some of the benefits of wetlands (no significant urban/rural differences). While urban development and land uses such as agriculture and industry were acknowledged as having a negative health effect on wetlands by 90% of respondents, significantly fewer (80%) saw recreational activities as having a negative effect ( $Z = 2.21$ ;  $p < 0.05$ ) (Graphs 9, Appendix D for “other”), again there were no location differences.



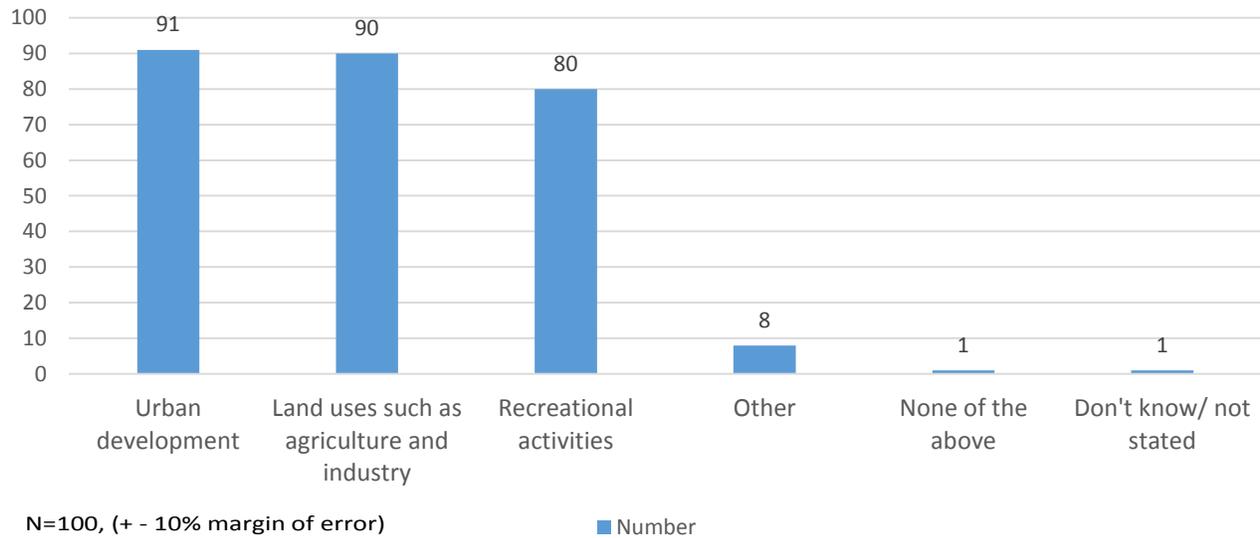
Graph 8

Q8: I am aware that wetlands are important for the following reasons (choose all that apply)

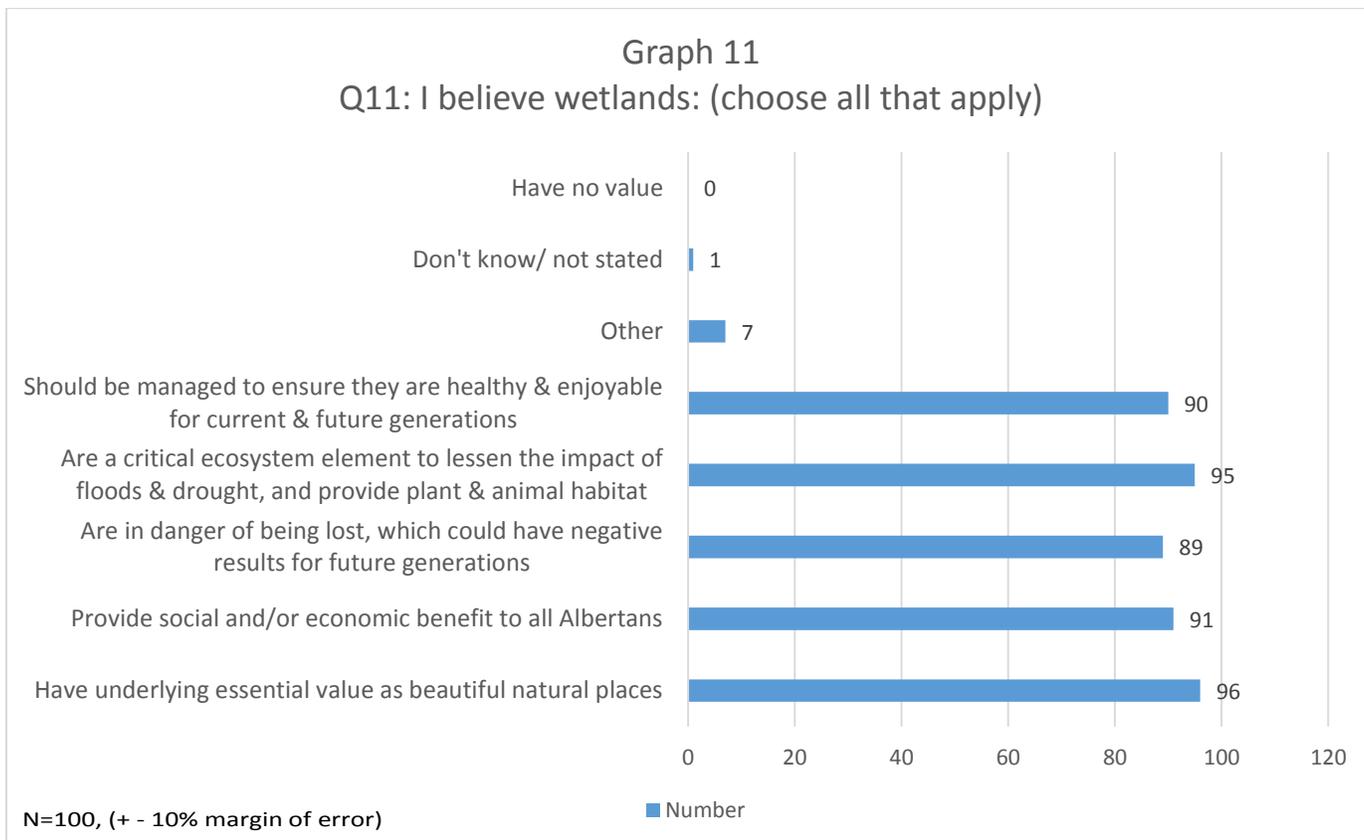
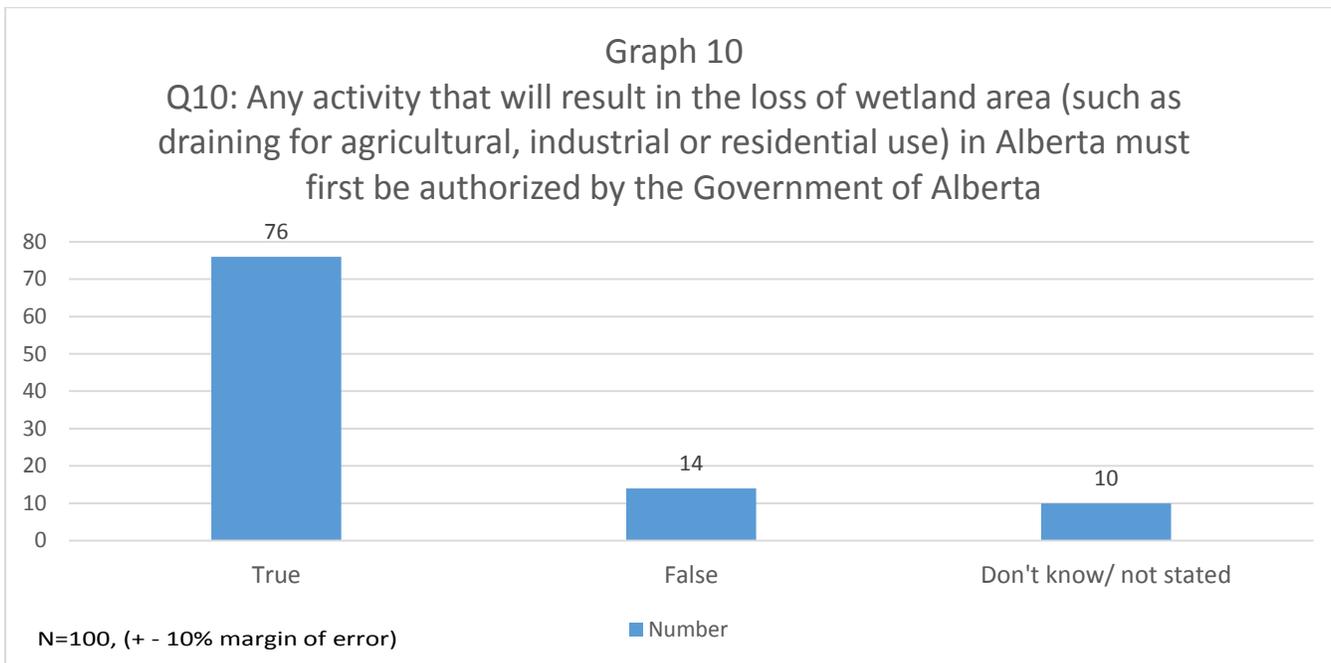


Graph 9

Q9: Which of the following human activities that occur on the wetlands or in the uplands that surround them do you know affects the health of wetlands? (choose all that apply)

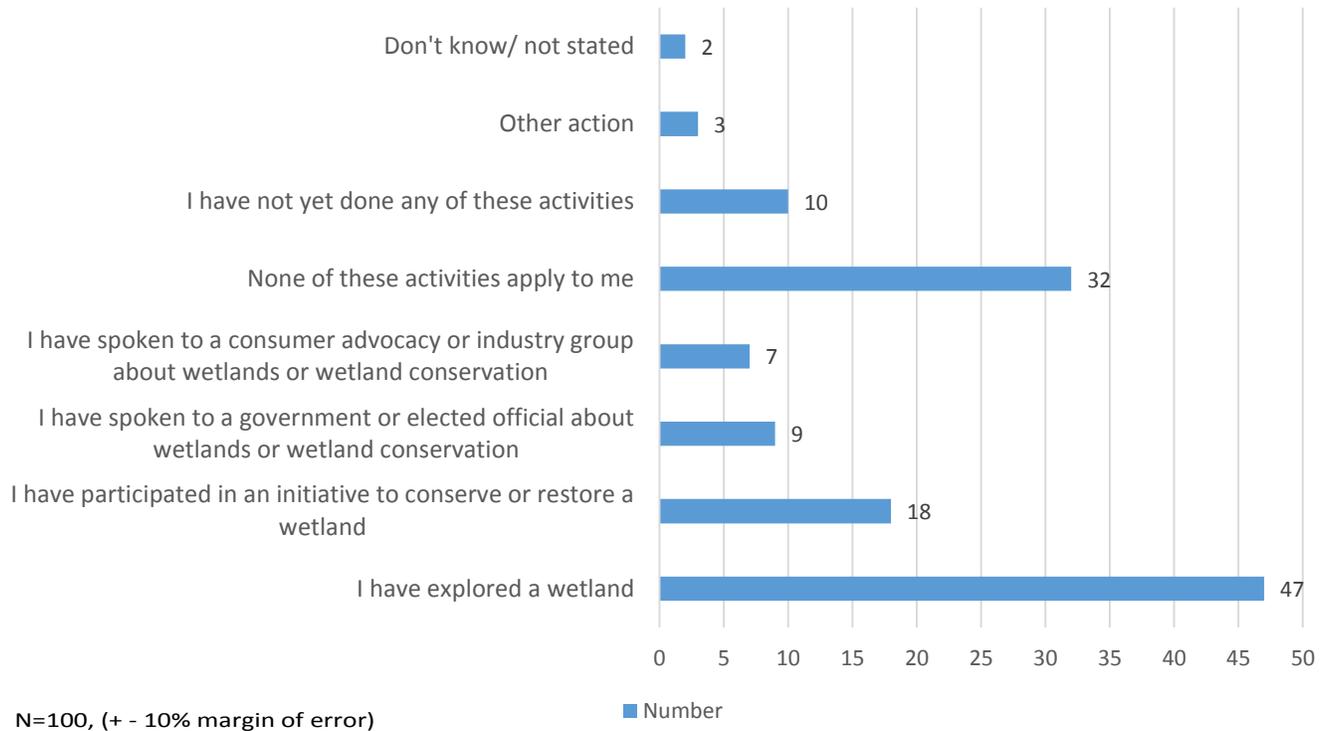


Three-quarters of those surveyed knew that activities that might result in a loss of wetlands needed authorization by the Government of Alberta (Graph 10). There was a significant urban/rural difference in this response with 81% of urban dwellers versus 60% of rural dwellers answering true ( $Z = 2.16; p < 0.05$ ). Various belief statements about wetlands all received similar response rates and were all highly valued among participants (Graph 11, Appendix D for “other”), so there were no demographic differences.



Graph 12

Q12: Which of the following wetlands activities have you done in the last 12 months?

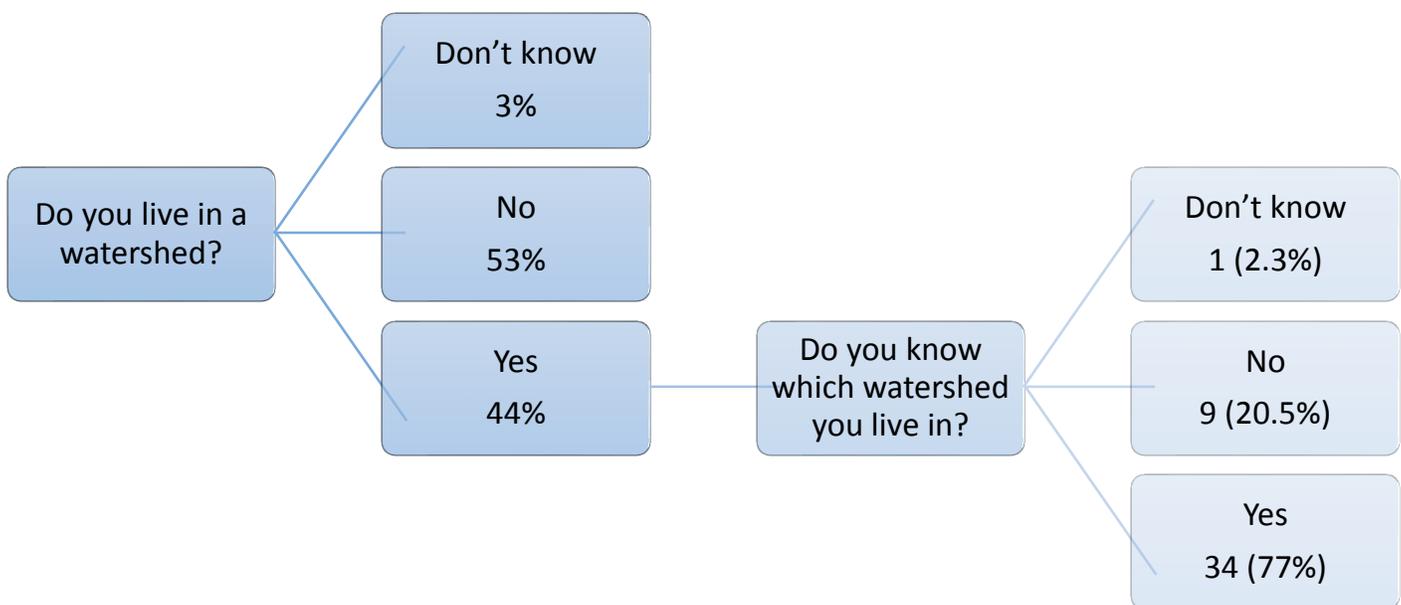


Only half of the sample had explored a wetland (Graph 12, Appendix D for “other”). Of the 47 who had – 34% lived in a rural area, while 66% lived in a more urban setting. However, 64% of all rural participants had explored a wetland, while only 41% of urban dwellers had done so. This represented a significant difference in behaviour ( $Z=1.97$ ;  $p < 0.05$ ). While fewer participants had participated in an initiative to conserve or restore a wetland, 36% of rural dwellers had done so versus 12% of urban dwellers – a significant difference ( $Z = 2.71$ ;  $p < 0.05$ ).

## Watershed Management

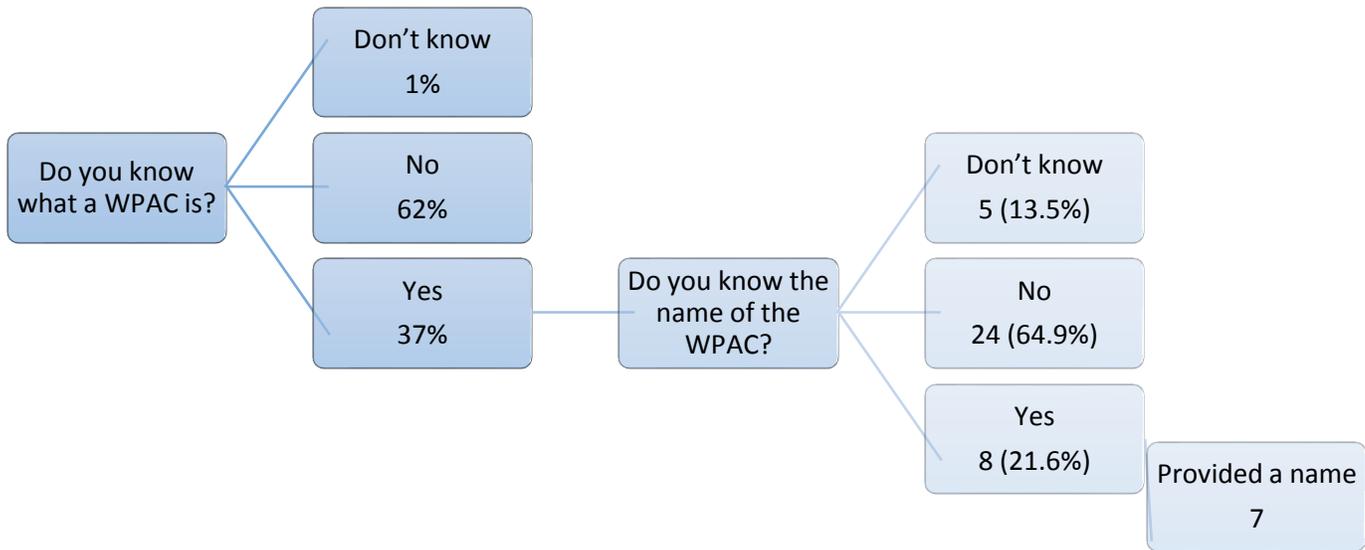
The next part of the survey tried to discover people’s awareness, knowledge, beliefs and activities concerning watershed management and the watershed in which they live. To assess awareness, the survey asked “Do you live in a watershed?” The awareness level of respondents was less than half, with 56% of respondents incorrectly answering that they did not live in a watershed (Graph 13). Rural dwellers (64%) were significantly more likely to know they lived in a water shed than urban dwellers (37%) ( $Z = 2.33$ ;  $p < 0.05$ ). The remaining 44% who answered correctly were then asked, “Do you know which watershed you live in?” If you knew that you lived in a watershed, then you were likely to know which one (77% said they knew). Interestingly, urban dwellers (89%) were significantly more likely to know *which* watershed they lived in versus rural dwellers (56%) ( $Z = 2.52$ ;  $p < 0.05$ ).

Graph 13  
Do you live in a watershed?



N=100, (+ - 10% margin of error)

Graph 14  
Do you know what a WPAC is?

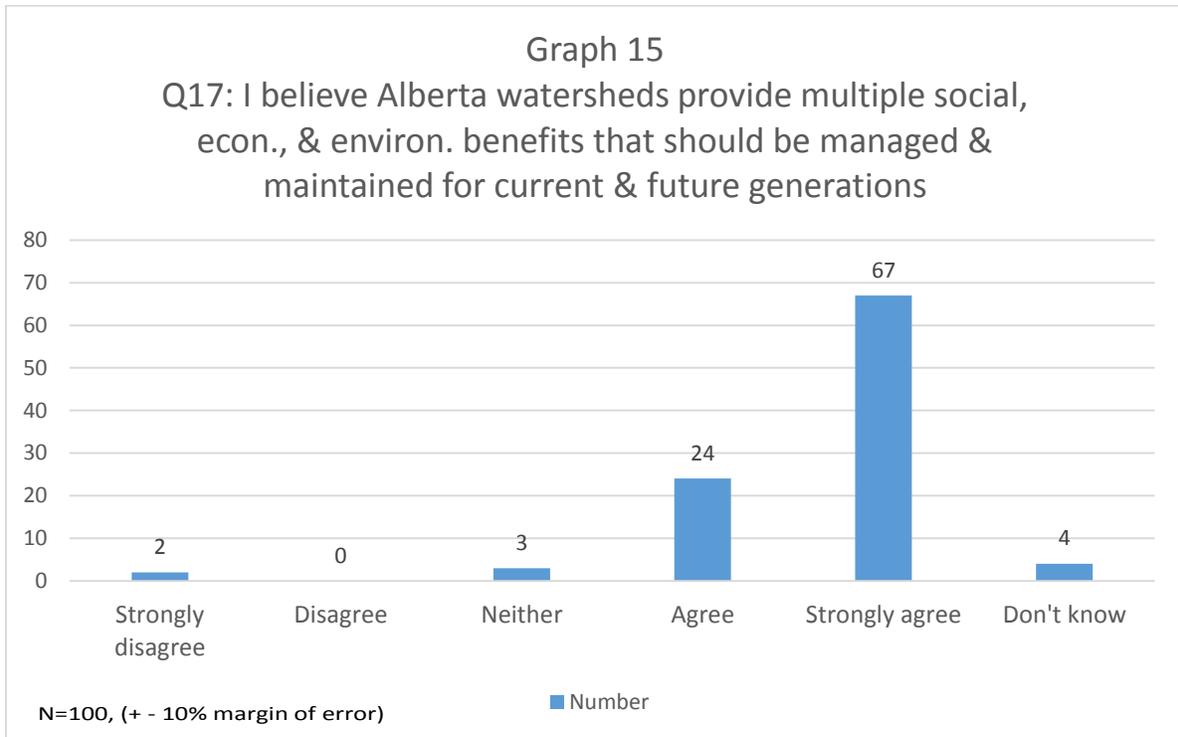


N=100, (+ - 10% margin of error)

The entire sample was then asked, “Do you know what a Watershed Planning and Advisory Council (WPAC) is?” Only 37% professed to know what a WPAC was (no significant urban/rural difference, but men were significantly more likely to know what a WPAC was,  $Z = 2.69$ ,  $p < 0.05$  – 12 women and 25 men) and of those answering yes, 22% (eight people) claimed to know the name of their WPAC (Graph 14, Appendix D for names). However, only 7 of those 8 individuals came up with a name when asked.

Albertans’ belief in the benefits of watersheds was quite high. When asked how strongly they agreed with the statement, “I believe Alberta watersheds provide multiple social, economic and environmental benefits that should be managed and maintained for current and future generations, 91% either agreed or strongly agreed (Graph 15), so there were no demographic differences. Among those who gave a less than favourable rating, their reasons can be seen in Table 3.

When looking at how Albertans might have turned their beliefs into actions, it can be seen in Graph 16 that 40% of the sample had discussed watershed issues with a neighbor, friend, or co-worker. [Rural dwellers (60%) were significantly more likely to have done so versus urban dwellers (33%) ( $Z = 2.36$ ;  $p < 0.05$ )]. Another 40% feel that the watershed management activities listed did not apply to them (no urban/rural difference (Appendix D for “other”).

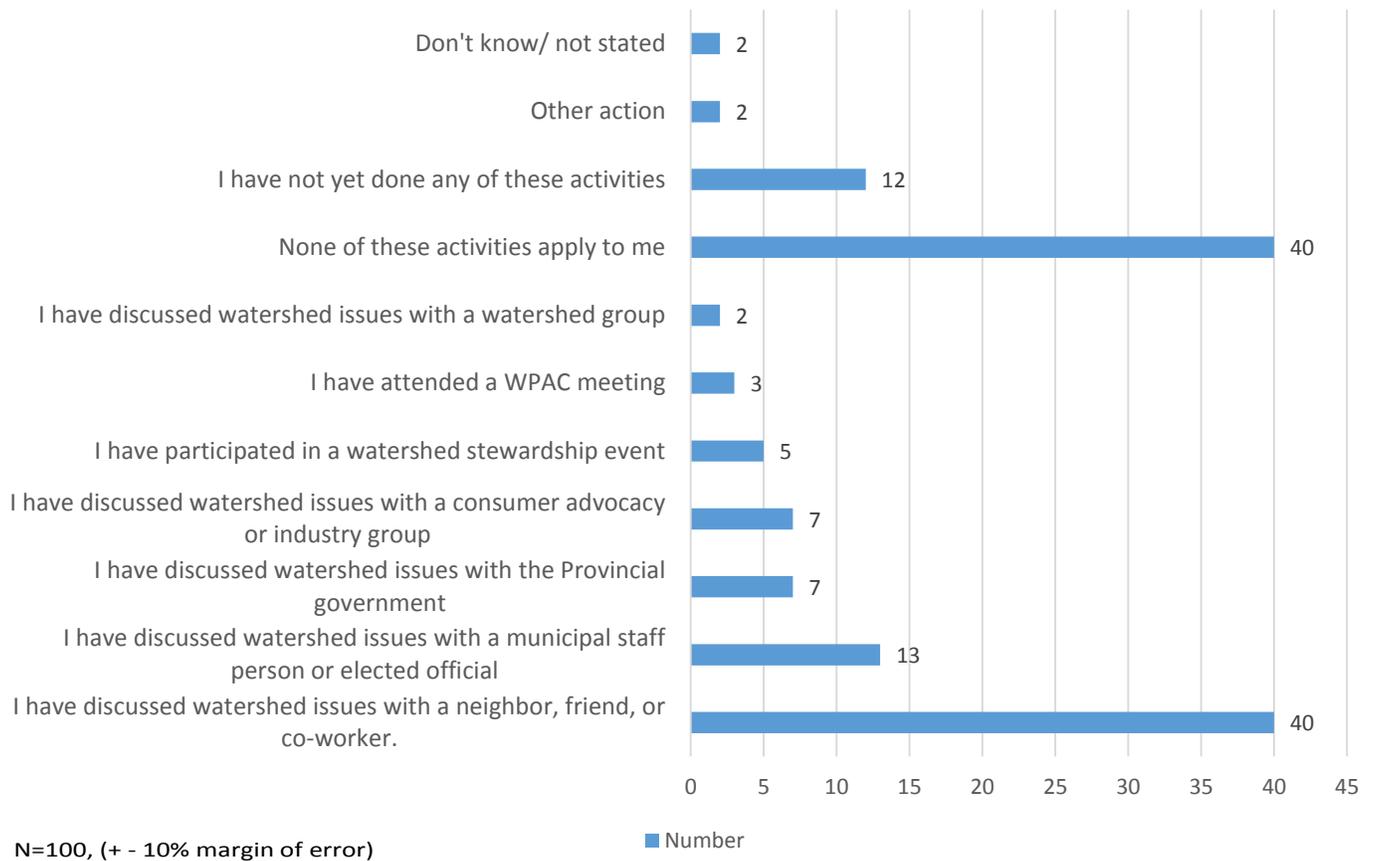


**Table 3**  
**Why did you provide a strongly disagree/disagree/ or neither agree nor disagree rating on Q17?**

Don't know/ not stated	I heard on the news media and politicians will raise it.	I live in a lake community and want to keep involved.
I don't know enough about the subject.	Partly because of economics play a role.	You can't manage it. The thing that manages it is the elevation of the land and the amount it has rained or the precipitation. It is also important for the mosquito population.

Graph 16

Q18: Which of the following watershed management activities have you done in the last 12 months?



## Water Supply and Allocation

The next section of the survey focused on water supply and allocation. Albertans were asked three questions related to awareness and knowledge of water supply and allocation issues and statutes (Table 4). There was a high degree of awareness that water is not always available where or when it is needed in Alberta. Fewer people agreed that all naturally occurring water belongs to the Crown or that a licence was needed to divert water in Alberta. For these three questions there were no urban/rural differences in the responses.

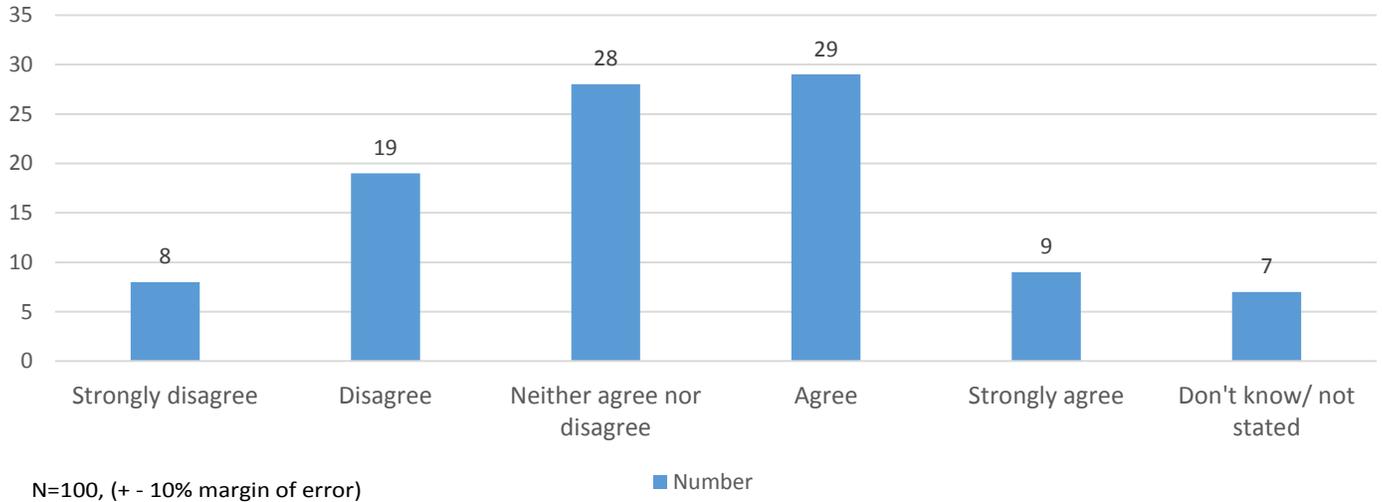
	True	False	Don't know/ not stated
Q19: Given our climate and geography, water is not always available in the right amount at the right time in some communities or for some users in Alberta.	85	10	5
Q20: All naturally occurring water in Alberta belongs to the Crown (Government of Alberta)	62	28	10
Q21: With the exception of small volumes for households and traditional agricultural uses, all water diversion in Alberta requires a licence issued by the Government of Alberta	76	11	13
N=100, (+ - 10% margin of error)			

The next three questions focused on attitudes and beliefs of Albertans toward the water supply (There were no significant urban/rural differences). There was a broad range of beliefs related to whether the government of Alberta manages and allocates our available water supply effectively and fairly (Graph 17). Approximately two-fifths (38%) of respondents agreed that the government was doing a good job. However, 28% had a neutral opinion and 27% disagreed. A very similar pattern of answers was found for the next question concerning how easy it was to find data and information about Alberta's water supply (Graph 18). The results in Graph 18 are not significantly different from Graph 17. It is interesting to note that between 7 – 9 % of respondents to both questions did not know what their beliefs were (these were largely different respondents across the two questions). The third belief question was about which reasons make you concerned about water scarcity in the future. The top two reasons were climate change and water use by industry (Graph 19). These two reasons were significantly preferred over the other reasons ( $Z = 2.30$ ;  $p < 0.05$ ). The remaining reasons were equally preferred (no significant difference). Interestingly, women chose climate change (86%) significantly more than men (68%) ( $Z = 2.14$ ;  $p < 0.05$ ).

The final question in this section related to water management supply and allocation asked respondents what activities they had participated in during the last 12 months (Graph 20, Appendix D for "other"). Respondents listed activities they had engaged in (31% listed at least one), with most stating that these activities did not apply to them (56%) or that they had not yet done any of these activities (26%) (There were no significant urban/rural differences).

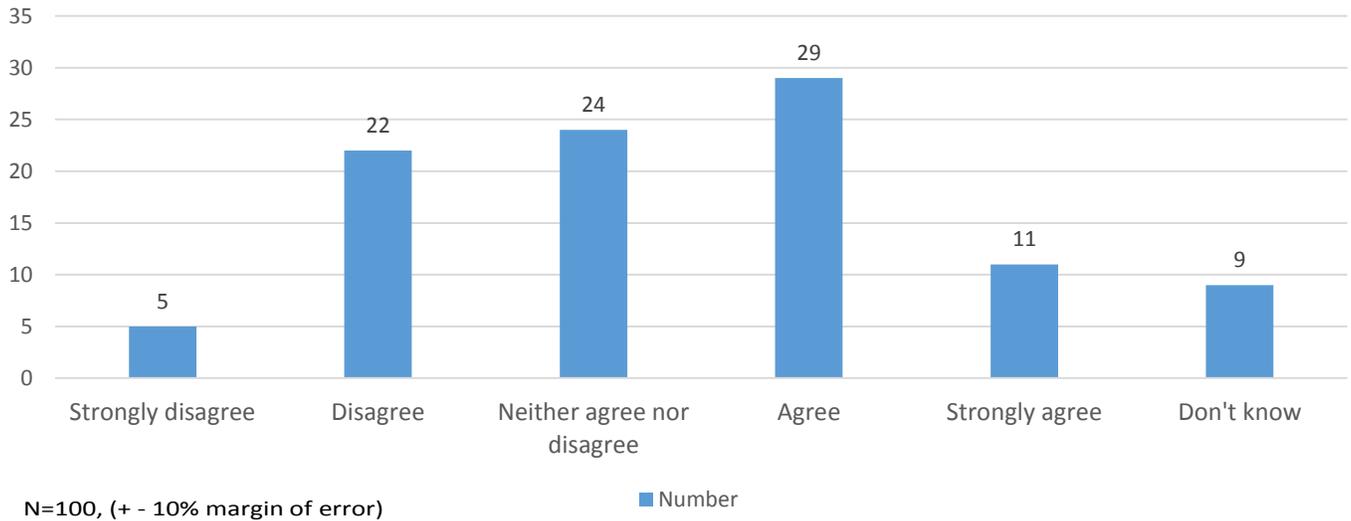
Graph 17

Q22: I believe the GOA manages & allocates our available water supply effectively & fairly to meet a variety of social, economic & ecological needs



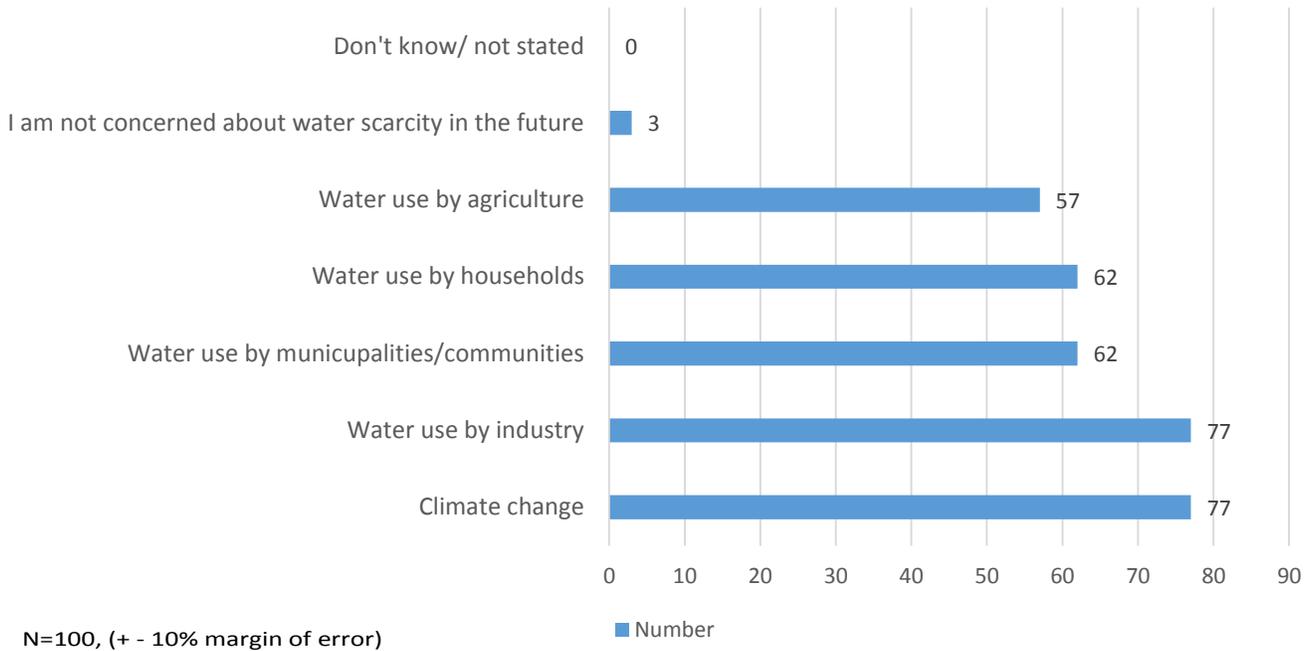
Graph 18

Q23: Data and information about Alberta's water supply is easily available to the public



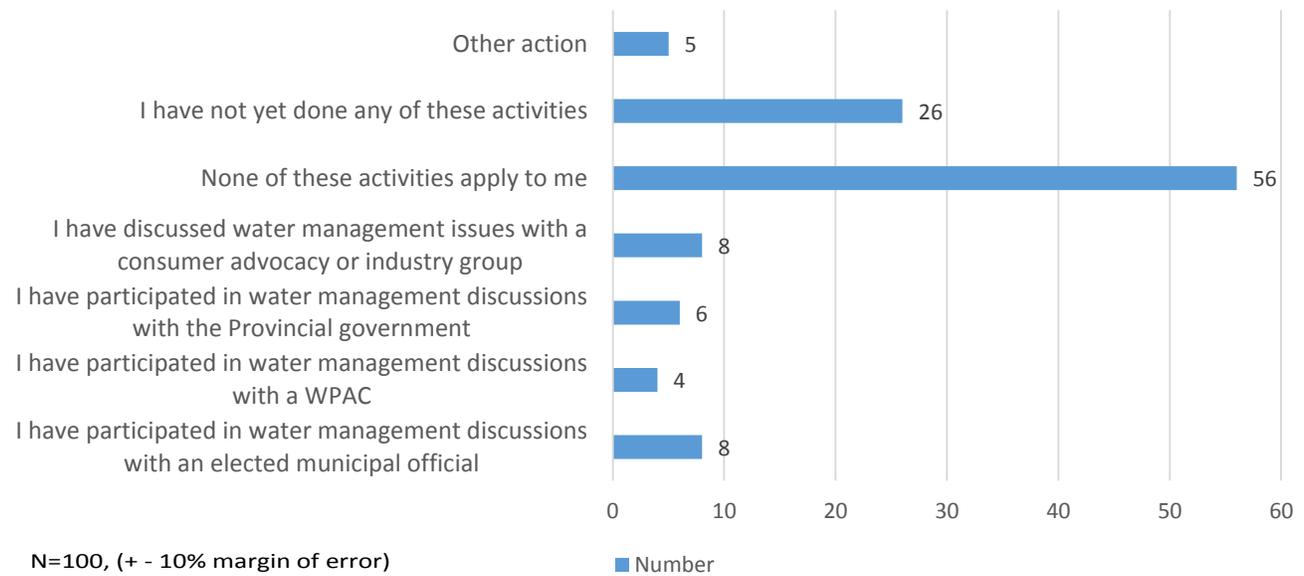
Graph 19

Q24: Which of the following reasons make you concerned about water scarcity in the future? (choose all that apply):



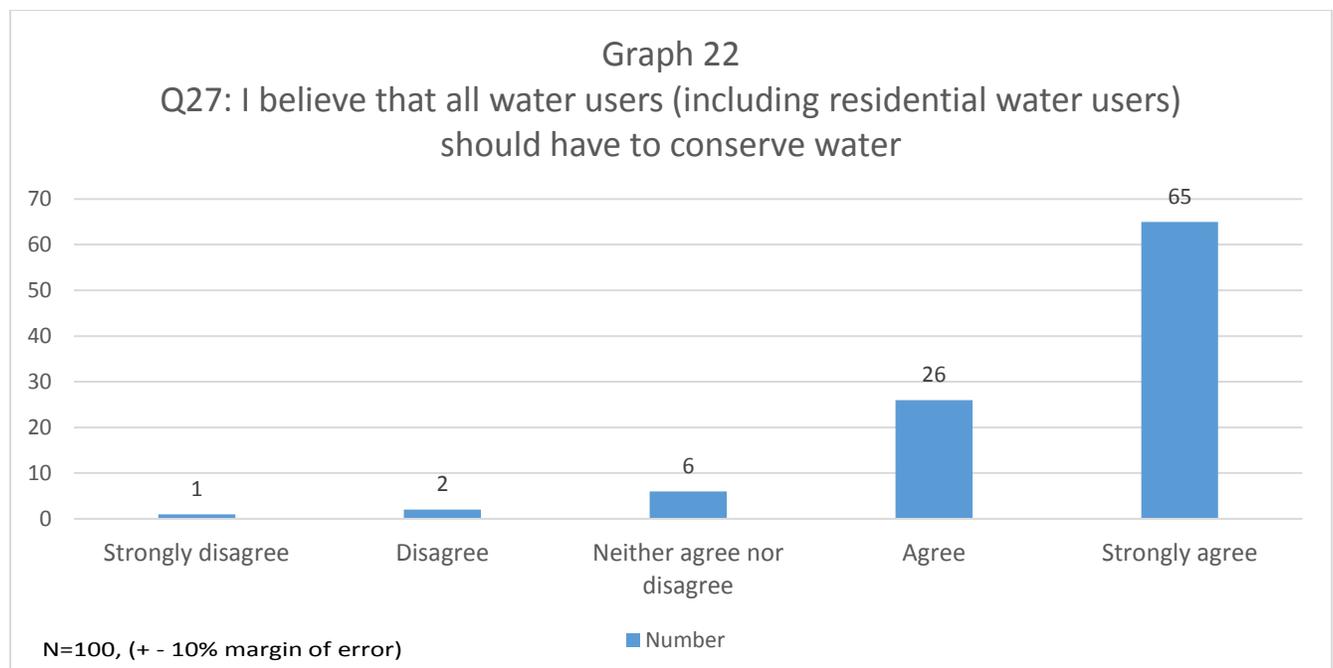
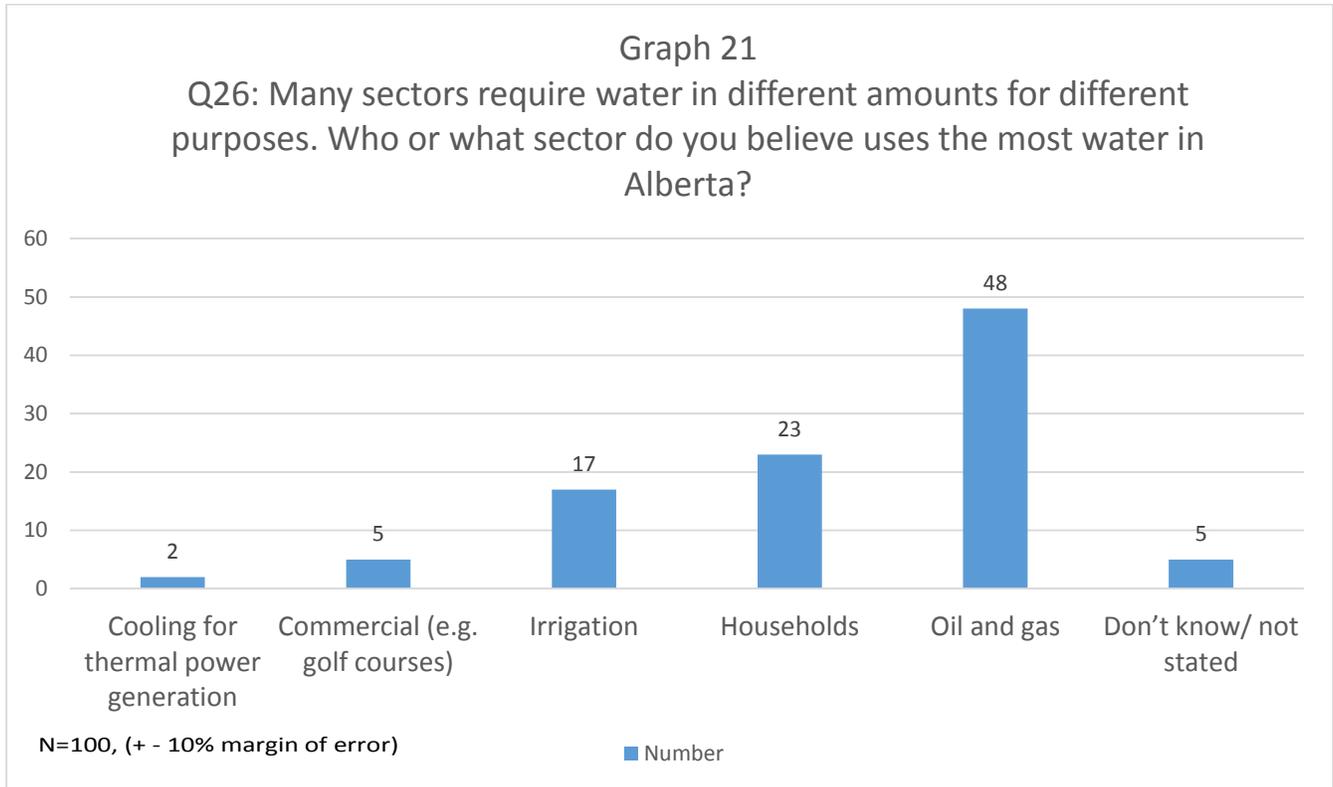
Graph 20

Q25: Which of the following water management supply & allocation activities have you done in the last 12 months?



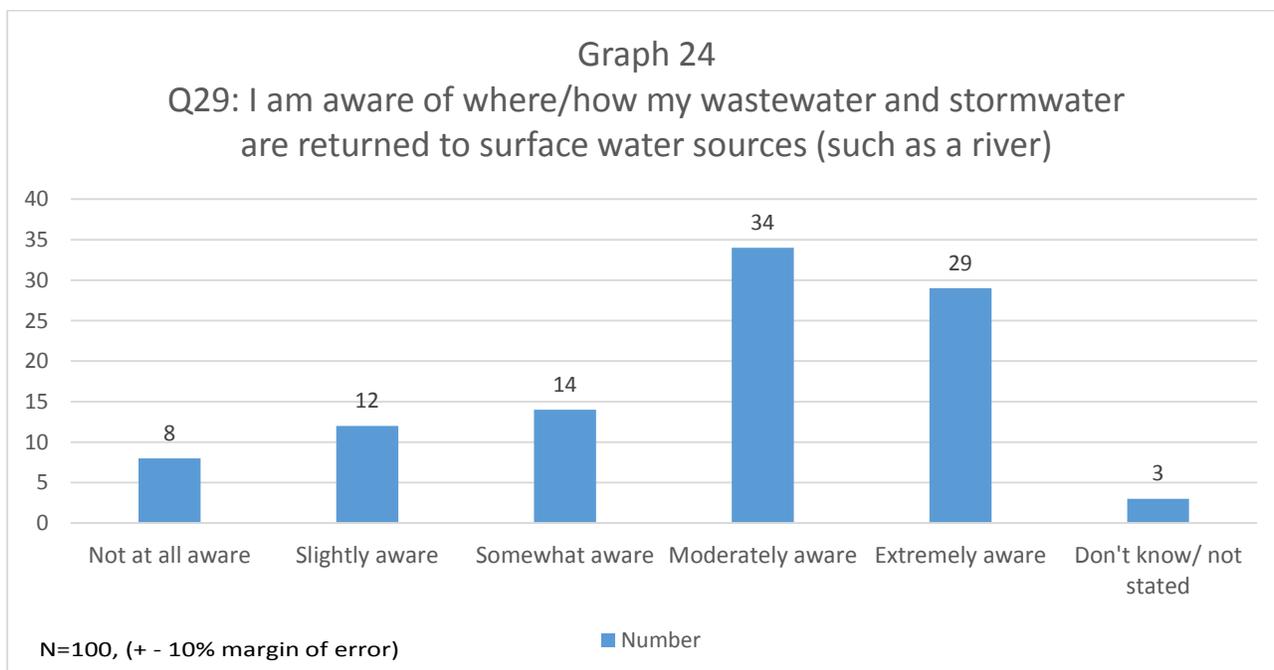
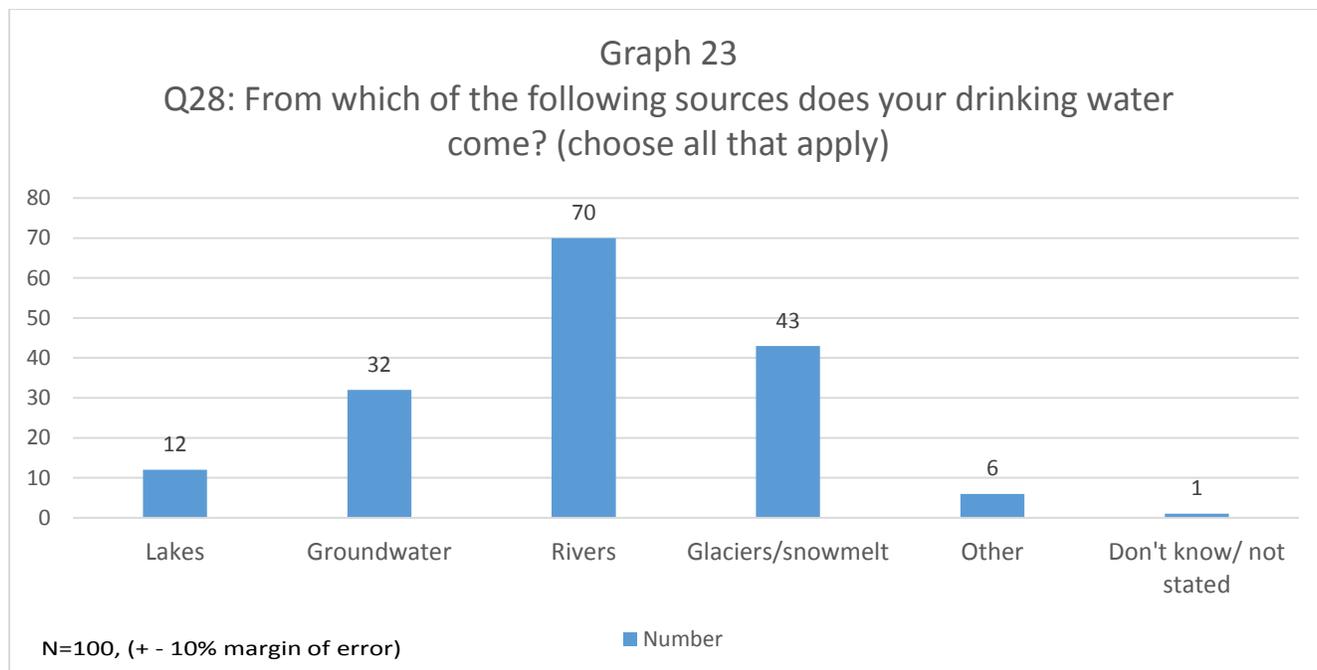
## Sector Water Use

Respondents were asked what they knew or believed about sector water use in Alberta. The first question asked them who uses the most water in Alberta (Graph 21). Only 17% gave the correct answer which was irrigation. Almost half of the sample felt it was “oil and gas.” The second question asked their attitude toward which sectors should conserve water. Only 3% of respondents disagreed that all water users should have to conserve (Graph 22). For both questions there were no significant urban/rural differences.

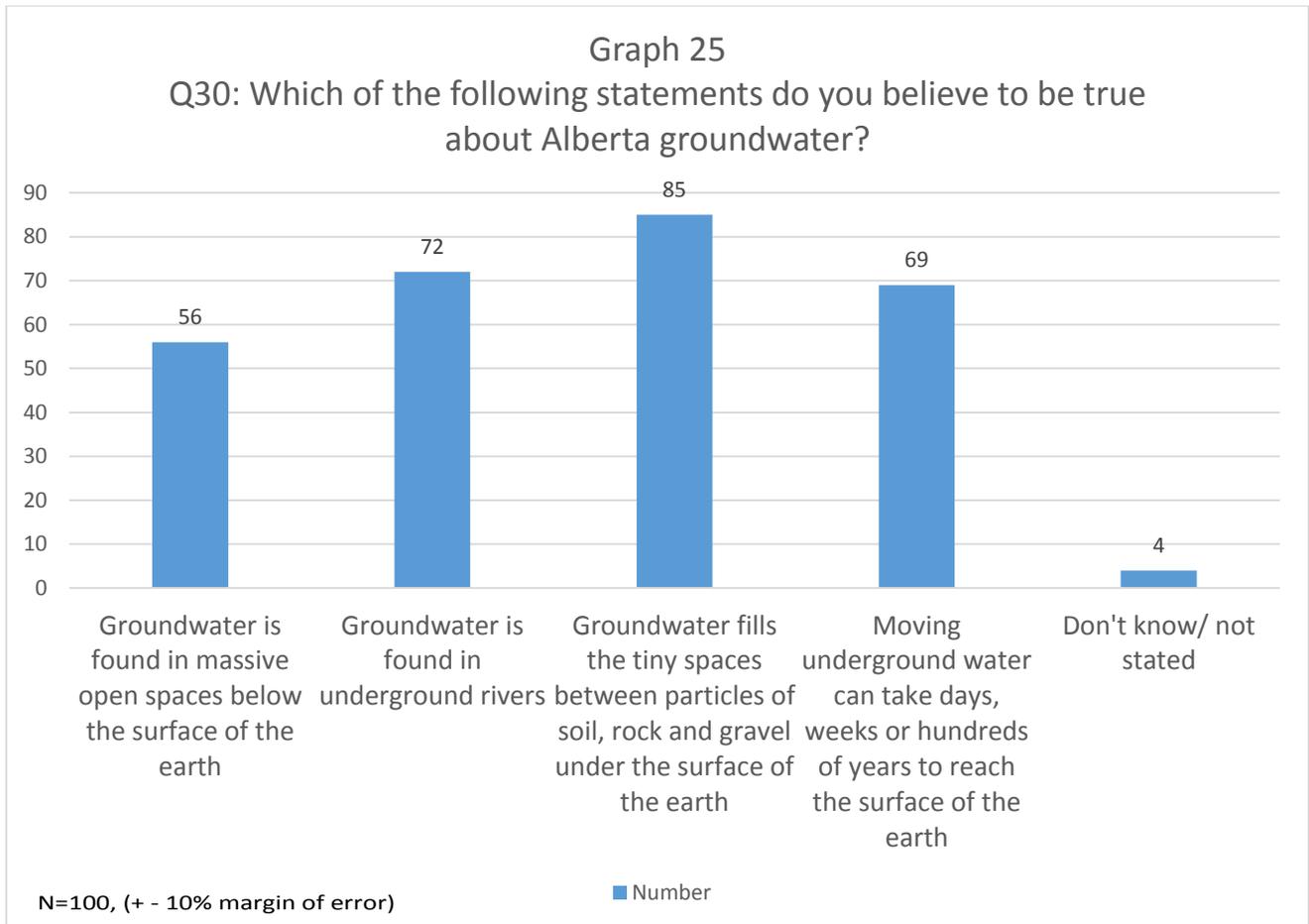


## Drinking water, wastewater & groundwater

People were asked if they knew where their drinking water came from. They were allowed to choose more than one answer (Graph 23, Appendix D for “other”). Most respondents stated that their drinking water came from rivers, snowmelt, and groundwater. An interesting comparison is that 83% of those living in urban areas said their drinking water came from “rivers,” while a significantly lower 32% of rural participants chose “rivers” ( $Z = 4.79; p < 0.05$ ). Conversely, 72% of those living in a rural area said their drinking water came from “groundwater” while 19% of urban dwellers chose that answer ( $Z = 4.95; p < 0.05$ ). Those who answered “other” said their drinking water came from natural springs, rainwater, streams, reservoirs and wells. Only 11% of respondents did not know or were not at all aware of where/how their wastewater and stormwater was returned to surface water sources (Graph 24). There were no urban/rural significant differences.



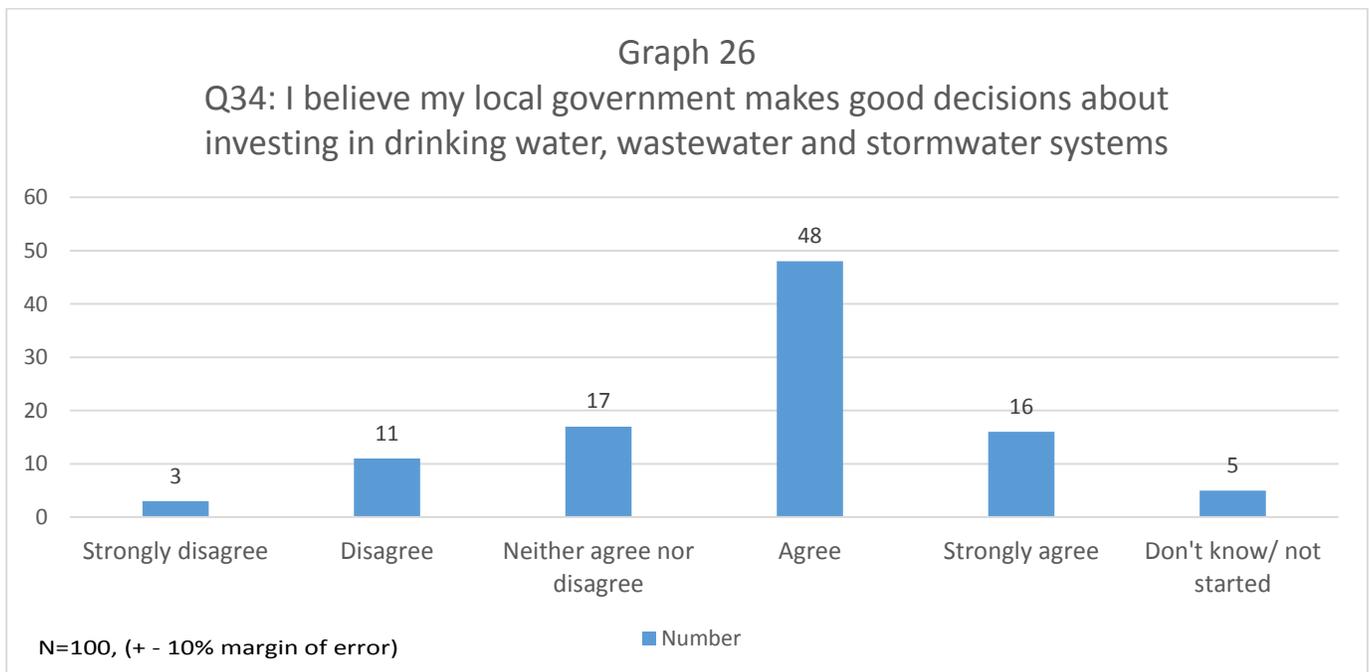
Respondents were asked which of four statements they believed to be true about Alberta groundwater (Graph 25). The first two statements/columns are not true. The second two statements are true. Respondents were significantly more likely to choose the third statement (85%) over the other three statements, correctly identifying that groundwater fills the tiny spaces between particles of soil, rock and gravel under the surface of the earth ( $Z = 2.24, p < 0.05$ ). They were not as accurate in identifying the last statement as true (69%). There were no significantly different beliefs base on where the respondents lived.



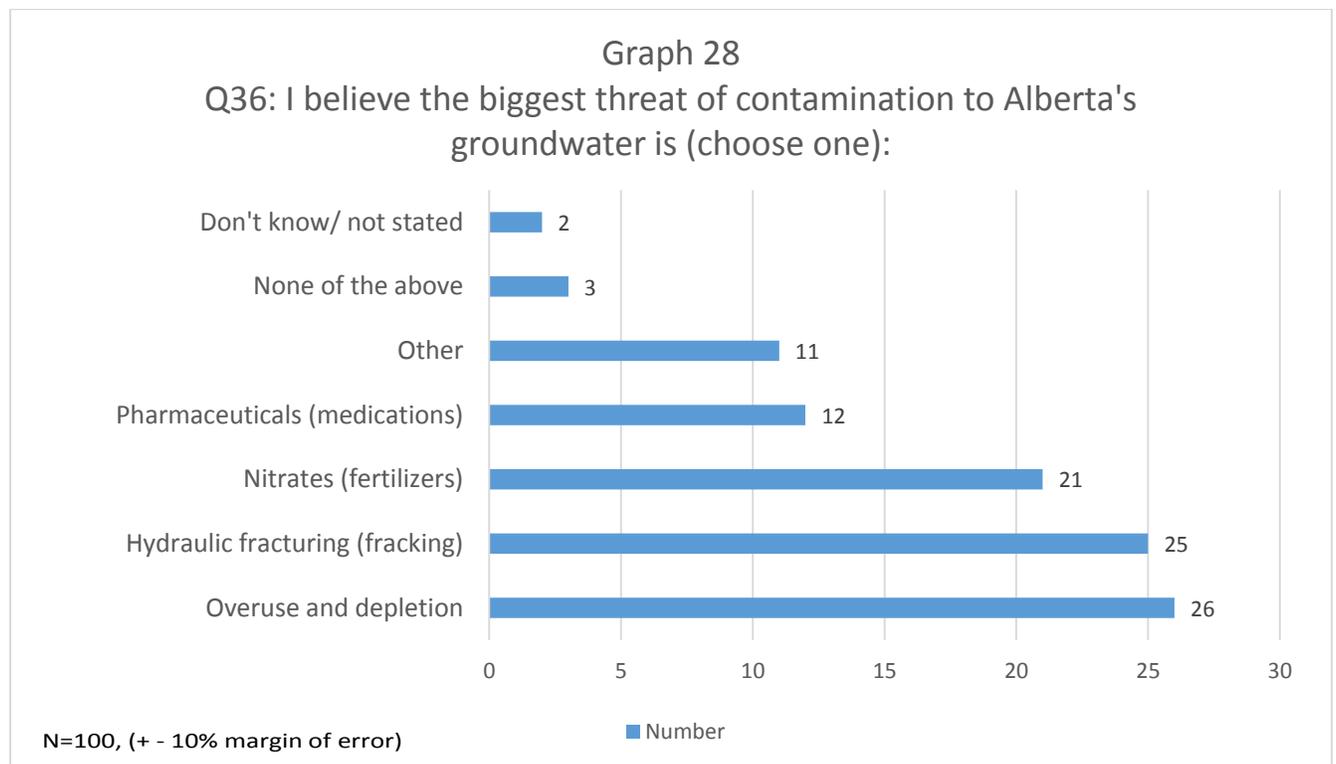
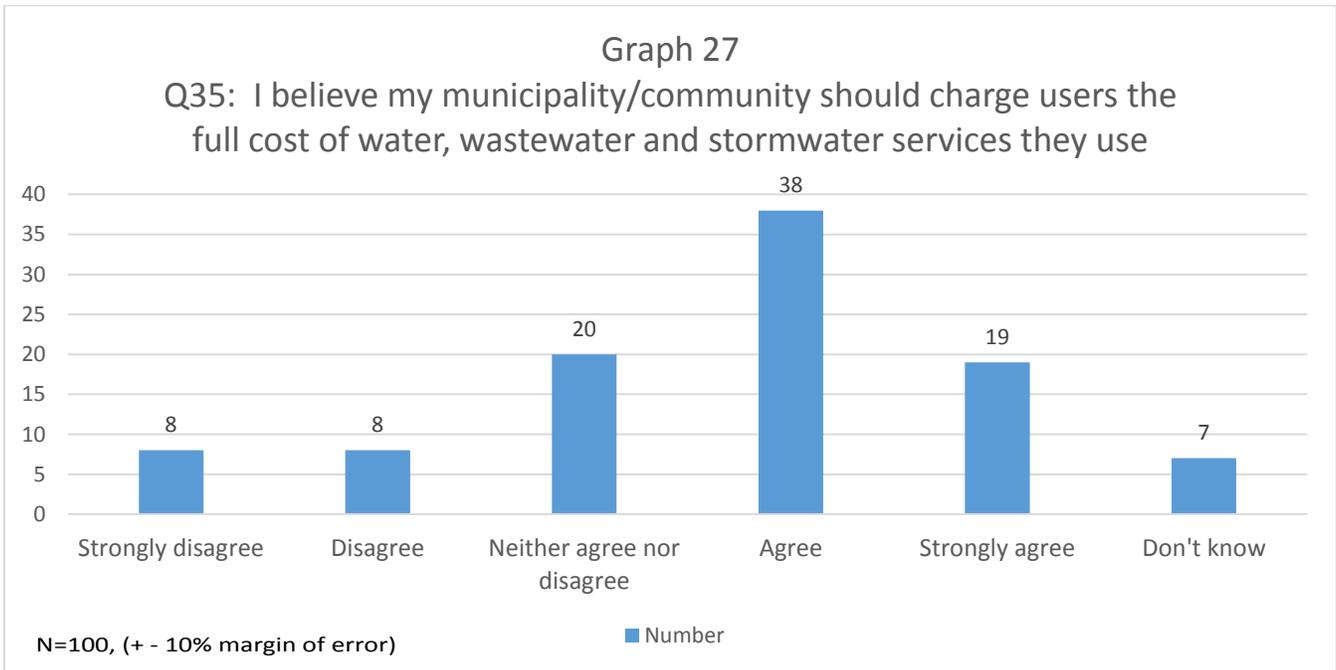
Respondents were next asked to show their awareness and knowledge on three statements about drinking water, wastewater and groundwater issues (Table 5). There were high levels of knowledge on all three questions, and therefore no demographic differences. They were next asked for their attitudes/beliefs on several statements, the first asking about whether local government makes good decisions about investing in drinking water, wastewater and stormwater systems (Graph 26). As shown in the graph, the majority of respondents agreed (64%). However, urban dwellers (75%) were more significantly more likely to do so versus rural dwellers (32%) ( $Z = 3.85$ ;  $p < 0.05$ ). Rural dwellers (36%) were also significantly more likely to be neutral than urban dwellers (11%) ( $Z = 2.92$ ;  $p < 0.05$ ).

	True	False	Don't know/ not stated
Q31: Groundwater (underground water found in the aquifer) is a source of drinking water for many rural households in Alberta.	90	5	5
Q32: A portion of municipal/ community expenses go to collecting, treating and distributing water, wastewater, and stormwater.	91	4	5
Q33: Pollutants such as soap, chemicals, litter, feces, and car fluids entering our storm drains can pose a threat to our drinking water.	98	2	0

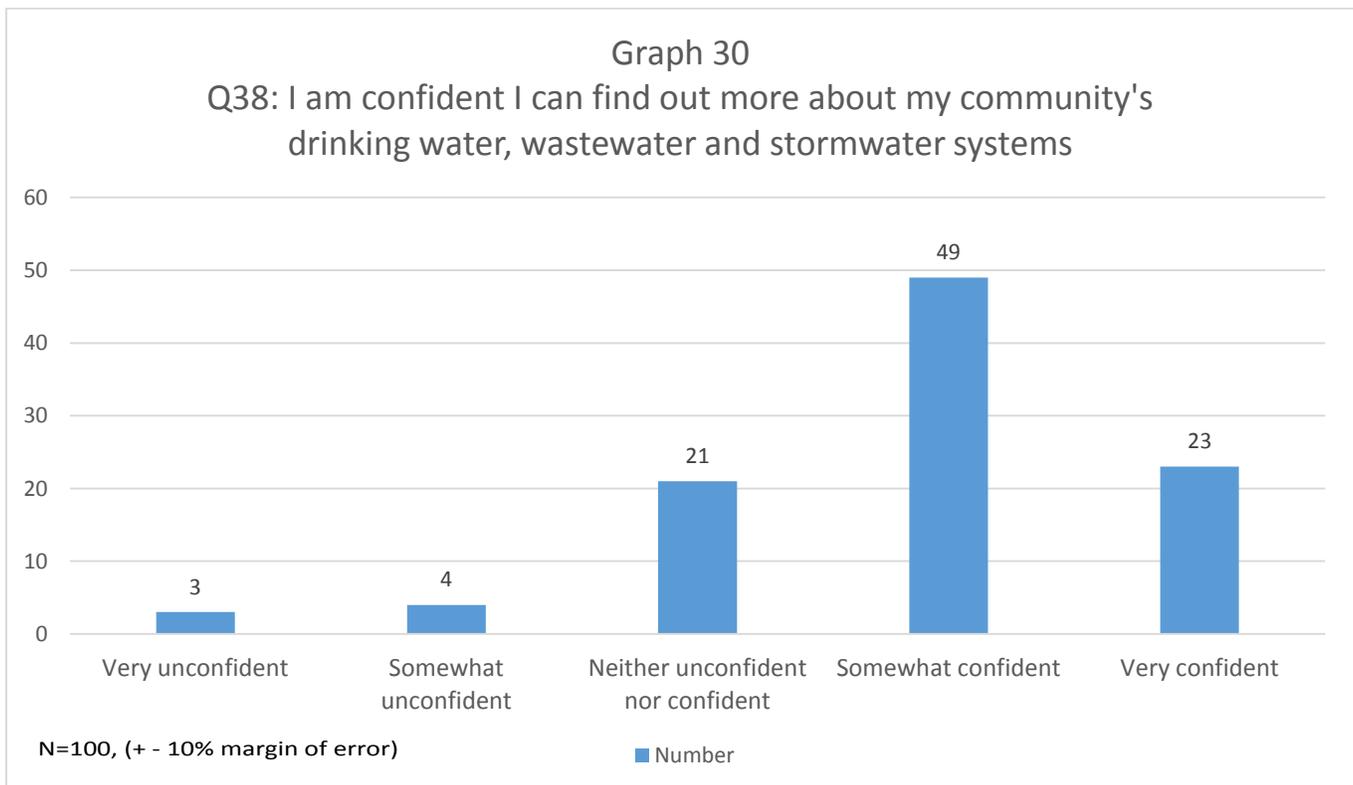
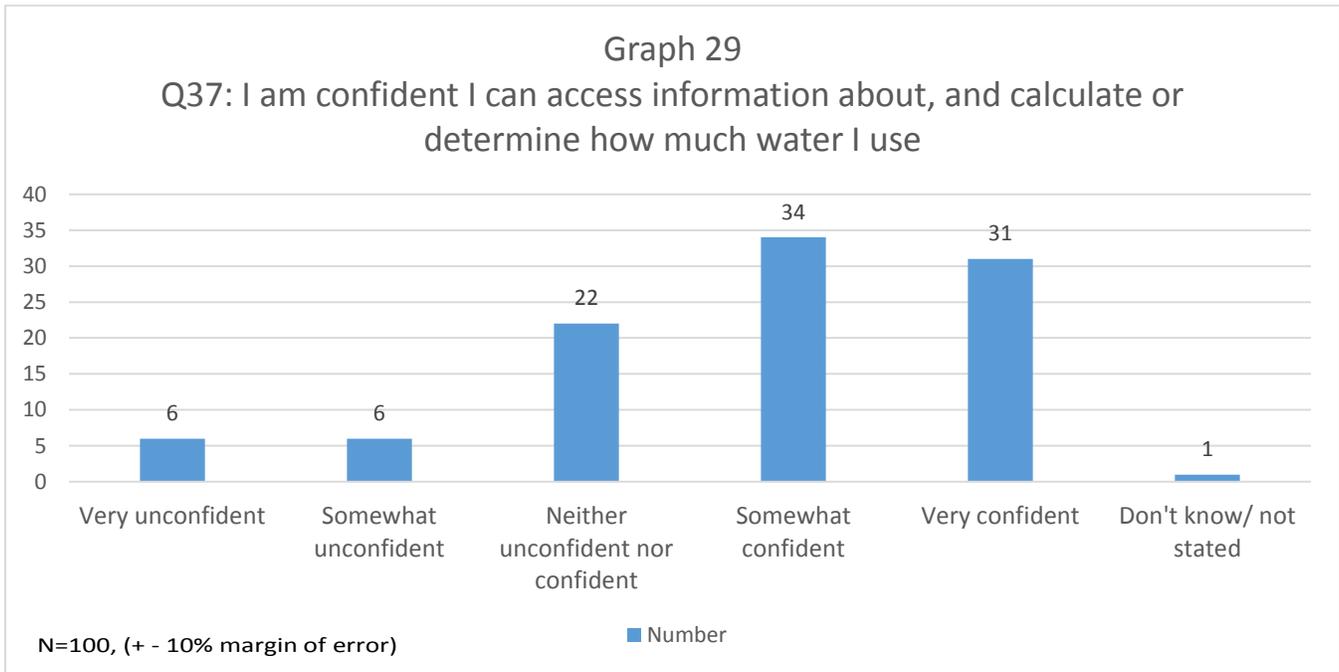
N=100, (+ - 10% margin of error)

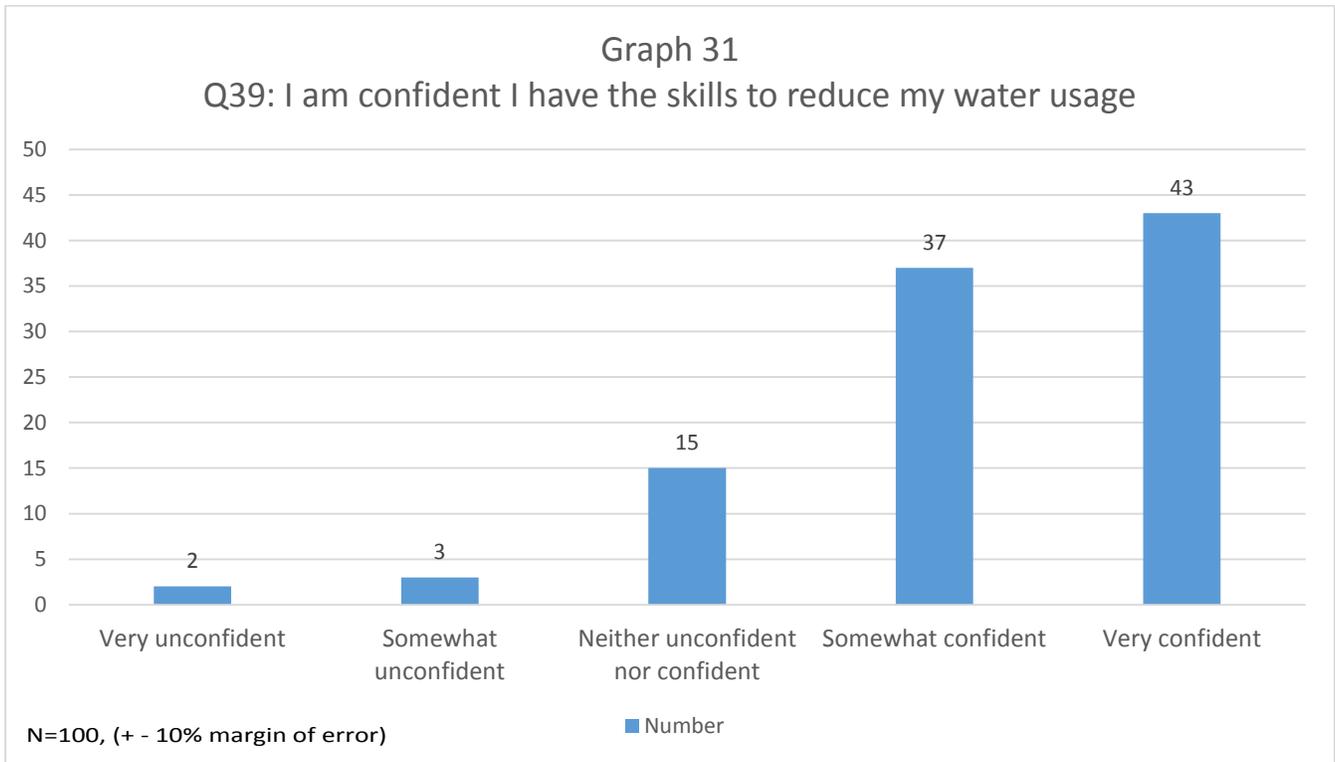


Somewhat over half (57%) of respondents held the belief/attitude that users should be charged the full cost of water, wastewater and stormwater services that they use (Graph 27). Albertans surveyed believed the three biggest threats of contamination to Alberta’s groundwater were: overuse and depletion, hydraulic fracturing, and nitrates (Graph 28, Appendix D for “other”). For both questions there were no urban/rural differences.



The survey also assessed Albertan’s skill levels with respect to determining their water usage (Graph 29). Most people were somewhat or very confident (65%) that they could access the information they needed. They were also confident (72% somewhat or very confident) that they could find out more about their community’s drinking water, wastewater and stormwater systems (Graph 30). While participants felt they could *determine* their water usage (65% Graph 29), they were significantly more confident (80% somewhat or very confident) that they had the skills to *reduce* their water usage (Graph 31) ( $Z = 2.38, p < 0.05$ ). For these three questions there were no urban/rural differences.

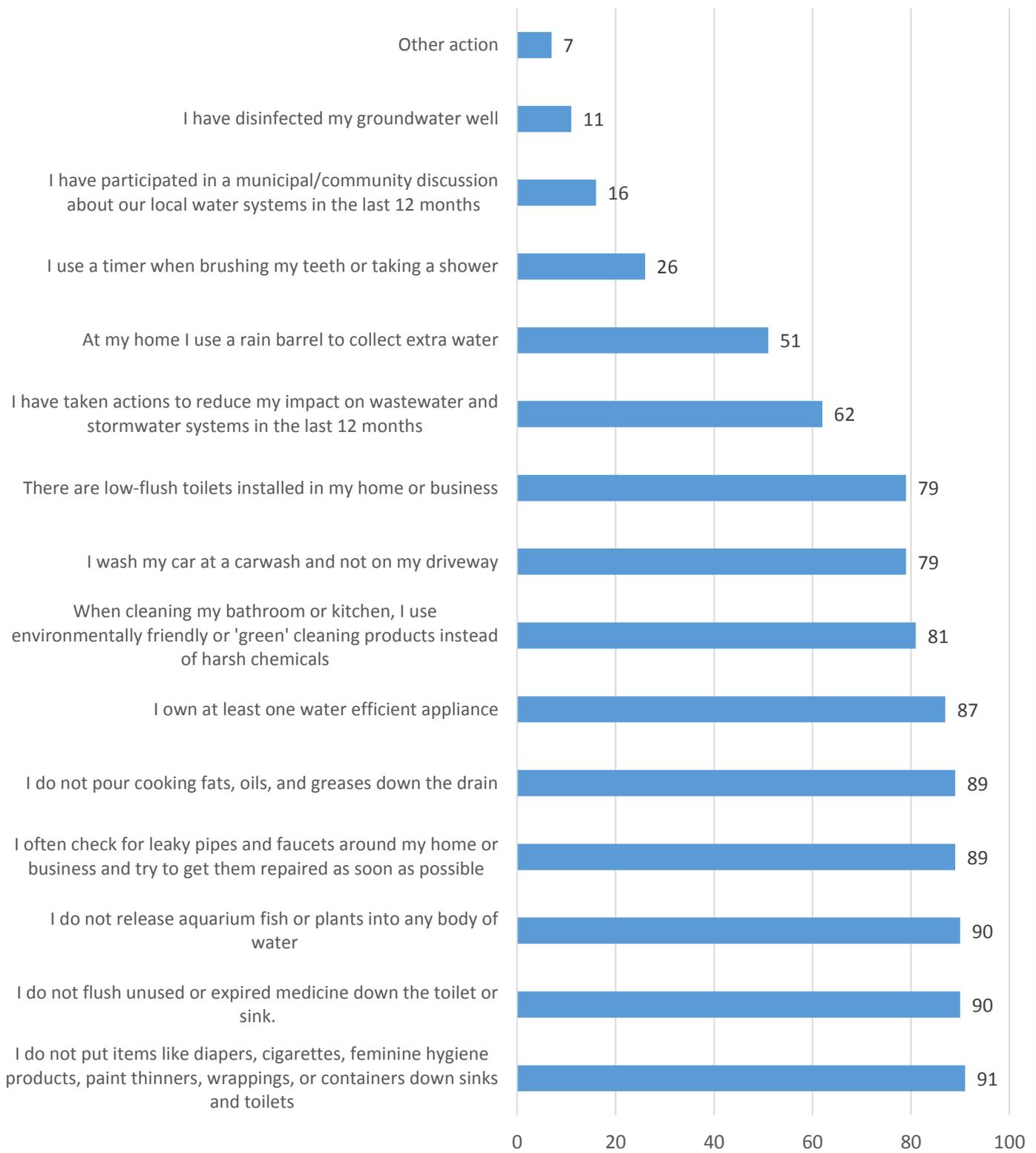




The final question presented a number of activities/ actions in which respondents may have engaged either in the past or currently (Graph 32, Appendix D for “other”). The least engaged in activity was disinfecting a groundwater well, although three-quarters of those doing so lived in a rural area. This also represented one-third of the rural participants. Two-thirds of those participating in a municipal/community discussion lived in urban areas. The presence of children in a household had a significant impact on using a timer when brushing teeth or showering, in that 55% of households with children reported using a timer, while only 23% of households without children used a timer ( $Z = 2.29, p < 0.05$ ). Rain barrel using is significantly higher in smaller cities and rural areas (72%) versus Edmonton and Calgary (30%) ( $Z = 4.2, p < 0.05$ ). Taking action to reduce personal impact on waste and stormwater systems does not appear to be dependent on where you live. Low flush toilets are installed in 79% of the homes or businesses surveyed. There appears to be a directional trend (not significant) for the highest levels of installation to be found in rural areas (92%) followed by smaller cities (80%) and then Calgary/Edmonton (72%). There appears to be no demographic differences in car-washing habits except that women (88%) were significantly more likely to choose this answer than men (70%) ( $Z = 2.21; p < 0.05$ ). The remaining activities have high action rates and thus non-significant demographic differences.

Graph 32

Q40: Which of the following drinking water, wastewater and stormwater activities have you done?



N=100, (+ - 10% margin of error)

■ Number

## Recommendations

Initially, the assessment tool was designed and tested, and then baseline data was gathered. The survey results provided a baseline of water literacy among Albertans. Current funding allowed for a survey comprised of 100 individuals (50 men/50 women) spaced geographically across the province balanced equally among Calgary, Edmonton, smaller cities, rural and north/south of Red Deer. The current results reflected a general geographic cross section of Albertans and provided some interesting results. Breaking down the sample into smaller demographic groups based on characteristics such as age or education proved difficult. Few significant differences were found. This could have been due to the small sample size which resulted in a margin of error of +/- 10%; with this sample size it is not possible to find small differences. Large effects were identified with the sample of 100; for a detailed look at finer differences among Albertans, a larger sample would be recommended.

For example, a sample size of 400 would provide a margin of error of approximately +/- 5% and a sample size of 1000 would provide a margin of error of approximately +/- 3%. Both of these levels are commonly used in research. If your goal is to find smaller, subtler differences in the knowledge, attitudes and behaviour of Albertans, then a larger sample is needed.

The sample focused on geographic distribution and also recruited men and women equally (with only three gender differences as noted in the body of the report). The age range of the sample included few respondents under the age of 39. In order to reflect the literacy levels of younger Albertans, it is recommended that this assessment tool be used to survey those 18 to 39. Using the assessment tool without changing the questions would allow the Water Literacy Project Team to assess the views of younger respondents and compare them to the older respondents featured in the current survey. It is recommended that this be accomplished soon to keep the time frames comparable.

Participants may be recruited in various ways. Some researchers have found that advertisements placed in publications such as “The Coffee News” and community newspapers have obtained good responses. Recruiting at events through a dedicated booth or advertising the survey as part of an existing booth has been effective. Discussing the survey and asking for participants on local radio shows, such as noon call-in shows has been effective. The key is to determine the demographic you want to recruit and to find an event or medium that attracts that group. Conducting the survey online and using social media to draw attention to it can be an effective way to attract a younger demographic. Of course, professional market research firms, such as Banister Research & Consulting Inc. could obtain the sample you desire with minimal effort from the Water Literacy Project Team (or other authorised groups using this assessment tool).

The current assessment tool is quite long. It was constructed in such a way that it could be administered in pieces, *i.e.*, a group interested in literacy around lake management could ask those questions plus demographics. At an event where people pass by (*i.e.*, The Calgary Stampede), the survey could be cut into its constituent parts and rotated through participants to increase participation and reduce quitting partway through (collecting demographic information on each participant).

The assessment tool has been provided in a paper format and a telephone format. The online format would follow the paper format (but would need to be entered into the online survey program being used to administer and record the survey). Demographic measures could be added or removed as desired.

A separate Excel file containing the data has been forwarded to the Project Team. In order to be compliant with current ethical standards, it is recommended that this file be securely stored and accessed only by those authorised to handle the data associated with this project. The file should be destroyed when it is no longer needed for further analysis. It is also noted that there is no information in the file that could identify individual participants.

### Appendix A

#### Disclaimer to accompany Water Literacy Assessment Tool



The Alberta Water Council (AWC) developed this tool to assess the state of some aspects of water literacy levels of some Albertans at a particular point in time. Other groups are welcome to use the assessment tool, however the tool is only intended to be used for informational purposes. The tool is not meant to be exhaustive in the topics it covers, nor is it intended to provide insights beyond the specific questions it poses. The AWC does not assure that the tool will provide meaningful results. Groups or individuals are welcome to use this assessment tool to gather information, with the understanding that the AWC takes no responsibility for the information gathered or conclusions drawn from its use. Groups using the tool must ensure they are following laws regarding freedom of information and personal privacy.

## Appendix B

### Water Literacy Assessment Tool



Welcome to the Alberta Water Survey. The Alberta Water Council (AWC) is a not-for-profit society, multi-stakeholder partnership with 24 Members from governments, industry, and non-government organizations. Its primary task is to champion achievement of the three goals of Alberta’s “Water for Life” strategy: safe secure drinking water supply, healthy aquatic ecosystems, and reliable quality water supplies for a sustainable economy. The AWC is interested in Albertan’s current level of knowledge, attitudes and actions concerning water. In order to find out more about what Albertan’s think, we are asking a wide range of people for their opinions.

This survey is voluntary and your answers will remain anonymous and confidential – all information will be used in summary form only. Answering the survey should take about 15 minutes of your time. Findings from this survey will help the AWC and its partners provide better educational programs and information about water in the future. For more information about the AWC, its partners, and its projects, see [www.awchome.ca](http://www.awchome.ca).

**Please mark the answers that best reflect your opinions.**

**The first 6 questions are about lakes.**

1. In comparison to other provinces like British Columbia and Ontario, Alberta has a(n) \_\_\_\_\_ number of recreational lakes.  
 Lower                       Equal                       Higher                       Don’t know
2. Many of Alberta’s lakes are naturally shallow and rich in plant nutrients which make them more likely to have algae blooms.  
 True                       False                       Don’t know
3. I know that the health of Alberta lakes is affected by the following human activities that occur on the lakes or in the watersheds that surround them (choose all that apply):  
 Urban development                       Septic system draining area  
 Recreational activities                       Removal of shoreline plants  
 Land uses such as agriculture or industry                       None of the above  
 Other \_\_\_\_\_
4. Who, among the following, should have the most responsibility for ensuring Alberta lakes are healthy (choose your top answer).  
 Government of Alberta                       Municipal governments                       Lakefront land owners  
 All Albertans                       Industry                       Other \_\_\_\_\_

5. Whether or not you own lakeshore property, which of the following activities could you personally do to help protect our lakes? (Choose all that apply.)

- Wash my car or boat at a carwash – not in my driveway or close to a lake
- Reduce or eliminate my use of fertilizers, herbicides and pesticides
- Find information about my local lake such as ways to protect it
- Speak to an elected official about the health of Alberta’s lakes
- Participate in a shoreline clean up or other lake event
- Join a cottagers or lake stewardship group
- Maintain my septic system
- Clean, drain and dry boats, boots and waders when moving between bodies of water
- Never dump my bait bucket when fishing.
- Plant or leave native plants intact on my lakeshore property
- None of these activities apply to me
- Other \_\_\_\_\_

6. Whether or not you own lakeshore property, which of the following activities to improve lake health have you done in the last 12 months? (Choose all that apply.)

- I have washed my car or boat at a carwash – not in my driveway or close to a lake
- I have reduced or eliminated my use of fertilizers, herbicides and pesticides
- I have found information about my local lake and ways to protect it
- I have spoken to an elected official about the health of Alberta’s lakes.
- I have participated in a shoreline clean up or other lake event
- I have joined a cottagers or lake stewardship group
- I have had maintenance done on my septic system
- I have cleaned, drained, and dried boats, boots and waders when moving between bodies of water
- I have not dumped my bait bucket when fishing
- I have planted or left native plants intact on my lake property to improve the shoreline
- I have not been to a lake or owned a lake cottage in the last 12 months
- None of these activities apply to me
- I have not yet done any of these activities
- Other action \_\_\_\_\_

**This section asks about wetlands.**

7. Which of the following are types of wetlands? (Choose all that apply.)

- Bogs       Fens       Marshes       Swamps       Shallow open water  
 None of the above       Don't know       Other \_\_\_\_\_

8. I am aware that wetlands are important for the following reasons (choose all that apply):

- Wetlands are a component of our watersheds  
 Wetlands play a role in maintaining water quality and water quantity  
 Wetlands provide habitat for many species (biodiversity)  
 Wetlands remove and store greenhouse gases from the atmosphere  
 None of the above  
 Other \_\_\_\_\_

9. I know that the health of wetlands is affected by the following human activities that occur on the wetlands or in the uplands that surround them (choose all that apply):

- Land uses such as agriculture and industry       Urban development  
 Recreational activities       None of the above  
 Don't know       Other \_\_\_\_\_

10. Any activity that will result in the loss of wetland area (such as draining for agricultural, industrial or residential use) in Alberta must first be authorized by the Government of Alberta.

- True       False       Don't know

11. I believe wetlands (choose all that apply):

- Have underlying essential value as beautiful natural places  
 Provide social and/or economic benefit to all Albertans  
 Are in danger of being lost, which could have negative results for future generations  
 Are a critical ecosystem element to lessen the impact of floods and drought, and provide plant and animal habitat  
 Should be managed to ensure they are healthy and enjoyable for current and future generations  
 Have no value  
 Other \_\_\_\_\_

12. Which of the following wetlands activities have you done in the last 12 months? (Choose all that apply.)

- I have explored a wetland.  
 I have participated in an initiative to conserve or restore a wetland.  
 I have spoken to a government or elected official about wetlands or wetland conservation.  
 I have spoken to a consumer advocacy or industry group about wetlands or wetland conservation  
 None of these activities apply to me  
 I have not yet done any of these activities  
 Other action \_\_\_\_\_

**The next 6 questions are about watershed management.**

13. A watershed (or drainage basin) includes all of the land that water flows across as it drains toward a common body of water, such as a stream, river, lake or coast. Do you live in a watershed?

- No (skip to 15)       Yes       Don't know (skip to 15)

14. I know which watershed I live in.

- No       Yes

15. I know what a Watershed Planning and Advisory Council (WPAC) is.

- No (skip to 17)       Yes

16. In Alberta, there are eleven WPAC's representing the major river basins. Do you know the name of your Watershed Planning and Advisory Council (WPAC)?

- Name \_\_\_\_\_  Don't know

17. I believe Alberta watersheds provide multiple social, economic and environmental benefits that should be managed and maintained for current and future generations.

- Strongly disagree    Disagree    Neither agree nor disagree    Agree    Strongly agree    Don't know

18. Which of the following watershed management activities have you done in the last 12 months? (Choose all that apply.)

- I have discussed watershed issues with a neighbor, friend, or co-worker.
- I have discussed watershed issues with a municipal staff person or elected official.
- I have discussed watershed issues with a watershed group.
- I have discussed watershed issues with the Provincial Government.
- I have participated in a watershed stewardship event.
- I have attended a WPAC (Watershed Planning and Advisory Council) meeting
- I have discussed watershed issues with a consumer advocacy or industry group.
- None of these activities apply to me
- I have not yet done any of these activities
- Other action \_\_\_\_\_

**This section asks about water supply & allocation.**

19. Given our climate and geography, water is not always available in the right amount at the right time in some communities or for some users in Alberta.
- True                       False                       Don't know
20. All naturally occurring water in Alberta belongs to the Crown (Government of Alberta).
- True                       False                       Don't know
21. Water diversion is removing water from rivers, lakes and wetlands for various purposes. With the exception of small volumes for households and traditional agricultural uses, all water diversion in Alberta requires a license issued by the Government of Alberta.
- True                       False                       Don't know
22. I believe the Government of Alberta manages and allocates our available water supply effectively and fairly to meet a variety of social, economic and ecological needs.
- Strongly disagree    Disagree    Neither agree nor disagree    Agree    Strongly agree    Don't know
- 
23. Data and information about Alberta's water supply is easily available to the public.
- Strongly disagree    Disagree    Neither agree nor disagree    Agree    Strongly agree    Don't know
- 
24. I am concerned about water scarcity in the future due to the following (choose all that apply):
- Climate change                       Water use by industry
- Water use by agriculture                       Water use by municipalities/ communities
- Water use by households                       I am not concerned about water scarcity in the future
25. Which of the following water management supply and allocation activities have you done in the last 12 months? (Choose all that apply.)
- I have participated in water management discussions with an elected municipal official
- I have participated in water management discussions with a WPAC (Watershed Planning and Advisory Council)
- I have participated in water management discussions with the Provincial Government
- I have discussed water management issues with a consumer advocacy or industry group.
- None of these activities apply to me
- I have not yet done any of these activities
- Other action \_\_\_\_\_

**The next 2 questions are about sector water use.**

26. Many sectors require water in different amounts for different purposes. Who or what sector do you believe uses the most water in Alberta (choose one):

- Irrigation  Commercial (e.g. golf courses)  
 Cooling for thermal power generation  Households  
 Oil and gas

27. I believe that all water users (including residential water users) should have to conserve water.

- Strongly disagree  Disagree  Neither agree nor disagree  Agree  Strongly agree

**This section asks about drinking water, wastewater & groundwater.**

28. My drinking water comes from the following sources (choose all that apply):

- Lakes  Groundwater  None of these  I don't know  
 Rivers  Glaciers/snowmelt  Other \_\_\_\_\_

29. I am aware of where/how my wastewater and stormwater are returned to surface water sources (such as a river).

- Not at all aware  Slightly aware  Somewhat aware  Moderately aware  Extremely aware

30. Which of the following statements do you believe to be true about Alberta groundwater (underground water found in the aquifer)? (Choose all that are true.)

- Groundwater is found in massive open spaces below the surface of the earth  
 Groundwater is found in underground rivers  
 Groundwater fills the tiny spaces between particles of soil, rock and gravel under the surface of the earth  
 Moving underground water can take days, weeks or hundreds of years to reach the surface of the earth  
 None of the above  
 Don't know

31. Groundwater (underground water found in the aquifer) is a source of drinking water for many rural households in Alberta.

- True  False  Don't know

32. A portion of municipal/community expenses go to collecting, treating and distributing water, wastewater, and stormwater.

- True  False  Don't know

33. Pollutants such as soap, chemicals, litter, feces, and car fluids entering our storm drains can pose a threat to our drinking water.

- True                       False                       Don't know

34. I believe my local government makes good decisions about investing in drinking water, wastewater and stormwater systems.

- Strongly disagree    Disagree    Neither agree nor disagree    Agree    Strongly agree    Don't know

35. I believe my municipality/community should charge users the full cost of water, wastewater and stormwater services they use.

- Strongly disagree    Disagree    Neither agree nor disagree    Agree    Strongly agree    Don't know

36. I believe the biggest threat of contamination to Alberta's groundwater is (choose one):

- Overuse and depletion                       Hydraulic fracturing (fracking)  
 Nitrates (fertilizers)                       Pharmaceuticals (medications)  
 None of the above                       Other \_\_\_\_\_

37. I am confident I can access information about, and calculate or determine how much water I use.

- Very                      Somewhat                      Neither unconfident                      Somewhat                      Very  
unconfident                      unconfident                      Nor confident                      confident                      confident

38. I am confident I can find out more about my community's drinking water, wastewater and stormwater systems.

- Very                      Somewhat                      Neither unconfident                      Somewhat                      Very  
unconfident                      unconfident                      Nor confident                      confident                      confident

39. I am confident I have the skills to reduce my water usage.

- Very                      Somewhat                      Neither unconfident                      Somewhat                      Very  
unconfident                      unconfident                      Nor confident                      confident                      confident

40. Which of the following drinking water, wastewater and stormwater activities have you done? (Choose all that apply.)

- There are low-flush toilets installed in my home or business.
- I own at least one water efficient appliance.
- I use a timer when brushing my teeth or taking a shower.
- I often check for leaky pipes and faucets around my home or business and try to get them repaired as soon as possible.
- At my home I use a rain barrel to collect extra water.
- When cleaning my bathroom or kitchen, I use environmentally friendly or 'green' cleaning products instead of harsh chemicals.
- I do not pour cooking fats, oils, and greases down the drain.
- I do not put items like diapers, cigarettes, feminine hygiene products, paint thinners, wrappings, or containers down sinks and toilets.
- I do not flush unused or expired medicine down the toilet or sink.
- I do not release aquarium fish or plants into any body of water.
- I wash my car at a carwash and not on my driveway.
- I have taken actions to reduce my impact on wastewater and stormwater systems in the last 12 months.
- I have participated in a municipal/community discussion about our local water systems in the last 12 months.
- I have disinfected my groundwater well.
- None of these activities apply to me
- I have not yet done any of these activities
- Other action \_\_\_\_\_

**The following questions are for classification purposes only.**

41. In what year were you born? \_\_\_\_\_

42. Are you . . . ?       Male                       Female

43. Do you have any children under the age of 18 in your household?

- No                       Yes

44. What is the highest level of education you have completed?

- High school or less                       University  
 Technical training or college                       Post graduate studies

45. In which of the following locations do you live?

- Edmonton                       Other cities \_\_\_\_\_  
 Calgary                       Rural Alberta

**Thank you for choosing to participate in this survey, we know your time is valuable.**

## Appendix C

### Telephone version of Assessment Tool



Hello, my name is \_\_\_\_\_. I'm calling from \_\_\_\_\_.  
Today, we are conducting a survey on behalf of the Alberta Water Council. The Alberta Water Council (AWC) is a not-for-profit society, multi-stakeholder partnership with 24 Members from governments, industry, and non-government organizations.

Please be assured that all your responses are confidential, and you will not be personally identified. Your input is extremely valuable in helping the AWC understand Albertan's current level of knowledge, attitudes and actions concerning water. In

order to find out more about what Albertan's think, we are asking a wide range of people for their opinions. Answering the survey should take about 15 minutes of your time.

Do you have 15 minutes to complete this survey?

- Yes [**CONTINUE**]  
 No [**THANK AND TERMINATE**]

**The first 6 questions are about lakes.**

1. In comparison to other provinces like British Columbia and Ontario, would you say Alberta has a lower, equal or higher number of recreational lakes.  
 Lower       Equal       Higher       Don't know
2. Please indicate whether you think the following statement is true or false: "Many of Alberta's lakes are naturally shallow and rich in plant nutrients which make them more likely to have algae blooms."  
 True       False       Don't know
3. Which of the following human activities that occur on the lakes or in the watersheds that surround them do you think affects the health of Alberta lakes (Read List - choose all that apply):  
 Urban development       Septic system draining area  
 Recreational activities       Removal of shoreline plants  
 Land uses such as agriculture or industry       None of the above  
 Other \_\_\_\_\_
4. Who, among the following, should have the most responsibility for ensuring Alberta lakes are healthy (Read List – choose only one answer).  
 Government of Alberta       Municipal governments       Lakefront land owners  
 All Albertans       Industry       Other \_\_\_\_\_

5. Whether or not you own lakeshore property, which of the following activities could you personally do to help protect our lakes? (Read List - Choose all that apply.)

- Wash my car or boat at a carwash – not in my driveway or close to a lake
- Reduce or eliminate my use of fertilizers, herbicides and pesticides
- Find information about my local lake such as ways to protect it
- Speak to an elected official about the health of Alberta’s lakes
- Participate in a shoreline clean up or other lake event
- Join a cottagers or lake stewardship group
- Maintain my septic system
- Clean, drain and dry boats, boots and waders when moving between bodies of water
- Never dump my bait bucket when fishing.
- Plant or leave native plants intact on my lakeshore property
- None of these activities apply to me
- Other \_\_\_\_\_

6. Whether or not you own lakeshore property, which of the following activities to improve lake health have you done in the last 12 months? (Read List - Choose all that apply.)

- I have washed my car or boat at a carwash – not in my driveway or close to a lake
- I have reduced or eliminated my use of fertilizers, herbicides and pesticides
- I have found information about my local lake and ways to protect it
- I have spoken to an elected official about the health of Alberta’s lakes.
- I have participated in a shoreline clean up or other lake event
- I have joined a cottagers or lake stewardship group
- I have had maintenance done on my septic system
- I have cleaned, drained, and dried boats, boots and waders when moving between bodies of water
- I have not dumped my bait bucket when fishing
- I have planted or left native plants intact on my lake property to improve the shoreline
- I have not been to a lake or owned a lake cottage in the last 12 months
- None of these activities apply to me
- I have not yet done any of these activities
- Other action \_\_\_\_\_

**The next section asks about wetlands.**

7. Which of the following are types of wetlands? (Read List - Choose all that apply.)
- Bogs       Fens       Marshes       Swamps       Shallow open water  
 None of the above       Don't know       Other \_\_\_\_\_
8. Which of the following reasons are you aware of that make wetlands important (Read List - choose all that apply):
- Wetlands are a component of our watersheds  
 Wetlands play a role in maintaining water quality and water quantity  
 Wetlands provide habitat for many species (biodiversity)  
 Wetlands remove and store greenhouse gases from the atmosphere  
 None of the above  
 Other \_\_\_\_\_
9. Which of the following human activities that occur on the wetlands or in the uplands that surround them do you know affects the health of wetlands (Read List - choose all that apply):
- Land uses such as agriculture and industry       Urban development  
 Recreational activities       None of the above  
 Don't know       Other \_\_\_\_\_
10. Please indicate whether you think the following statement is true or false: "Any activity that will result in the loss of wetland area (such as draining for agricultural, industrial or residential use) in Alberta must first be authorized by the Government of Alberta."
- True       False       Don't know
11. Do you believe wetlands \_\_\_\_\_ (Read list - choose all that apply):
- Have underlying essential value as beautiful natural places  
 Provide social and/or economic benefit to all Albertans  
 Are in danger of being lost, which could have negative results for future generations  
 Are a critical ecosystem element to lessen the impact of floods and drought, and provide plant and animal habitat  
 Should be managed to ensure they are healthy and enjoyable for current and future generations  
 Have no value  
 Other \_\_\_\_\_
12. Which of the following wetlands activities have you done in the last 12 months? (Choose all that apply.)
- I have explored a wetland.  
 I have participated in an initiative to conserve or restore a wetland.  
 I have spoken to a government or elected official about wetlands or wetland conservation.  
 I have spoken to a consumer advocacy or industry group about wetlands or wetland conservation  
 None of these activities apply to me  
 I have not yet done any of these activities  
 Other action \_\_\_\_\_

**The next 6 questions are about watershed management.**

13. A watershed (or drainage basin) includes all of the land where water flows/drains across as it drains toward a common body of water, such as a stream, river, lake or coast. Do you live in a watershed?  
 No (skip to 15)       Yes       Don't know (skip to 15)
14. Do you know which watershed you live in?  
 No       Yes
15. Do you know what a Watershed Planning and Advisory Council (WPAC) is?  
 No (skip to 17)       Yes
16. In Alberta, there are eleven WPAC's representing the major river basins. Do you know the name of your Watershed Planning and Advisory Council (WPAC)?  
Name \_\_\_\_\_  Don't know
17. Please rate your level of agreement with the following statement "I believe Alberta watersheds provide multiple social, economic and environmental benefits that should be managed and maintained for current and future generations." Do you \_\_\_\_\_ (Read list)?  
Strongly disagree    Disagree    Neither agree nor disagree    Agree    Strongly agree    Don't know
- 17a. **[IF Q17=Strongly disagree OR Disagree Or Neither agree nor disagree; ASK]** Why did you provide that rating? \_\_\_\_\_ **[RECORD VERBATIM]**
18. Which of the following watershed management activities have you done in the last 12 months? (Choose all that apply.)  
 I have discussed watershed issues with a neighbor, friend, or co-worker.  
 I have discussed watershed issues with a municipal staff person or elected official.  
 I have discussed watershed issues with a watershed group.  
 I have discussed watershed issues with the Provincial Government.  
 I have participated in a watershed stewardship event.  
 I have attended a WPAC (Watershed Planning and Advisory Council) meeting  
 I have discussed watershed issues with a consumer advocacy or industry group.  
 None of these activities apply to me  
 I have not yet done any of these activities  
 Other action \_\_\_\_\_

**The next section asks about water supply & allocation.**

19. Please indicate whether you think the following statement is true or false: "Given our climate and geography, water is not always available in the right amount at the right time in some communities or for some users in Alberta."  
 True       False       Don't know

20. Please indicate whether you think the following statement is true or false: “All naturally occurring water in Alberta belongs to the Crown (Government of Alberta).”
- True                       False                       Don't know
21. Please indicate whether you think the following statement is true or false: “Water diversion is removing water from rivers, lakes and wetlands for various purposes. With the exception of small volumes for households and traditional agricultural uses, all water diversion in Alberta requires a license issued by the Government of Alberta.”
- True                       False                       Don't know
22. Please rate your level of agreement with the following statement “I believe the Government of Alberta manages and allocates our available water supply effectively and fairly to meet a variety of social, economic and ecological needs.” Do you \_\_\_\_\_? (Read list)
- Strongly disagree    Disagree    Neither agree nor disagree    Agree    Strongly agree    Don't know
- 
23. Please rate your level of agreement with the following statement “Data and information about Alberta’s water supply is easily available to the public.” Do you \_\_\_\_\_? (Read list)
- Strongly disagree    Disagree    Neither agree nor disagree    Agree    Strongly agree    Don't know
- 
24. Which of the following reasons make you concerned about water scarcity in the future (Read list - choose all that apply):
- Climate change                       Water use by industry
- Water use by agriculture                       Water use by municipalities/ communities
- Water use by households                       I am not concerned about water scarcity in the future
25. Which of the following water management supply and allocation activities have you done in the last 12 months? (Choose all that apply.)
- I have participated in water management discussions with an elected municipal official
- I have participated in water management discussions with a WPAC (Watershed Planning and Advisory Council)
- I have participated in water management discussions with the Provincial Government
- I have discussed water management issues with a consumer advocacy or industry group.
- None of these activities apply to me
- I have not yet done any of these activities
- Other action \_\_\_\_\_

**The next 2 questions are about sector water use.**

26. Many sectors require water in different amounts for different purposes. Who or what sector do you believe uses the most water in Alberta (Read list - choose one):

- Irrigation  Commercial (e.g. golf courses)  
 Cooling for thermal power generation  Households  
 Oil and gas

27. Please rate your level of agreement with the following statement “I believe that all water users (including residential water users) should have to conserve water.” Do you \_\_\_\_\_? (Read list)

- Strongly disagree  Disagree  Neither agree nor disagree  Agree  Strongly agree

**This section asks about drinking water, wastewater & groundwater.**

28. From which of the following sources does your drinking water come (Read list - choose all that apply):

- Lakes  Groundwater  None of these  I don't know  
 Rivers  Glaciers/snowmelt  Other \_\_\_\_\_

29. Please rate your level of awareness of where/how your wastewater and stormwater are returned to surface water sources (such as a river). Are you \_\_\_\_\_? (Read list)

- Not at all aware  Slightly aware  Somewhat aware  Moderately aware  Extremely aware

30. Which of the following statements do you believe to be true about Alberta groundwater (underground water found in the aquifer)? (Choose all that are true.)

- Groundwater is found in massive open spaces below the surface of the earth  
 Groundwater is found in underground rivers  
 Groundwater fills the tiny spaces between particles of soil, rock and gravel under the surface of the earth  
 Moving underground water can take days, weeks or hundreds of years to reach the surface of the earth  
 None of the above  
 Don't know

31. Please indicate whether you think the following statement is true or false: “Groundwater (underground water found in the aquifer) is a source of drinking water for many rural households in Alberta.”

- True  False  Don't know

32. Please indicate whether you think the following statement is true or false: "A portion of municipal/community expenses go to collecting, treating and distributing water, wastewater, and stormwater."

- True                       False                       Don't know

33. Please indicate whether you think the following statement is true or false: "Pollutants such as soap, chemicals, litter, feces, and car fluids entering our storm drains can pose a threat to our drinking water."

- True                       False                       Don't know

34. Please rate your level of agreement with the following statement "I believe my local government makes good decisions about investing in drinking water, wastewater and stormwater systems." Do you \_\_\_\_\_? (Read list)

- Strongly disagree    Disagree    Neither agree nor disagree    Agree    Strongly agree    Don't know

35. Please rate your level of agreement with the following statement "I believe my municipality/community should charge users the full cost of water, wastewater and stormwater services they use. Do you \_\_\_\_\_? (Read list)

- Strongly disagree    Disagree    Neither agree nor disagree    Agree    Strongly agree    Don't know

36. Which of the following do you believe to be the biggest threat of contamination to Alberta's groundwater? (Read list - choose one):

- Overuse and depletion                       Hydraulic fracturing (fracking)  
 Nitrates (fertilizers)                       Pharmaceuticals (medications)  
 None of the above                       Other \_\_\_\_\_

37. Please rate your confidence level in accessing information about, and calculating or determining, how much water you use. Would you say you are \_\_\_\_\_? (Read list)

- Very                      Somewhat                      Neither unconfident                      Somewhat                      Very  
unconfident                      unconfident                      Nor confident                      confident                      confident

38. Please rate your confidence level in find in out more about your community's drinking water, wastewater and stormwater systems. Would you say you are \_\_\_\_\_? (Read list)

- Very                      Somewhat                      Neither unconfident                      Somewhat                      Very  
unconfident                      unconfident                      Nor confident                      confident                      confident

39. Please rate your confidence level in having the skills to reduce your water usage. Would you say you are \_\_\_\_\_? (Read list)

Very unconfident	Somewhat unconfident	Neither unconfident Nor confident	Somewhat confident	Very confident
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

40. Which of the following drinking water, wastewater and stormwater activities have you done? (Choose all that apply.)

- There are low-flush toilets installed in my home or business.
- I own at least one water efficient appliance.
- I use a timer when brushing my teeth or taking a shower.
- I often check for leaky pipes and faucets around my home or business and try to get them repaired as soon as possible.
- At my home I use a rain barrel to collect extra water.
- When cleaning my bathroom or kitchen, I use environmentally friendly or 'green' cleaning products instead of harsh chemicals.
- I do not pour cooking fats, oils, and greases down the drain.
- I do not put items like diapers, cigarettes, feminine hygiene products, paint thinners, wrappings, or containers down sinks and toilets.
- I do not flush unused or expired medicine down the toilet or sink.
- I do not release aquarium fish or plants into any body of water.
- I wash my car at a carwash and not on my driveway.
- I have taken actions to reduce my impact on wastewater and stormwater systems in the last 12 months.
- I have participated in a municipal/community discussion about our local water systems in the last 12 months.
- I have disinfected my groundwater well.
- None of these activities apply to me
- I have not yet done any of these activities
- Other action \_\_\_\_\_

**The following questions are for classification purposes only.**

41. In what year were you born? \_\_\_\_\_

42. Are you . . . ?       Male                       Female

43. Do you have any children under the age of 18 in your household?  
 No                       Yes

44. What is the highest level of education you have completed?  
 High school or less                       University  
 Technical training or college                       Post graduate studies

45. In which of the following locations do you live?

- Edmonton       Other cities; please specify: \_\_\_\_\_  
 Calgary       Rural Alberta; please specify: \_\_\_\_\_

46. Do you live North or South of Red Deer?

- North of Red Deer       I live in Red Deer  
 South of Red Deer

47. What is the first three digits of your postal code?

\_\_\_\_ **RECORD VERBATIM**

**Thank you for choosing to participate in this survey, we know your time is valuable.**

**Appendix D**  
**“Other” Responses**

<p>Question 3</p> <p>Which of the following human activities that occur on the lakes or in the watersheds that surround them do you think affects the health of Alberta lakes?</p>
<p>aerial spraying, aviation pollution, airplanes  commercial fishing  Factories  Global warming,  mother nature, lack of rain  oil and gas  Pollution in general  possible oil spills  Rainfall levels and or snowpack.  Tar sands messing up watershed, industrial leaks, natural sewer water draining into the lakes</p>
<p>Question 4</p> <p>Who should have the most responsibility for ensuring Alberta lakes are healthy?</p>
<p>all  All Canadians, also immigrants in Canada  All levels of government and the people themselves  depends on who owned the lake  Environmental groups  province of Alberta  Provincial and federal government</p>
<p>Question 5</p> <p>Whether or not you own lakeshore property, which of the following activities could you personally do to help protect our lakes?</p>
<p>Boat inspections on highways  Conscious about amount of water used, use of rain barrel, use one bucket to wash my car, nothing goes into the sewer system when washing car  Don't dump garbage or litter. Keep garbage contained. Don't flick things into lake.  don't litter and throw debris in lakes, and always take garbage with you  Get schools involved and future generations, pick up after your animals feces, no littering,  If something came to my attention, I would do it. Talking to local officials about septic systems being properly installed and maintained  no littering  Reduce water consumption</p>
<p>Question 6</p> <p>Whether or not you own lakeshore property, which of the following activities to improve lake health have you done in the last 12 months?</p>
<p>donated to ducks unlimited</p>

## Appendix D Continued

### “Other” Responses

<p>Question 7</p> <p>Which of the following are types of wetlands?</p>
<p>all of them</p> <p>all the above</p> <p>Bodies of water around other bodies of water, bogs and lots of plants</p> <p>dugout</p> <p>Muskeg</p> <p>Permafrost in Northern Canada</p> <p>Tributaries</p>
<p>Question 8</p> <p>Which of the following reasons are you aware of that make wetlands important?</p>
<p>Provide recreation area</p> <p>They are beautiful and natural</p> <p>Water filtration</p>
<p>Question 9</p> <p>Which of the following human activities that occur on the wetlands or in the uplands that surround them do you know affects the health of wetlands?</p>
<p>agricultural pesticides and fertilizers</p> <p>Contour land draining</p> <p>Dumping into our water</p> <p>General pollution - both pharmaceutical, industrial and personal</p> <p>Human dumping</p> <p>Industry</p> <p>things that happening naturally in our environment such as storms, weather conditions</p> <p>Use of pesticides</p>
<p>Question 11</p> <p>Do you believe wetlands _____</p>
<p>All of the above bad idea to drain them.</p> <p>corporate companies claim that fracking is NOT damaging, but it is, and not owning up to it--agricultural herbicides are toxic and are denying it</p> <p>Essential to consider all elements in our natural habitat</p> <p>I believe wetlands should be protected from urban sprawl.</p> <p>If wetlands have value, then farmers that protect them should be compensated.</p> <p>Some are on farmland and is the responsibility of the farmer</p> <p>would like to see the Government take a more active role to take more seriously</p>

## Appendix D Continued

### “Other Responses”

<p>Question 12</p> <p>Which of the following wetlands activities have you done in the last 12 months?</p>
<p>I participate with trout unlimited I've tried to talk to people about balance and menace about the landscape. like to see more public awareness in the cities</p>
<p>Question 16</p> <p>Do you know the name of your WPAC?</p>
<p>Battle River Bow River Camrose county It has different names Old Man Watershed Council Peace River Swan River Tolman</p>
<p>Question 18</p> <p>Which of the following watershed management activities have you done in the last 12 months?</p>
<p>gave money to Ducks Unlimited I participated in a water quality study. Water sniffing for a period of months to check the quality for Edmontonians to use.</p>
<p>Question 25</p> <p>Which of the following water management supply and allocation activities have you done in the last 12 months?</p>
<p>conserving water in condo I conserve water, read water meter, read government literature and follow their tips I try to talk to all of the above. Alberta dependent on rainfall Only personally with my water barrel in my own garden With coworkers</p>
<p>Question 28</p> <p>From which of the following sources does your drinking water come</p>
<p>natural spring natural springs rain rainwater, streams, and creeks reservoir wells</p>

## Appendix D Continued

### “Other Responses”

Question 36
Which of the following do you believe to be the biggest threat of contamination to Alberta's groundwater?
All All of the above apply equally All of the above- can't single one out All of them choice 2 and 3 are about even Climate change Industry oil & gas oil industry and leaks that go on People pesticides and fertilizers, herbicides and nitrates
Question 40
Which of the following drinking water, wastewater and stormwater activities have you done?
Don't flush the toilets a lot. general conservation of water overall I do not water my lawn. I have complained to anyone who will listen. I would like to see the government subsidize a two-flush system on residential toilets for solids and liquid waste. try to make people more aware of better ways to conserve our water Use as little water as possible; ex. using a broom on the sidewalk instead of a hose, take a bath every other day We have had our septic tanks thoroughly cleaned, vacuumed out Twice