

12-2015

# Development of Survey Tool to Evaluate Behavior and Educational Tools Affecting Water Health in Lewiston and Auburn Communities

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## Recommended Citation

Griffin, Caitrin; Jessup, Clara; Dunn, Julia; and Dube, Phillip, "Development of Survey Tool to Evaluate Behavior and Educational Tools Affecting Water Health in Lewiston and Auburn Communities" (2015). *Community Engaged Research Reports*. 26.  
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# Development of Survey Tool to Evaluate Behavior and Educational Materials Affecting Water Health in Lewiston and Auburn Communities

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In collaboration with the City of Lewiston (ME), City of Auburn (ME), and Woodward and Curran Inc.

Fall 2015

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# I. MS4 Stormwater BMP Adoption Plan Compliance Objective

The Androscoggin Valley Stormwater Group (AVSWG) has been tasked with the objective of inducing a reduction or elimination of fertilizers and/or pesticides for 15% of college educated residents between the ages of 35-55 in the cities of Lewiston and Auburn by June, 2018. This demographic was chosen as the target of the outreach program because of their financial stability and their relative willingness to change behavior when compared to other age groups.

We produced a survey that targets this same demographic and is meant to evaluate the effectiveness of the AVSWG education outreach program. This deliverable fits into Permit Year 3 of the BMP Adoption Plan. Additionally, we have offered informal evaluation of the BMP adoption plan activities and materials through this tool and through critical evaluation, which also fulfills a compliance task in Permit Year 3.

## II. Survey Building Resources

Through research we gathered previously implemented surveys that had been administered within the United States. The Environmental Protection Agency (EPA) provided an abundance of surveys and evaluations that focused on assessing public interest and outreach programs regarding water health and pollution issues.<sup>1</sup> This diverse list of surveys allowed us to gather initial key characteristics to include while constructing our survey. We constructed a list of crucial attributes to build a survey that consisted of format, length, types of questions, survey mode, awareness of bias/lead in questions, and initial consent from the participant.

With this gathered information we conducted further research, which allowed us to carry out cross critical analysis. The three surveys that were the most useful were the *Non-Point*

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<sup>1</sup>Environmental Protection Agency (EPA). "Surveys & Evaluations". Accessed from: <http://cfpub.epa.gov/npstbx/Surveys.cfm>

*Source Pollution Communication Survey Final Report: Cities of Auburn and Lewiston and Town of Sabattus*<sup>2</sup>, the *New Hampshire Survey Center Phone Survey (2013)*<sup>3</sup>, and the *Durham Fertilizer Written Survey*<sup>4</sup>. These sources were particularly helpful given they were conducted in various modes and on subjects on, similar, or connected to stormwater pollution.

We used the *Non-Point Source Pollution Communication Survey Final Report: Cities of Auburn and Lewiston and Town of Sabattus*, provided by our community partners, as our baseline survey. This report consisted of a previously conducted survey in the Lewiston and Auburn communities that evaluated public outreach regarding water pollution and stormwater issues. The report included results, how it was implemented, and analysis of their surveying processes. Having access to this critically analyzed data allowed us to recognize weaknesses and ineffective parts and practices of their survey. For example, the survey was implemented using two different modes: intercept and online. However, both proved to be incredibly ineffective. While intercept surveys are generally ineffective, online surveys often hold a higher response rate. In this case, both were ineffective because participants were initially mailed an invitation to participate in the online survey, which proved to result in a lower response rate due to inconvenience.

The *New Hampshire Survey Center Phone Survey (2013)* consisted primarily of lawn care maintenance questions and its connection to water pollution. While the survey did consist of inapplicable questions to our survey, such as questions regarding septic system regulations and the role of state and federal regulations, most of the content of the survey was useful. We modeled some of our questions off of specific questions that fit our survey goals. Some of these consisted of opinions on the effects of lawn care maintenance on water pollution and gauging how concerned residents are about water pollution and health in their community. The *Durham Fertilizer Written Survey*, although much more specific to fertilizer use than our survey, aided us in constructing fertilizer questions appropriate for our survey.

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<sup>2</sup> Hutchins, Karen. "Non-Point Source Pollution Communication Survey Final Report: Cities of Auburn and Lewiston and Town of Sabattus". *Maine's Sustainability Solutions Initiative, University of Maine Orono*. (2013): 1-61. Web.

<sup>3</sup> New Hampshire Survey Center Phone Survey: Prep/PSU Survey Draft. (2013): 1-11. Web.

<sup>4</sup> Fleming, Morgan. "Durham Fertilizer Written Survey". *Durham County Homeowner Fertilizer Behaviors Survey: Summary and Analysis of Results*. (2013): 1-11. Web.

Further details regarding mode selection and the use of these resources to construct our specific survey questions can be found in the following sections.

### III. Survey Mode Selection

There are different ways of administering a survey, including pen-and-paper, online, telephone and in-person (intercept). Each of these survey methods has distinct characteristics, advantages, and disadvantages. There are often overlaps between the merits and demerits of each method. While deliberating on the best survey mode we considered the following factors/questions:

- Which survey method is going to yield the highest response rate?
- Which of these survey methods makes it easy for people to participate?
- Which survey method is the least expensive?

In terms of gathering and presenting data in a useful form, the online mode is the most convenient. For example, if we were to use paper-and-pencil, intercept or telephone survey modes, survey distribution would take much more time and human labor to produce significant response rates. That kind of investment did not seem consistent with the community partner's goals of making the survey administration as efficient as possible.<sup>5</sup> Comparatively, an online survey is easy to design, distribute, and analyze. Programs like Qualtrics, our recommended survey interface, offer quick template survey building tools that require no additional understanding of code or computer programming, while also analyzing all data collected from the survey participants, which streamlines the entire surveying process, increasing efficiency. Compared to the other visual mode of survey, mail, online surveys allow for quick edits in surveys, even when they are live, so mistakes can be immediately fixed, even if they are identified after the survey has been distributed. This affords more constant control and presence to survey administrators throughout the surveying process.

The drawbacks regarding the online mode are mostly tied to accessibility and consistency across browsers. Sometimes, differences in browsers change the appearance or accessibility of a survey, especially in relation to older hardware, which could limit access to newer browsers.

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<sup>5</sup>Explorable. *Online Surveys*. Accessed from: <https://explorable.com/online-surveys>

Furthermore, people with different browsers and older computer hardware might find it more challenging to access the survey and this could affect the response rate. One of the drawbacks to using the online mode is that the survey administrator can't promptly respond to questions about the survey while the survey-taking is in process, as they might be able to during a phone or intercept survey. However, survey administrators are best equipped to address questions following survey completion because of their ability to change the survey or clarify a component of the survey while the survey is still in process.

The online mode of surveying is the least time, cost, and labor intensive of all the modes. However, the telephone mode offers a cheaper option in comparison to intercept surveys when conducted on a small scale. Since our target population is most likely going to own phones, we do not have to worry about omitting those without phones if we decide to use the telephone mode. One of the disadvantages of using the telephone mode is that the survey administrator cannot use visual aids to clarify survey questions.

As we have mentioned, we recommend that our community partner administer the survey through an online platform. Since we don't have our target populations' email addresses, we recommend QR codes/short URLs distributed via mail on postcards as an alternative method to distribute the survey.<sup>6</sup> A short URL is a customized, memorable and anyone can access. Short URLs reduce the amount of typing required if the person has to input the URL into his/her web browser and they are particularly useful if one wishes to share the survey on social media sites that restrict the number of characters you can use in your post. Creating a short URL is an incredibly easy process, wherein one simply pastes their long URL into a URL converter, and may select a time period for which they want their short URL to be active. One simple source that we suggest for this process is the Google short URL converter, which can be found at this web address: <https://goo.gl/>. Additionally, there are few studies on QR codes that suggest it is an inefficient method of connecting consumers to a web address. However, Qualtrics automatically provides a QR code with each survey it produces and should therefore be considered as a method of directing participants to our survey.<sup>7</sup>

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<sup>6</sup> A link to a resource that creates QR Codes: <http://goqr.me/> & A link to a resource that creates short URLs: <http://tinyurl.com/>

<sup>7</sup> Kolowich, Lindsey. *Are QR Codes Dead?* Accessed from: <http://blog.hubspot.com/marketing/qr-codes-dead>

Our community partner has the mailing addresses of the target population, therefore, whoever administers the survey would mail postcards with a short URL and/or QR code that would connect target participants to our survey. The person who receives the postcard with the short URL and/or QR code would then be able to access the survey through their phone or computer.

In addition to these recommendations, we encountered a challenge regarding access to the Qualtrics survey. We became aware that there would need to be a liaison between our community partner and the Bates community because only members of the Bates network are allowed to access the Bates subscription to Qualtrics. Thankfully, several members of the Bates community have stepped up to assist our community partners in this way. Below, we have provided the contact information for three resources that will be available to facilitate communication between the community partner and Bates.

- Professor Kathryn Graff Low, Bates College Department of Psychology. Bates phone: 207-786-6186. Bates email: [klow@bates.edu](mailto:klow@bates.edu).
- Mr. Sam Boss, Bates College Community-Engaged Learning Program Coordinator. Bates phone: 207-786-8319. Bates email: [aboss@bates.edu](mailto:aboss@bates.edu).
- Ms. Camille Parrish, Bates College Department of Environmental Studies. Bates phone: 207-786-6464. Bates email: [cparrish@bates.edu](mailto:cparrish@bates.edu).

## IV. Survey Questions and Their Significance

This section details the significance of the 18 questions included in our finalized survey. Each question is stated with its mode and followed by an explanation of its significance and function. These questions were modeled off and developed through critical analysis of the materials that were explained in an earlier section, through collaboration with our community partners, and feedback from our unofficial and official piloted survey. These decisions were further influenced by the goals and educational materials provided by our community partners, and our target demographic. There are four major categories of questions: demographics/involvement, evaluation of educational materials, behavior, and follow up/feedback.

**Question 1:**

“Statement of Consent: This quick survey is being conducted by the cities of Lewiston and Auburn to evaluate the effectiveness of stormwater education outreach programs. You will be asked a series of questions addressing your familiarity with the education materials distributed by this program. There are no risks to participation and all responses from participants will be confidential, to the extent permitted by law. Please read the following statement of consent before continuing onto the survey.

I understand that I am free to discontinue the survey at any time without penalization. I understand that I am free to leave a question blank if I feel uncomfortable answering. I also understand that the findings of this survey will be collected and interpreted on a group basis with no identification on specific individuals. By responding “yes” below, I consent to participation in this survey.”

**Mode:** Multiple choice (“Yes” or “No”)

**Significance:** The purpose of this statement is for the participant to be fully informed and aware of the intent and function of the survey. Some sort of statement of consent for transparency was typical for nearly all of the surveys that we researched. In the survey *Non-Point Source Pollution Communication Survey Final Report: Cities of Auburn and Lewiston and Town of Sabattus*, which is detailed in an earlier section, it dedicates a page of briefing in order for the participant to understand the circumstances of the survey, including the possible risks and benefits. With a recommendation from Professor Low we converted this briefing section into an abbreviated statement of consent.

**Question 2:**

“Are you a resident of Lewiston or Auburn?”

**Mode:** Multiple choice (“Yes” or “No”)

**Significance:** This question is necessary in order to ensure that the survey is reaching the target demographic it seeks to engage. In our official pilot survey this proved as an effective tool to sort out people who were not actually residents of Lewiston or Auburn. This will be helpful to avoid any data received through a distribution error when the survey is administered. This type of question is similar to many of the other surveys we analyzed, including the *New Hampshire Survey Center Phone Survey (2013)*.

**Question 3:**

“What is your age?”

**Mode:** Multiple choice

**Significance:** Similarly to the previous question, this helps determine that the survey is reaching the target demographic.

**Question 4:**

“What is the highest degree or level of education you have received? (If currently enrolled, highest degree completed)”

**Mode:** Multiple choice

**Significance:** See previous statement of significance.

**Question 5:**

“Have you participated in any other surveys about stormwater runoff pollution in the past 3 years?”

**Mode:** Multiple choice (“Yes” or “No”)

**Significance:** The purpose of this question is to reveal any overlap in the participants who took the previous survey regarding stormwater runoff in the Lewiston and Auburn areas in 2013. The previous survey was not able to reach the target demographic efficiently because of the ways in which it was implemented, so this question is not meant to rule out specific participants, but rather to gather more information. This will allow our community partners to compare data and see if there is a trend or pattern in behavior of participants that did or did not take the previous survey in 2013.

**Question 6:**

“To what extent are you responsible for your own lawn care?”

**Mode:** Slider (Range from “Not at all responsible” to “Exclusively responsible”)

**Significance:** This question further determines whether the participants are of the correct target demographic. This question was constructed with the help of Professor Low as well as modeled off of content from the *Durham Fertilizer Written Survey*. It indicates whether our community partners are distributing educational materials to a demographic that will change their lawn care behavior in order to meet the goals of the BMP adoption plan. This information will be pertinent for effective and efficient future community outreach programs implemented by our community partners.

**Questions 7:**

“Which of the following educational materials have you seen in the last year?”

**Mode:** Multiple choice (Images of selected educational materials)

**Significance:** There are four images of educational materials for the participant to choose from as well as the option to choose “none of the above”. This evaluates the effectiveness of the educational materials distributed by our community partners. It enables our community partners to gauge if the educational materials are reaching the target audience, if the educational materials are effective in implementing change in behavior to those that access it, and if the educational materials need to be more memorable or better distributed. The use of images rather than the use of description of the materials as options was decided through collaboration with our community partners as well as Professor Low in order to receive a greater response rate.

**Question 8:**

“If you have received any of these materials, please describe what you remember about them.”

**Mode:** Text entry

**Significance:** This allows for our community partners to recognize what is and isn’t memorable about the current educational materials. The open ended format of this question allows for our community partners to assess the effectiveness of materials rather than to only gauge the participants’ recognition of the materials.

**Question 9:**

“If so, please rate the degree to which the information in the materials was useful.”

**Mode:** Slider (Range from “Not at all useful” to “Very useful”)

**Significance:** This question provides residents to express whether or not they consider the educational materials to be effective. By comparing the finalized collection of data, our community partners will be able to gauge whether or not their materials need to be redesigned by seeing if there is an overarching trend in the data.

**Question 10:**

“How important is the health of the Androscoggin River to you?”

**Mode:** Slider (Range from “Not important” to “Very important”)

**Significance:** This question gauges if water health can be used to incentivize local residents to avoid stormwater pollution. Questions regarding if participants consider water safety, health, pollution, etc. significant to them was a trend throughout the surveys about stormwater that we researched.

**Question 11:**

“Based on the information you may have received in these sources of outreach materials, do you believe that any of the following sources may negatively affect the quality of the water in the Androscoggin River? You may choose more than one answer.”

**Mode:** Multiple choice

**Significance:**

The multiple choice options to this question are: “applying fertilizer”, “mowing lawn too low”, “not cleaning up pet waste”, “dumping leaf litter into catch basins”, and “none of the above”. The structure of this question avoids bias and requires residents to have accurate knowledge of stormwater in order to answer correctly. This allows our community partners to further understand if participants have effectively absorbed knowledge from the educational materials, given that the answers are addressed in the distributed materials.

**Question 12:**

“Have you changed your lawn care practices in the past 3 years?”

**Mode:** Multiple choice (“Yes” or “No”)

**Significance:** This question allows for our community partners to see if there is any link between the participants’ behavior and the educational outreach materials that were put into circulation about three years ago.

**Question 13:**

“If you’ve changed your lawn care practices the past 3 years, how have your practices changed and why?”

**Mode:** Text entry

**Significance:** This is a behavioral question that evaluates the reasoning behind the participants’ behavior. This is an effective way to reveal whether the educational outreach materials have impacted the participants’ behavior. It also allows other reasons to surface and thus provide helpful information for future outreach programing.

**Question 14:**

“For what reasons would you choose alternatives to chemical fertilizers and pesticides?”

**Mode:** Multiple choice

**Significance:** Similar to the previous question, this question allows our community partner to gauge what issues motivate change in the Lewiston and Auburn communities. This will provide

our community partners with appropriate rhetorical strategies and incentives for future effective outreach materials.

**Question 15:**

“Environmental issues related to water are not important to me.”

**Mode:** Multiple choice

**Significance:** This is a reverse scored question that was initially suggested by Professor Low in order to check accuracy and consistency of the survey results. This question works in tandem with the 10th question: “How important is the health of the Androscoggin River to you?” If the answer to these two questions are not consistent then it is easy to determine that the data collected from that specific survey is obsolete.

**Question 16:**

“What is the best way to inform you about issues regarding water health in the Lewiston/Auburn area?”

**Mode:** Multiple choice

**Significance:** The purpose of this question is to continue engagement and discourse on stormwater issues and water health in the most effective and efficient way to reach community members. This will allow for easy communication between our community partners and residents of the Lewiston and Auburn communities in the future. This was based off of similar questions found in the *New Hampshire Survey Center Phone Survey (2013)*.

**Question 17:**

“If you are interested in receiving future information about stormwater runoff pollution via email, please share your email address in the box below.”

**Mode:** Text entry

**Significance:** Similar to the previous question, data from this question allows for further discourse and indicates what participants care and are thus more likely to change their behavior in order to benefit water health in the Lewiston and Auburn communities.

**Question 18:**

“Thank you for participating in our survey on stormwater pollution awareness in Lewiston and Auburn! At this time, please consider leaving any questions or comments you may have had regarding the content of this survey in the box below. We appreciate and encourage feedback.”

**Mode:** Text Entry

**Significance:** This question allows for feedback and another way for our community partners to gain insight into what is working and what is not. This will be useful information moving forward and to implement change. We modeled this off a similar question and space for feedback found in the *Durham Fertilizer Written Survey*.

## V. Analysis of Pilot Survey Results

In the middle of the semester, we distributed a preliminary version of our survey among our class. This was not our official pilot survey because it was not distributed through the online mode, in a completed stage, or to the intended demographic. However, this exercise was useful because it allowed us to draw on the collective survey-building experiences of our classmates, and they made helpful suggestions regarding formatting, wording and clarity within the questions, and avoiding bias. This helped us develop and complete our first draft.

We then released a live, fully functional pilot survey to test the functionality of the survey on the Qualtrics interface, while also targeting individuals who fit the Lewiston and Auburn residency demographic goal. This survey was conducted to both assess the content of educational materials and survey clarity, while we also hoped that it would reaffirm our choice to use the online mode of survey. Sam Boss from the Bates Harvard Center helped us create a mailing list of Bates faculty and staff that met several of the demographic criteria. Specifically, the targeted participants lived in Lewiston and Auburn, and it was assumed that most of the people who were on staff at Bates were roughly within the target age demographic as well.

We had a 21% response rate on this pilot survey, which was live and collecting responses for 2 weeks. This pilot survey helped us solidify the content and communication methods of our final product. The biggest changes we made following this pilot survey were in response to parts of the survey that saw the lowest amounts of participation, specifically questions surrounding the educational materials. In order to reduce ambiguity, we changed Question 7, which asked participants to identify which educational materials people had seen. Instead of using verbal descriptions of the materials, we uploaded pictures of materials in hopes of increasing affirmative response rates on that question, as well as increased participation on Question 8, which asked participants to recall information from the educational materials. Additionally, we

received constructive feedback from our professor, Tom Wenzel, and added additional demographic questions about participant's age and education levels, which would help our partners ensure that they were reaching their intended audience. Finally, we added a small informational section that defined stormwater, because our community partner indicated that there might be some confusion about what stormwater is, which may have lowered response rates.

## VI. Recommendations Regarding Educational Materials

It was brought to our attention that different educational materials were being distributed in Lewiston and Auburn. In order to maximize the effectiveness of the education program in the collective community of Lewiston and Auburn, this survey tool should be able to be distributed to residents of both cities without creating redundancies or producing questions that only certain participants can answer. Considering that both cities are producing similar materials to communicate the same message, merging the two campaigns and sharing materials should be an intuitive process. While this educational outreach program does not fit the conventional standards of capitalist marketing, many of the rules of thumb used in advertising and marketing are applicable to this initiative. One of the most consistently echoed rules of good marketing is the concept of consistency. This means that if you are trying to communicate the same overarching message to a single collective community, you should attempt consistency in the appearance of your materials across the board.<sup>8</sup>

While this applies specifically to the inconsistent educational content being distributed between Lewiston and Auburn, this also applies to the consistency of appearance between different materials for distribution. Specifically, we were unable to identify common themes in the educational materials beyond the communicative purpose behind the materials. There was no indication that these materials were distributed by the same overarching campaign, or that they could be seen as complementary to each other. Solidifying your core message would be a good

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<sup>8</sup> "The Difference Between a Good Brand and a Great Brand? Consistency." North Star Marketing, accessed November 18, 2015.

indication that you have one solid “thesis” message that you are trying to communicate through your campaign.<sup>9</sup> With that in mind, we recommend that you consolidate your campaign materials between Lewiston and Auburn, and consider revising the verbiage used in the educational materials in order to communicate the overarching goal of your campaign in a succinct manner.

## Appendix A: Survey Tool

*This is a static visual copy of the survey. To view the online interactive click on this link:*

<https://goo.gl/xfiHwP>

### Stormwater Survey

This quick survey is being conducted by the cities of Lewiston and Auburn to evaluate the effectiveness of stormwater education outreach program. You will be asked a series of questions addressing your familiarity with the education materials distributed by this program. There are no risks to participation, and all responses from participants will be confidential, to the extent permitted by law. Please read the following statement of consent before continuing on to the survey.

I understand that I am free to discontinue the survey at any time without penalization. I understand that I am free to leave a question blank if I feel uncomfortable answering. I also understand that the findings of this survey will be collected and interpreted on a group basis with no identification of specific individuals. By responding “yes” below, I consent to participate in this survey.

- ☐ Yes
- ☐ No

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<sup>9</sup> Bischoff, Shelli. *Nonprofit Marketing with Purpose*. Conservation Impact, 2004, accessed 16 Nov. 2015.



Are you a resident of Lewiston or Auburn?

- ☐ Yes
  - ☐ No
- 

What is your age?

- ☐ Under 20
  - ☐ 20-34
  - ☐ 35-54
  - ☐ 55-75
  - ☐ Older than 75
- 

What is the highest degree or level of education you have received? (If currently enrolled, highest degree completed)

- ☐ 8th grade
- ☐ Some high school, no diploma
- ☐ High school diploma or equivalent (ex. GED)
- ☐ Some college, no degree
- ☐ Trade/technical/vocational training
- ☐ Associate Degree
- ☐ Bachelor's Degree
- ☐ Professional Degree beyond BA or BS

Have you participated in any other surveys about stormwater runoff pollution in the past 3 years? (Stormwater is surface water in abnormal quantities resulting from heavy falls of rain or snow.)

- ☐ Yes
  - ☐ No
- 

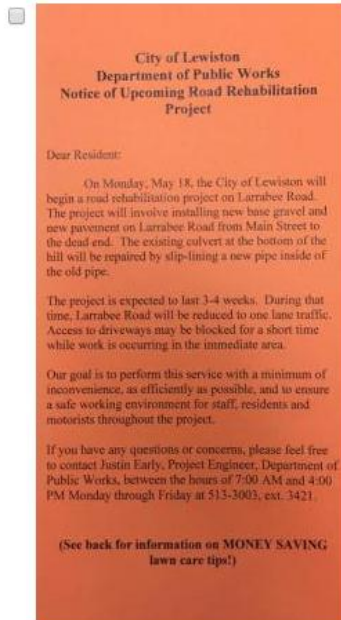
To what extent are you responsible for your own lawn care?

Not at all Responsible      0      10      20      30      40      50      60      70      80      90      100      Exclusively Responsible

Lawn Care Responsibility



Which of the following educational materials have you seen in the last year?





☐ None of the above

If you have received any of these educational materials, please describe what you remember about them.

If so, please rate the degree to which the information in the materials was useful.

Not at all useful      20      30      40      Neutral      60      70      80      Very useful  
0      10      50      90      100

Usefulness of materials

How important is the health of the Androscoggin River to you?

Not important      20      30      40      Neutral      60      70      80      Very important  
0      10      50      90      100

Importance

Based on the information you may have received in these sources of outreach materials, do you believe that any of the following activities may negatively affect the quality of water in the Androscoggin river? You may choose more than one answer.

- ☐ Applying fertilizer
  - ☐ Mowing lawn too low
  - ☐ Not cleaning up pet waste
  - ☐ Dumping leaf litter into catch basins
  - ☐ None of the above
- 

Have you changed your lawn care practices in the past 3 years?

- ☐ Yes
- ☐ No

If you have changed your lawn care practices in the past 3 years, how have your practices changed and why?

For what reasons would you choose alternatives to chemical fertilizers and pesticides?

- ☐ Financial reasons
  - ☐ Environmental reasons
  - ☐ Health reasons
  - ☐ I wouldn't choose alternatives
  - ☐ I am not responsible for what is used on my lawn
- 

Environmental issues related to water are not important to me.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree

What is the best way to inform you about issues and events regarding water health in the Lewiston Auburn area?

- ☐ Email
- ☐ Telephone
- ☐ Mail
- ☐ Face to face
- ☐ Social Media (Facebook, Twitter, etc.)
- ☐ I am not interested in receiving this information

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If you are interested in receiving future information about stormwater runoff pollution via email, please share your email address in the box below.

Thank you for participating in our survey on stormwater pollution awareness in Lewiston and Auburn! At this time, please consider leaving any questions or comments you may have had regarding the content of this survey in the box below. We appreciate and encourage feedback.

# Appendix B: Annotated Bibliography

**Andres, Lesley. *Designing & Doing Survey Research*. London: SAGE Publications, 2012. Print.**

This resource provides information on the different survey modes and a comprehensive analysis of the merits and demerits of each survey mode. This book also provides valuable insight of how to administer a survey and ways to enhance response rates.

**Bischoff, Shelli. *Nonprofit Marketing with Purpose*. Conservation Impact, 2004. Web. 16 Nov. 2015.**

This source provides information about material evaluation. It offers marketing and advertising techniques to best communicate with a target demographic on behalf of a nonprofit campaign like the stormwater outreach program regarding written communication.

**Brenkert, George G. "Ethical Challenges of Social Marketing" *Journal of Public Policy & Marketing* 21.1 (2002):14-25. Online.**

This article discusses ethical concerns of social marketing through addressing the ends social marketing seeks, the rationale it offers for achieving those ends, and its effects on the targets.

**Environmental Protection Agency (EPA). "Surveys & Evaluations". Accessed from: <http://cfpub.epa.gov/npstbx/Surveys.cfm>**

This EPA site provides an archive of baseline attitude surveys, stormwater program-related surveys, and evaluations of media campaigns from around the country.

**Fink, Arlene. *The Survey Handbook*. Thousand Oaks: SAGE Publications, 2002. Print.**

This book provides basic information on surveys and useful information on how to design sound surveys.

**Fleming, Morgan. "Durham Fertilizer Written Survey". *Durham County Homeowner Fertilizer Behaviors Survey: Summary and Analysis of Results*. (2013): 1-11. Web.**

This survey primarily involves questions regarding lawn care maintenance and was distributed in Durham County, North Carolina.

**Fowler, Floyd J. *Survey Research Methods Applied Social Research Methods Series*. Sage Publications, 1984. Print.**

This book looks at survey research methods with a specific focus on designing survey questions, methods of data collection and the ethical issues in survey research.

**Fricker, Ronald D. and Matthias Schonlau. “Advantages and Disadvantages of Internet Research Surveys: Evidence from the Literature.” *SAGE* 14.4 (2002): 347-367. Web.**

This article discusses the advantages and disadvantages of online survey, allowing us to analyze what would be the best mode for the survey to be administered through.

**Hill, Craig A., Elizabeth Dean, Joe Murph. *Media, Sociality, and Survey Research* by. Somerset, NJ, USA: John Wiley & Sons, 2013. ProQuest ebrary. Web. 27 September 2015.**

This eBook looks at the challenges of the survey research field such as lower response rates and the changes in the ways that human beings interact. It suggests ways in which social media can improve survey research.

**Hutchins, Karen. “Non-Point Source Pollution Communication Survey Final Report: Cities of Auburn and Lewiston and Town of Sabattus”. *Maine’s Sustainability Solutions Initiative, University of Maine Orono*. (2013): 1-61. Web.**

The purpose of this survey was to gauge how knowledgeable residents of Lewiston, Auburn, and the Town of Sabattus are of educational outreach materials regarding various stormwater issues. These includes the effects of runoff into nearby bodies of water as well as lawn care maintenance.

**New Hampshire Survey Center Phone Survey: Prep/PSU Survey Draft. (2013): 1-11. Web.**

This resource is a phone survey implemented by the University of New Hampshire Survey Center, targeting a similar topic to what our survey aims to address.

**North Star Marketing. “The Difference Between a Good Brand and a Great Brand? Consistency.” Accessed November 18, 2015. Web.**

This online webpage provides introductory information about marketing, branding, market awareness and advertising consistency. Specifically, this provides support for our intuitive expectations regarding marketing, regardless of the product, and maximizing effectiveness.

**Saris, Willem. *Wiley Series in Survey Methodology: Design, Evaluation, and Analysis of Questionnaires for Survey Research (2nd Edition)*. Somerset, NJ, USA: John Wiley & Sons, 2013. ProQuest ebrary. Web. 27 September 2015.**

This eBook examines the latest developments in the survey research field. More specifically, it suggests methods for developing a survey questionnaire and the cultural aspects that might affect the outcome of a survey.

**Rada de Díaz, Vidal and Juan Antonio Domínguez-Álvarez. “Response Quality of Self-Administered Questionnaires: A Comparison between Paper and Web Questionnaires.” *SAGE* 32.2 (2013): 256-269. Web.**

This article provides us with more information to help us create our survey and how it can be effectively conducted. This article compares both paper and web surveys and the effectiveness of them.

**Weisberg, Herbert, and Bowen, Bruce. *An Introduction to Survey Research and Data Analysis*. San Francisco: W. H. Freeman and Company, 1997. Print.**

This book looks at survey research and data analysis. This was important for our project because we are not administering the survey, so this book helped us see what type of data that one can gather through a survey.