

# EASTERN WASHINGTON STORMWATER EFFECTIVENESS STUDIES

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## TECHNICAL EVALUATION REPORT

### YAKIMA CAR WASH WASTEWATER EDUCATION & OUTREACH EFFECTIVENESS STUDY

#### *Study Classification:*

Structural BMP       Operational BMP       Education & Outreach

#### *Study Objective(s):*

Evaluate Effectiveness       Compare Effectiveness



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## TECHNICAL EVALUATION REPORT PUBLICATION INFORMATION

The Technical Evaluation Report (TER), as well as the Quality Assurance Project Plan (QAPP) for this study, is available to the public on the City of Yakima website:  
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## DOCUMENT HISTORY

This study was conducted following the QAPP which can be accessed at the link on the previous page. The study began in July 2021 and the last data were collected in October 2021. Data collection was completed in November of 2021 and the final TER was submitted to the Washington State Department of Ecology in February 2022.

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## TABLE OF CONTENTS

<b>1.0 EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>2.0 BACKGROUND .....</b>	<b>4</b>
2.1 INTRODUCTION TO THE E&O PROGRAM .....	4
2.2 PROBLEM DESCRIPTION .....	4
2.3 PROJECT GOALS & OBJECTIVES.....	5
2.4 PROJECT OVERVIEW .....	5
2.5 STUDY LOCATION .....	6
<b>3.0 SAMPLING PROCEDURES.....</b>	<b>9</b>
3.1 TYPES OF DATA COLLECTED .....	9
3.2 SAMPLING COLLECTION PROCESS.....	9
3.2.1 SOP Overview .....	9
3.2.2 Audit Overview .....	10
<b>4.0 DATA QUALITY AND ANALYSIS.....</b>	<b>11</b>
4.1 DATA QUALITY ASSESSMENT .....	11
4.1.1 Data Verification .....	11
4.1.2 Data Usability Assessment .....	12
<b>5.0 RESULTS AND DISCUSSION.....</b>	<b>14</b>
5.1 OBJECTIVE #1: UNDERSTAND TO WHAT EXTENT THE TARGET AUDIENCE CURRENTLY USES PREFERRED CAR WASHING BMPs.....	15
5.1.1 Baseline Survey Results.....	16
5.1.2 Baseline Observational Results.....	23
5.2 OBJECTIVE #2: DEVELOP AND IMPLEMENT AN E&O PROGRAM TARGETING ADOPTION OF PREFERRED CAR WASHING BMPs.....	23
5.3 OBJECTIVE #3: MEASURE ADOPTION OF TARGETED BEHAVIORS BY THE TARGET AUDIENCE.....	24
5.3.1 Follow-Up Survey Results and Comparison.....	25
5.3.2 Follow-Up Observational Results.....	32
5.3.3 Commercial Car Wash Usage Results .....	32
5.3.4 Results of Statistical Comparison .....	32
5.4 OBJECTIVE #4: DEVELOP RECOMMENDATIONS BASED ON THE STUDY FINDINGS AND USE THE RECOMMENDATIONS TO REVISE AND IMPLEMENT A MODIFIED E&O PROGRAM .....	33
<b>6.0 CONCLUSIONS .....</b>	<b>38</b>
<b>7.0 REFERENCES .....</b>	<b>40</b>
<b>APPENDICES .....</b>	<b>42</b>
APPENDIX A: SURVEY QUESTIONS.....	43
APPENDIX B: OBSERVATIONAL DATA FORM .....	44
APPENDIX C: DATA ANALYSIS.....	45
Appendix C.1: Survey Data Analysis .....	46
Appendix C.2: Observational Data Record.....	47
Appendix C.3: Statistical Analysis .....	48
APPENDIX D: DATA QUALITY .....	49
Appendix D.1 Assessment of MPCs and DQIs .....	50
Appendix D.2 Results of Audit.....	51

Appendix D.3 SOP Deviations Documentation.....	52
Appendix D.4 Results of Data Verification .....	53
APPENDIX E: CAR WASH USAGE DATA COLLECTED .....	54
APPENDIX F: SUMMARY OF QAPP REVISIONS .....	55
APPENDIX G: REVISED E&O MATERIALS AND SURVEY .....	56

## LIST OF FIGURES AND TABLES:

Table 2-1: E&O Materials and the Distribution of Materials .....	4
Figure 2-1 Approximate Locations of Local Commercial Car Washes and Target Neighborhoods .....	7
Table 2-2 Study Neighborhood Locations.....	8
Table 3-1 Data Needed to Meet Objectives.....	9
Table 4-1 Data Verification Summary.....	11
Table 4-2 Data Usability Assessment Summary .....	12
Table 4-3 Flag Data Codes .....	13
Figure 5-1 Where Respondents Reside.....	15
Figure 5-2 Awareness of Best Car Washing Location (Baseline Responses Only).....	17
Figure 5-3 Awareness of Car Washing Wastewater Impacts (Baseline Responses Only).....	17
Figure 5-4 Awareness of Car Washing BMPs (Baseline Responses Only).....	18
Figure 5-5 Adoption of Preferred Car Washing Location (Baseline Responses Only) .....	20
Figure 5-6 Frequency of Preferred Car Washing BMP Adoption (Baseline Responses Only) .....	20
Table 5-1 Likert Scales for Car washing BMPs and Non-Environmentally Friendly BMPs .....	21
Figure 5-7 Barriers Identified to Adopting Car Wash BMPs (Baseline Responses Only) .....	22
Table 5-2 E&O Program Schedule During Study.....	24
Figure 5-8 Question Used to Distinguish Baseline and Follow-Up Survey Responses.....	25
Figure 5-9 Awareness of Best Car Washing Location.....	26
Figure 5-10 Awareness of Car Washing Wastewater Impacts.....	27
Figure 5-11 Awareness of Car Washing BMPs .....	28
Figure 5-12 Adoption of Preferred Car Washing Location .....	29
Figure 5-13 Frequency of Preferred Car Washing BMP Adoption .....	30
Figure 5-14 Barriers Identified to Adopting Car Wash BMPs .....	31
Table 5-3 Awareness & Adoption Statistical Comparison Results .....	33

## 1.0 EXECUTIVE SUMMARY

Under the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4s) Phase II Permit (the Permit) for Eastern Washington (EWA), jurisdictions such as the City of Yakima, Washington (City of Yakima), are required to evaluate the effectiveness of a Permit-required stormwater management program (S8 Monitoring and Assessment) and evaluate their education and outreach (E&O) programs (S5.B.1.b). The study presented in this document was designed to meet the requirements of both Permit requirements.

The City of Yakima chose to focus their E&O program to target the car washing behaviors of City of Yakima residents who drive one or more vehicles (the target audience). City of Yakima staff have previously observed residents washing cars outside their homes and allowing car wash wastewater to reach the storm drain. Car wash wastewater sends harmful amounts of chemicals such as detergents, sediment, nutrients, and metals into storm drains. Many of the City of Yakima's storm drains discharge directly to surface waters. This can be prevented by following car washing best management practices (BMPs). The goal of the E&O program was for City of Yakima residents who drive one or more vehicles to understand the impacts to stormwater and adopt car washing BMPs (target behaviors) that will limit the impacts to stormwater. In turn, the goal of this study was to evaluate the effectiveness of the City of Yakima E&O program where effectiveness is based on changes in the target audiences understanding and adoption of the target behaviors. In addition, results from this study will be used to direct ongoing E&O efforts more effectively and recommend future actions.

Preferred car washing BMPs and non-environmentally friendly car washing practices were identified through a literature review of similar studies. The preferred BMPs that were identified included the use of commercial car washes, diverting stormwater to permeable surfaces, use of less harmful soaps or no soap, only washing the exterior of the car, limiting the frequency of car washing, and reporting spills or car wash wastewater entering the storm system. Non-environmentally friendly practices identified included washing car on pavement, drain/hose water and soap into the street and washing the vehicle engine undercarriage, mounted equipment, or tires. Potential barriers for adopting the target behavior were also identified through the literature search. Barriers identified included cost, lack of knowledge, time/convenience, lack of access to materials, and quality of product. These barriers were used in the survey to identify barriers that were preventing the target audience from adopting the preferred BMPs.

The E&O program was deployed during the dry season, beginning in summer 2021, and completed in fall 2021. To reach a range of City of Yakima drivers, a multimedia approach was used to reach the target audience. E&O materials were deployed using materials and methods such as social media posts, and door knockers delivered to neighborhoods, as well as distributing towels for car washing, tote bags, and hand sanitizer pens at the Central Washington State Fair.

To determine the effectiveness of the designed E&O program, baseline and follow-up data were compared from surveys submitted by residents who reside in the City of Yakima or Yakima County. Survey responses provided insight of residents' understanding of the impacts of car wash wastewater discharges to the stormwater system, use of preferred car washing BMPs and non-environmentally friendly practices, and barriers preventing the BMPs from being adopted. Social media posts, newspaper advertisements, a banner on the City of Yakima website, and a booth at the Central Washington State Fair were used to advertise the survey to the target audience. Incentives were also provided to those who took the survey (e.g., towels, tote bags, and hand sanitizer pens). To verify the results of the survey data, City of Yakima officials attempted

to gather observational data via drive-by visits through three target neighborhoods. The three target neighborhoods comprised approximately 700 parcels. The target neighborhoods were selected because city staff from the City of Yakima had previously observed evidence of car washing in these neighborhoods and because the neighborhoods consist of homogenous housing developments. Baseline survey and observational data were collected prior to the implementation of the E&O program and follow-up survey and observational data were collected after the E&O program was implemented. The data collected was analyzed to determine the effectiveness of the program. The findings of the study are summarized by study objective below.

*Study Objective #1:* Understand to what extent the target audience currently uses preferred car washing BMPs.

From the survey responses, the most commonly reported preferred car washing BMP was commercial car washing, which was also the practice that respondents were most aware of. The least commonly reported preferred car washing BMP was calling the spill control hotline in an event of a soap spill. Respondents also indicated they used non-environmentally friendly practices, which were reported as a group instead of by individual practices. Respondents indicated using non-environmentally friendly practices approximately as often as the preferred BMPs, excluding commercial car washing.

*Study Objective #2:* Develop and implement an E&O program targeting adoption of preferred car washing BMPs.

An E&O program targeting the City of Yakima's use of preferred car washing BMPs was developed and implemented during the study. The program identified preferred car washing BMPs and the impacts of car wash wastewater entering storm drains for the residents who drive one or more personal vehicles. A program icon, slogan, and E&O materials were developed in English and Spanish which included doorknockers (brochures), post cards, social media posts, towels, tote bags, and hand sanitizer pens. The postcards and doorknockers were delivered to homes in the target neighborhoods. The other materials, excluding social media posts, were distributed at the Central Washington State Fair. Social media posts were uploaded on average three times per month to Facebook, Instagram, and Twitter.

*Study Objective #3:* Measure the target audience's understanding and adoption of targeted behaviors.

The baseline and follow-up surveys were used to measure the target audience's understanding and adoption of the preferred BMPs. During the study, the desired sample size was 500 to 1,000 responses for each of the baseline and follow-up surveys. This desired sample size would have provided a 95 to 97 percent confidence interval that the data collected was representative of the targeted population. The actual sample sizes collected during the study were 260 and 62 for the baseline survey data and follow-up survey data, respectively. A lower sample size results in a lower confidence interval that the sample is representative of the target population. During the study, no statistically significant change in the targeted behavior awareness or adoption was indicated, except for a decrease in awareness of at-home car washing BMPs and decrease in commercial car wash use. This decrease in awareness is likely not representative of an actual decrease in awareness rather a result of the smaller sample size and associated lower confidence interval achieved. The decrease in commercial car wash use appears to match a COVID-19 market trend in the commercial car wash industry, but more commercial car wash data is needed to determine whether that trend is occurring in the City of Yakima.

The most identified barriers for not using preferred BMPs included cost, time/convenience, and lack of knowledge. Of the three barriers a significant change (between baseline and follow up data) was observed: an 8 percent decrease was observed in number of times cost was reported and a 16 percent decrease was observed in the number of times lack of knowledge was reported. The decrease in number of times lack of knowledge was reported suggests that participants may have become more aware of the preferred car washing BMPs. It is expected that with the continuation of an E&O program, lack of knowledge would continue to decrease. Cost was not addressed by the E&O program. Given this, the reason for the 8 percent decrease is unknown. However, the lower number of participants who selected “no barrier” suggests the E&O program may be reducing the number of perceived barriers for the target audience. Recommendations for reducing these barriers are addressed in the recommendations (Objective #4).

Observational data and commercial car wash usage data were collected to verify the survey results. During drive-by visits in the target neighborhoods before E&O implementation, city staff observed only four instances of residential car washing during two drive-by visits. However, during the follow-up drive-by visits, evidence of residential car washing was not observed at all. Since no follow-up observational data were collected, observational data were not used to verify the survey data. Five City of Yakima commercial car wash locations were contacted multiple times to request car wash usage data to supplement the observational data. Of the locations contacted, only one location responded by stating that the company has observed a decrease in car washes per week compared to previous years.

***Study Objective #4:*** Develop recommendations based on the study findings and use the recommendations to revise and implement a modified E&O program.

The results from this study indicated that additional effort should be made to increase the sample size for the survey, increase the reach of the E&O program, and address barriers of the E&O materials. Specifically, the recommendations for the project can be separated into four categories:

- Increase E&O program reach for the general public
- Increase E&O program reach and survey participation for the Spanish speaking communities
- Improve E&O program message and materials (to address barriers)
- Improve survey response and verification of the survey results

## 2.0 BACKGROUND

### 2.1 Introduction to the E&O Program

A new E&O program was developed for the City of Yakima which informed a target audience of the impacts of car wash wastewater and adoption of preferred car washing BMPs, which were the program's targeted behaviors. The target audience for the study included residents of the City of Yakima who drive one or more vehicles. The E&O program included distributing E&O materials to three select neighborhoods, at the Central Washington State Fair, and through social media. The type of E&O materials and how the materials were distributed are listed in Table 2-1. Copies of the E&O materials used during the study are included in Appendix G and Appendix D of the study QAPP.

**Table 2-1: E&O Materials and the Distribution of Materials**

E&O Materials	How E&O Materials were distributed <sup>(1)</sup>
Postcards and doorknockers (brochures)	Delivered to residential houses located in the targeted neighborhoods <sup>(2)</sup>
Social media posts	City of Yakima's Twitter, Instagram, and Facebook
Website posts	City of Yakima website
Towels, tote bags, and hand sanitizer pens	Central Washington State Fair

Notes:

<sup>(1)</sup>Distribution of the E&O program materials was modified for the study from what will typically be implemented to accommodate data collection and increase survey responses. Additional discussion is provided in Section 5.2.

<sup>(2)</sup>Information about targeted neighborhoods provided in Section 2.5.

### 2.2 Problem Description

The 2019 to 2024 EWA NPDES Phase II MS4 Permit requires Permittees to prohibit, through ordinances or other regulatory mechanism, non-stormwater discharges into the MS4 (Washington State Department of Ecology, 2019). Additionally, Permittees are required to implement an E&O program designed to reach the general public regarding subject areas targeting potential impacts from stormwater discharges; methods for avoiding, minimizing, or reducing the impacts of those discharges; and actions individuals can take to improve water quality. The City of Yakima has not previously implemented an E&O program that targeted residential car washing behaviors. However, empirical observations by City of Yakima officials indicated that a program targeting residential car washing behaviors would be beneficial to reducing non-stormwater discharges and pollutants to receiving waters. Specifically, City of Yakima officials had previously observed that residents within the City of Yakima limits who drive one or more vehicles tend to wash vehicles in paved driveways during the dry season, from May through September. Car wash wastewater flowed from the driveway into storm drains in the streets. Based on literature findings from other regions (citations for these studies are included in the QAPP), it is probable that residents who drive one or more vehicles may not be aware of the impacts of these actions.

Residential car wash water is often a primary source of stormwater pollution. Roughly 444,000 residential car washes are averaged each year in Federal Way, WA, resulting in pollutant loadings that can have a detrimental impact on aquatic life depending on the size of the receiving waters (Smith & Shilley, 2009). Studies have found that stormwater pollutant concentrations collected downstream of residential car washing can compare similarly to levels of pollutants found in utility sewer wastewater (Sablayrolles, Vialle, & Montrejaud-Vignoles, 2010). The primary difference being that stormwater from areas developed before the NPDES MS4 permit is often not treated before entering waterways compared to wastewater which is typically treated or required to be treated by all known, available, and reasonable methods of prevention, control, and treatment for domestic and industrial wastewater facilities (Washington State Legislature, 1987; Washington State Legislature, 1990)

Car wash wastewater is composed of oils, silt, sand, clay, hydrocarbons, and metals such as zinc and copper (Grisso, et al., 1998). These chemicals impair biological functions and can be lethal to organisms found in receiving waters such as coho salmon and phytoplankton. (Smith & Shilley, 2009). Surfactants that are composed of nitrogen and phosphorus are commonly found in car wash soaps to create suds. Exposing surfactants to waterways can result in harmful algae blooms and abnormal birthing defects in the development of juvenile fish. (Oknich, 2016).

## 2.3 Project Goals & Objectives

The goal of the study was to evaluate the effectiveness of a new education program that informs the public about preferred car washing BMPs to prevent runoff from entering storm drains and discharging to receiving water bodies. This study evaluated the effectiveness through the following:

- Measure the target audience's (Section 2.5) awareness of the impact of their actions on receiving water quality
- Measure the target audience's awareness of preferred car washing BMPs
- Measure the target audience's adoption of the E&O program's targeted behavior (i.e., using preferred car washing BMPs)

The results of this study were used to identify any barriers to adoption of targeted behaviors and recommend improvements for the residential car washing E&O program. The improvements are expected to increase adoption of the targeted behavior and will help to direct E&O resources more effectively. Additionally, results from this study will be used to evaluate changes in the adoption of targeted behaviors.

The objectives of this study were the following:

- Understand to what extent the target audience currently uses preferred car washing BMPs
- Develop and implement an E&O program targeting adoption of preferred car washing BMPs
- Measure understanding and adoption of targeted behaviors by the target audience
- Develop recommendations based on the study findings and use the recommendations to revise and implement a modified E&O program

## 2.4 Project Overview

This study was created to meet the effectiveness requirements through the development and evaluation of a new E&O program. The E&O program developed for this study provided information about the impacts of car wash wastewater and preferred car washing BMPs to prevent car wastewater from entering the storm

system. The E&O program and study targeted the City of Yakima residents who drive one or more vehicles, specifically focusing on three neighborhoods for data collection (Section 2.5).

Surveys and observational data were collected to measure the effectiveness of the E&O program. The survey questions and observational data form used to collect data are provided as Appendix A and Appendix B of this report. Before implementation of the new E&O program, the survey was deployed and field observational data were collected to measure the target audience's understanding of the impacts of car wash wastewater on receiving waters and use of preferred car washing BMPs. The survey also identified barriers preventing the public from following preferred car washing BMPs. Observational data, consisting of a count of residents washing their car with or without using preferred BMPs, was collected during observational drive-by visits (Section 8.2 of the QAPP) by lead entity and participating entity staff in the three target neighborhoods (Section 4.3 of the QAPP). The survey was developed and made available to the population of the City of Yakima online through SurveyMonkey (Momentive) immediately after the observational site visits occurred. The survey was advertised via postcards in the target neighborhoods, the City of Yakima's social media accounts, and the City of Yakima website.

Following the observational data collection and after the survey had been available for approximately 1 month, the E&O program was deployed. The E&O program consisted of delivery of materials to homes in the target neighborhoods, posts on the City of Yakima's website and social media accounts, and distribution of materials during the Central Washington State Fair (Section 7.4 of the QAPP). The E&O materials were developed in English and Spanish and included the same materials used to advertise the survey, as described previously and in further detail in Section 5.2.

Following the implementation of the new educational program, follow-up field observations were conducted to measure the adoption of the car washing BMPs. The survey continued to be available through the same platform and was advertised using doorknockers in the target neighborhoods (which were distributed approximately 1 month after the surveys were first advertised), the City of Yakima social media accounts, the City of Yakima website, and the Central Washington State Fair. Drive-by visits to collect observational data occurred in the three target neighborhoods within 2 weeks after the Central Washington State Fair.

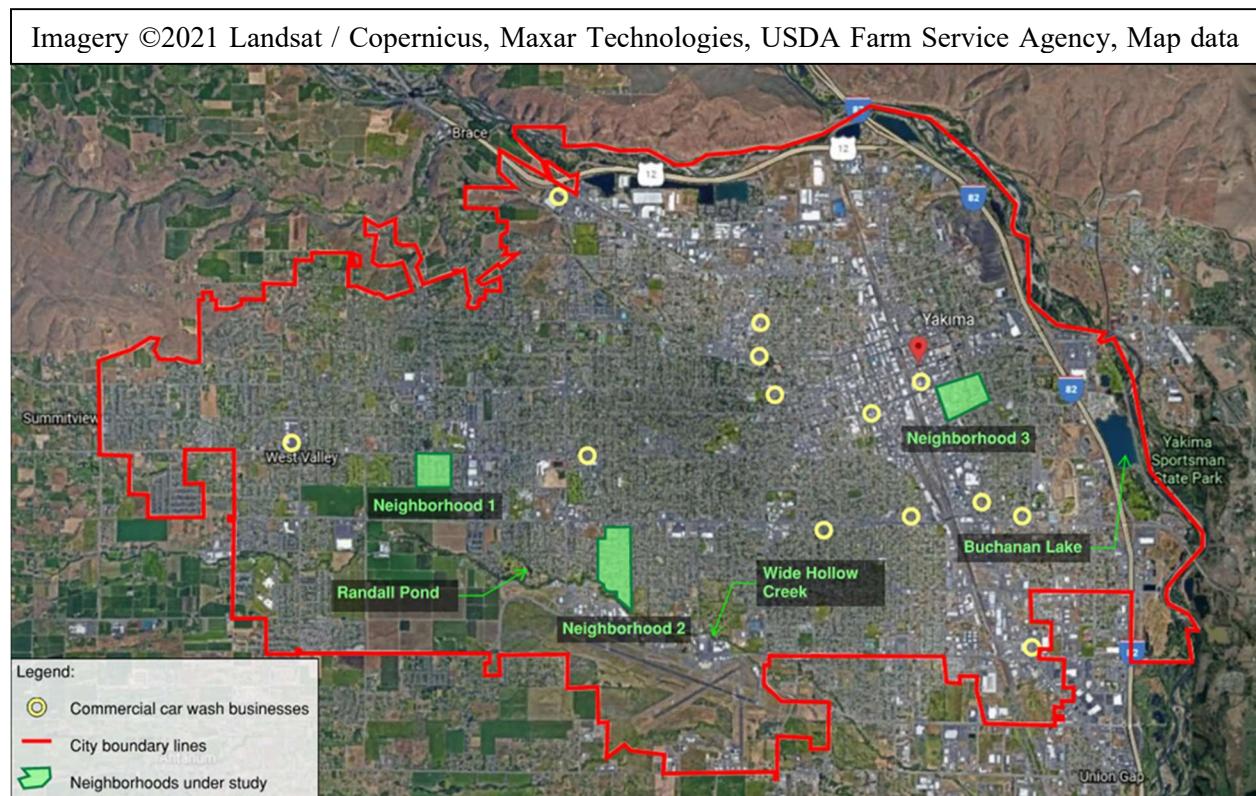
The effectiveness of the new educational program was evaluated by comparing the survey and observational data collected before (baseline) and after (follow-up) the E&O campaign was launched. The analysis included using basic statistics to determine the percent change during the study as well as hypothesis testing. Results from the hypothesis testing were used to determine whether there were any statistically significant changes (based on the results of the statistical analysis) in the target audience's awareness and adoption of car washing behavior. Barriers identified in the survey were summarized and used to develop the final recommendations of the study. A more detailed discussion about the analysis and results is included in Section 5.0.

## 2.5 Study Location

The study was located within the limits of the City of Yakima (see Figure 2-1) and the target population for the study consisted of residents of the City of Yakima that drive one or more vehicles. No control populations or sites were identified for this study; rather, data collected before and after the E&O program was implemented were compared to evaluate effectiveness. As such, the anticipated population was expected to be approximately 31,000 households, assuming the national average of households with access

to a car (91.3 percent) (Peterson, 2021) was an appropriate estimate for Yakima, which has approximately 34,000 households (United States Department of Commerce, 2019). The sample size selected was 500 to 1,000 respondents (Section 7.2 of the QAPP).

Responses from residents who live within Yakima County were also included in the sample size. Yakima County residents who responded to the survey were likely to have been exposed to the City of Yakima E&O materials because Yakima County provided links on their webpage to the City of Yakima E&O materials or they may have attended the Central Washington State Fair where the E&O materials were distributed.



**Figure 2-1 Approximate Locations of Local Commercial Car Washes and Target Neighborhoods**

Three neighborhoods were selected to collect observational data. The neighborhoods were selected based on observations by City of Yakima officials of evidence of car washing activities in these neighborhoods in the past and because these neighborhoods consist of homogenous housing developments. The three neighborhoods consist of single-family homes with paved driveways on paved streets. Residents in these neighborhoods are expected to own at least one or more vehicles. The homes in these neighborhoods have running water to wash cars and have a storm system that connects to the City of Yakima MS4. There are approximately 700 parcels where observational data was collected. Descriptions for each of the three neighborhoods where additional data were collected are summarized in Table 2-.

**Table 2-2 Study Neighborhood Locations**

Neighborhood Name	Description
Neighborhood 1	<ul style="list-style-type: none"> <li>• Located in the western portion of the City of Yakima</li> <li>• Bordered by Tieton Drive and Arlington Street to the north and south, and by S 54th Avenue and S 58th Avenue to the east and west</li> <li>• Approximately 2 miles from the nearest commercial car wash</li> <li>• Approximately 160 parcels in this community</li> <li>• Drains to Randall Pond</li> </ul>
Neighborhood 2	<ul style="list-style-type: none"> <li>• Located in the southern portion of the City of Yakima</li> <li>• Bordered by Nob Hill Boulevard and Suncrest Way to the north and south, and by S 32nd Avenue and S 36th Avenue to the east and west</li> <li>• Approximately 2 miles from the nearest commercial car wash</li> <li>• Approximately 300 parcels in this community</li> <li>• Drains to Wide Hollow Creek</li> </ul>
Neighborhood 3	<ul style="list-style-type: none"> <li>• Located in the eastern portion of the City of Yakima</li> <li>• Bordered by Pine Street and Race Street to the north and south, and to the east and west by S 2nd Street and S 7th Street</li> <li>• Approximately 1 mile from nearest commercial car wash</li> <li>• Approximately 240 parcels in this community.</li> <li>• Drains to Buchanan Lake</li> </ul>

## 3.0 SAMPLING PROCEDURES

### 3.1 Types of Data Collected

Data collection for this project extended from July to the end of October using an online survey and observational visits to the three target neighborhoods (Figure 2-1; Table 2-2). The data listed in Table 3-1 provides a summary of the types of data collected, methods used to collect the data, and total number of participants. The data identified in the table was required to meet the objectives of the study. Appendix C of this report contains summarized data collected during the study.

**Table 3-1 Data Needed to Meet Objectives**

Data Type	How was Data Collected	Total # Data Points Collected
Map of Target Neighborhoods	Boundaries provided by City of Yakima and Google Maps	1
Baseline Survey Data	Online questionnaire before implementing E&O campaign	260 <sup>(1)</sup>
Follow-Up Survey Data	Online questionnaire after implementing E&O campaign	62 <sup>(2)</sup>
Baseline Observational Data	Drive-by site visit; inspect for evidence of residential car washes	4 <sup>(3)</sup>
Follow-Up Observational Data	Drive-by site visit; inspect for evidence of residential car washes	0 <sup>(3)</sup>
Car Wash Usage Data	Contacting commercial car washes to request car wash usage data	0 <sup>(4)</sup>

Notes:

<sup>(1)</sup>Total responses from residents inside Yakima city limits (151) and outside of Yakima city limits but within Yakima County (109).

<sup>(2)</sup>Total responses from residents inside Yakima city limits (34) and outside of Yakima city limits but within Yakima County (28).

<sup>(3)</sup>Out of approximately 700 houses observed.

<sup>(4)</sup>Discussion of car wash data provided in Section 5.3.3 and Appendix E.

### 3.2 Sampling Collection Process

#### 3.2.1 SOP Overview

Standard operating procedures (SOPs) were consistently used during this study to describe how data should be collected. More detailed information regarding each SOP can be found in Section 8.0 of the study QAPP. The SOPs followed during this study include:

- Baseline Observational Drive-By Visit – Procedures outline how to collect observational data.
- Baseline Survey – Procedures outline how to distribute the survey and collect responses.
- Follow-Up Survey – Procedures outline how to distribute the survey and collect responses.
- Follow-Up Observational Drive-By Visit – Procedures outline how to collect observational data.
- Car Wash Usage Data – Data was requested to supplement observational data. No SOPs were developed for the QAPP.

Any deviations from the SOPs were documented and are summarized in Appendix D.3 of this report.

### 3.2.2 Audit Overview

An audit was conducted to verify that the study was conducted in conformance with the SOPs included in the study QAPP. The audit was conducted by a participating entity in the study and was conducted following completion of data collection. Results of the audit are located in Appendix D.2 of this report. The audit included:

- Verifying that the SOPs were followed for data collection and data recording in Section 8.2 of the QAPP.
- Verifying the data management procedures defined in Section 10.0 of the QAPP were followed.
- Interviewing the Lead Entity PM (or anyone who collected data for the study) regarding the SOPs they followed during data collection and comparing their responses to the SOPs.
- Interviewing the Lead Entity PM and Principal Investigator (or anyone who participated in data management) regarding their data management procedures and comparing interview responses to the Data Management Plan in Section 10.0 of the QAPP.
- Reviewing the electronic files to verify that the data management procedures were followed.
- Developing a corrective action plan using the process described Section 9.2 of the QAPP, when a discrepancy was identified.

## 4.0 DATA QUALITY AND ANALYSIS

### 4.1 Data Quality Assessment

A data quality assessment was performed to determine whether data collected during the study met data quality indicators (DQIs) and measurement performance criteria (MPCs) that were defined in the study QAPP. The results of the data quality assessment are summarized in Appendix D of this report. DQIs are qualitative and quantitative measures that characterize the aspects of quality data. MPCs are the acceptance criteria for DQIs which specify the standard for data that meets the project's data quality objectives. To assess whether MPCs were met, a data verification (process to evaluate quality of the data) and data usability assessment (process to determine if data can be used to meet study objectives) were conducted. The following sections summarize the process as well as the results of the data verification and data usability assessment listed in Section 12 of the QAPP. The results of whether MPCs were met for each DQI is summarized in Appendix D.1.

#### 4.1.1 Data Verification

Table 4-1 summarizes the results of the data verification for each component listed in Section 12.1 of the study QAPP.

**Table 4-1 Data Verification Summary**

COMPONENT	RESULT
Review all the data records to ensure they are consistent, correct, and complete, with no errors or omissions.	No errors or omissions were observed. Any missing data was flagged and noted with “XRU.” Responses that were either inconsistent or unreasonable were flagged and noted with “XNI” or “XN” (see Table 4-3 and Section 5.1.2 for discussion). The data record was also reviewed by a participating entity. The results of the review are summarized in Appendix D.4.
Review the results from the quality control section (Section 9 of the study QAPP).	See Appendix D.2; no corrective actions were needed during the study.
Review the results from the audit.	See Appendix D.2; SOPs were followed or modified if needed to meet study objectives and maintain data quality. Revisions to SOPs are documented in Appendix D.3.
Examine data to determine if MPCs were met.	See Appendix D.1; MPCs were met. It is important to note that the number of survey and observational data participants for this study was below the expected sample size, resulting in a lower confidence interval that the sample represents the target population. The impact of the sample size is discussed in Appendix D.1 and Section 6.0. Recommendations to improve survey responses in the future are included in Study Objective #4 of Section 5.4.

#### 4.1.2 Data Usability Assessment

Table 4-2 summarizes the results of the data usability assessment for each component of the process listed in Section 12.2 of the study QAPP. If data were flagged as part of the data verification, audit, or other quality checks, it would be removed from the dataset analyzed to meet study objectives. No data were flagged due to quality issues.

**Table 4-2 Data Usability Assessment Summary**

COMPONENT	RESULT
Review the results from data verification.	No data were flagged for quality issues.
Review the results from the audit.	No data were flagged due to audit findings.
Determine if MPCs listed in Table 6.1 of the study QAPP were met.	No data were flagged due to not meeting MPCs. The impacts of sample size and recommendations are addressed in Sections 5.0 and 5.4, respectively.

During analysis, data was reviewed and flagged for consistency, completeness, and correctness as described in Table 4-1. The flagged data were sorted into two categories: reasonable responses and unreasonable responses. Reasonable flagged data were responses that were mostly complete and included one response which conflicted with another response. Unreasonable flagged data included responses that conflicted with two or more survey questions or responses that indicated the respondent did not truthfully respond to the survey (i.e., indicating the primary language spoken in their home was Elvish). Survey questions were intentionally designed to limit social desirability bias by listing undesired behaviors with desired behaviors or by ordering questions in a certain way. If the questions were answered so that responses were not consistent between two or more questions, it was possible that the answers had been influenced by the participant's bias. Unreasonable flagged data also included participants who indicated they live outside of Yakima County, responses which represented tests of the survey, and participants who indicated they do not drive a personal vehicle. Responses that were unreasonable were removed from the dataset analyzed to meet study objectives. Table 4-3 summarizes the flag codes, the flag definition, and whether the data were excluded from the dataset.

**Table 4-3 Flag Data Codes**

FLAG CODE	FLAG DEFINITION	# OF RESPONSES EXCLUDED FROM DATASET	EXCLUDED FROM DATASET? (Y/N)
XN	Open-ended response indicated participant did not respond truthfully	2	Y
XND	Participant does not drive a personal vehicle	2	Y
XNI	Response conflicts with two or more survey questions	6	Y
XNT	Response represents a check that the survey platform was operating properly	4	Y
XNO	Participant lives outside of Yakima County	15	Y
XRU	One or more survey questions were unanswered	0	N
XRI	Participant's response is reasonable but not consistent with another question response, potentially due to respondent misinterpretation	0	N

## 5.0 RESULTS AND DISCUSSION

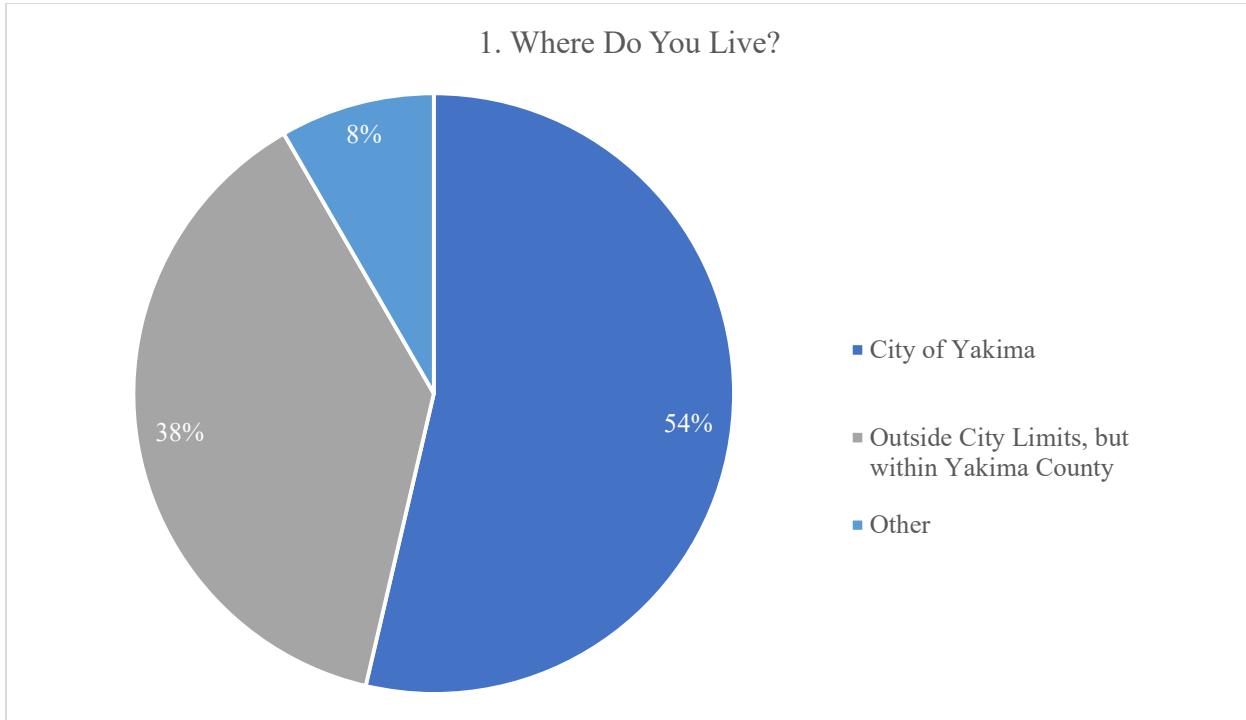
This section presents the results of the study and is organized by study objective (Section 4.2 of study QAPP). For each objective a succinct response regarding the results is first provided in italicized text followed by details regarding how the research team reached those conclusions. The data presented consists primarily of survey responses. Appendix A provides the study survey questions and the survey data analysis is included in Appendix C.1. Observational data and commercial car wash usage data are also discussed in this section; data is included in Appendix C.2 and Appendix E. The sample sizes of data collected are also discussed in this section. The data analysis methods are described in Section 13 of the study QAPP.

The results of the study were filtered to include only data that was expected to be representative of the target population, specifically residents who were likely exposed to the City of Yakima E&O materials and who drive a personal vehicle. Several questions were included in the survey to check whether the respondent appeared to be representative of the target population. The list below addresses how data was filtered based on these survey questions.

- **Residence** – Survey Question 1 asked respondents where they live and were provided three response options: City of Yakima, Outside the Yakima city Limits but within Yakima County, and Other. Of those who responded to the survey, the majority (54 percent) indicated they live within the City of Yakima as shown in Figure 5-1. A large portion of respondents also live outside of the City of Yakima limits, but within Yakima County (38 percent). To increase the sample size for analysis, responses from participants living in Yakima County were included. The participants living outside the City of Yakima but inside of Yakima County were likely to have been exposed to the City's E&O materials because Yakima County provided links on their webpage to the City's E&O materials, or they may have attended the Central Washington State Fair where the E&O materials where distributed. Eight percent of respondents indicated they live outside of Yakima County and their responses were removed from the dataset because it is unlikely they would have received or saw any of the E&O materials or they may be responding about different E&O programs.
- **Personal Vehicle** – Survey Question 3 asked respondents if they drive a personal vehicle. The results presented in this section represent all the respondents who answered “yes” to this question. Four respondents were removed from the results because they indicated they did not drive a personal vehicle. The results presented therefore represent residents in the City of Yakima as well as residents of Yakima County who drive a personal vehicle.

It is important to note that after the data were filtered, the sample size for baseline (before E&O program was implemented) survey responses were 260 and the sample size for the follow-up (after the E&O program was implemented) survey responses was 62. The desired sample size for the study was 500 to 1,000 survey responses each for the baseline and follow-up surveys. The desired sample size would have provided a 95 to 97 percent confidence interval that the data collected is representative of the target population, as described in Section 7.2 of the QAPP. A lower sample size results in a lower confidence interval that the sample is representative of the target population. Specifically, the baseline sample size of 260 corresponds to about a 90 percent confidence interval and the follow-up sample size of 62 corresponds to much less than a 90% confidence interval (Israel, 1992). The lower sample size and the fact that the survey responses are not paired datasets (paired datasets use the same participants for both the baseline and follow-up data) may cause differences between baseline and follow-up responses that do not accurately represent the impact of the E&O materials on the target audience during the study. For example, in Section 5.3.4, a statistically significant decrease in the awareness of residential car washing BMPs is observed; meaning that awareness

significant decrease in the awareness of residential car washing BMPs is observed; meaning that awareness declined after the target audience reviewed the E&O materials. However, this change may be caused by the low sample size and not by an actual decrease in awareness. Because of the lower than desired sample sizes obtained for the study, recommendations in Section 5.4 include identifying ways to disseminate the E&O materials to reach a larger portion of the target population.



**Figure 5-1 Where Respondents Reside**

## 5.1 Objective #1: Understand to what extent the target audience currently uses preferred car washing BMPs

*Succinct Objective Summary: Prior to implementing the E&O program, survey responses indicated that the most frequently used preferred car washing BMP reported was commercial car washing, which was also the BMP most respondents were aware of. The least commonly reported preferred car washing BMP was calling the spill control hotline in an event of a soap spill. Respondents also indicated they used non-environmentally friendly practices, which were reported as a group instead of individual practices. Respondents indicated using non-environmentally friendly practices more often than the preferred BMPs excluding commercial car washing.*

The survey was used to measure awareness of car washing BMPs and impacts of car wash wastewater as well as adoption of car washing BMPs. Awareness is important to adoption because the target audience needs to be aware of the preferred behavior (use of car washing BMPs) to implement the behavior (McKenzie-Mohr, 2013). Barriers to adopting car washing BMPs were also identified through the survey responses. It was necessary to identify the barriers, as literature suggests that effective E&O programs remove barriers to the desired behavior to get a target audience to adopt the desired behavior and improving awareness of a behavior often is not enough to achieve a behavior change (McKenzie-Mohr, 2000). The

barriers were used to inform the recommendations for future E&O programs in Section 5.4. The following paragraphs focus on the findings related to awareness, adoption, and barriers to adoption using the baseline (before the E&O program was implemented) survey responses.

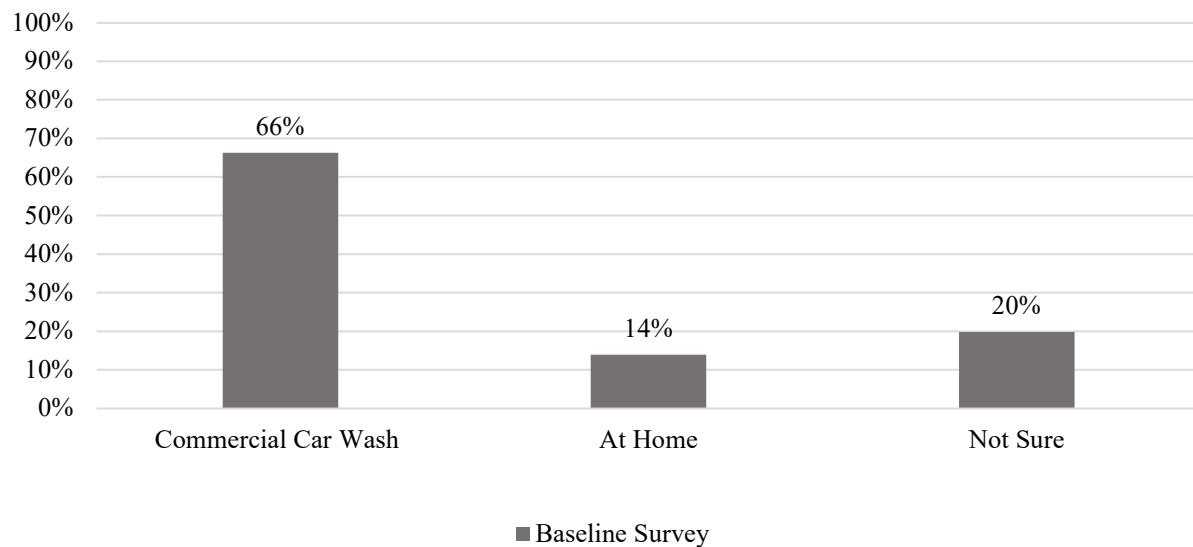
### 5.1.1 Baseline Survey Results

To measure awareness of the impacts of car wash wastewater, the survey asked participants whether they thought it was better for a vehicle to be washed at home or in a commercial car wash (Question 8) and whether they were aware of the impacts of car wash wastewater on stormwater and bodies of water (Question 9). Question 8 was asked to understand participants' awareness of commercial car washes providing a better option to limit the impacts of car wash wastewater on stormwater because commercial car washes are required to prevent wastewater from discharging to storm drains. The baseline results of Questions 8 and 9 are shown in Figure 5-2 and Figure 5-3.

The results of Question 8 in Figure 5-2 suggest that almost two-thirds of the participants (66 percent) understood prior to the E&O program that washing a vehicle at a commercial carwash is better for the environment than washing a vehicle at home. The results of Question 9 in Figure 5-3 indicate that roughly the same percentage of respondents (70 percent) had some awareness (fully aware [28 percent], mostly aware [18 percent], somewhat aware [26 percent]), while the remaining were not aware (28 percent) of the impacts of car wash wastewater on stormwater and water bodies. The baseline survey responses to Questions 8 and 9 are compared to follow-up survey responses in Section 5.3.1 to measure whether a change in awareness occurred during the study.

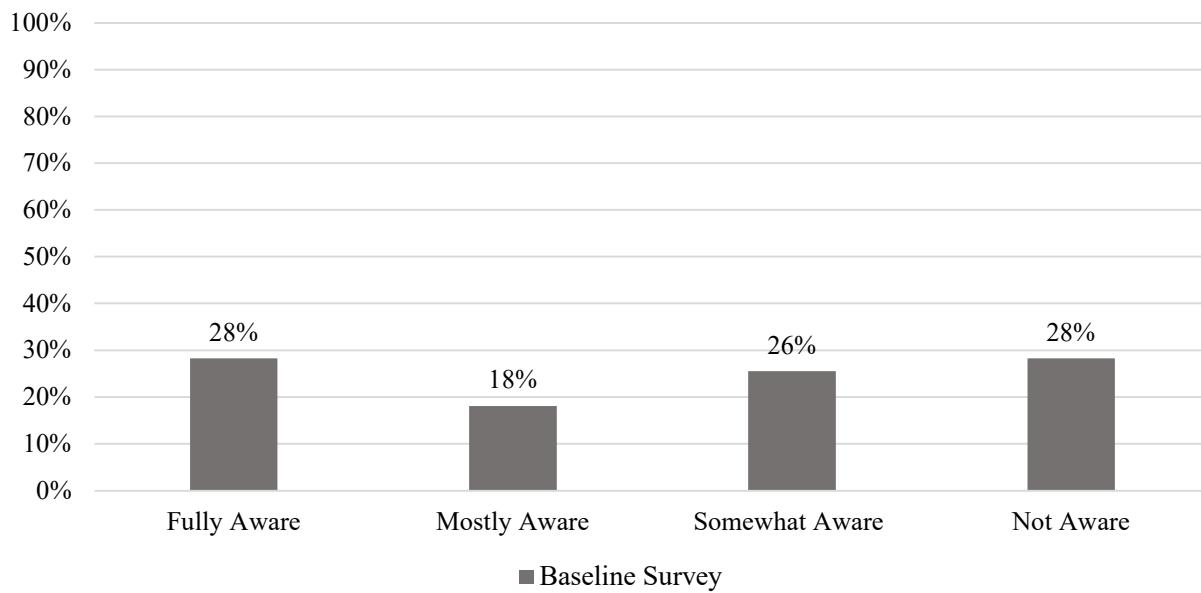
To gain an understanding of the participants' awareness of car washing BMPs before the E&O program was implemented, Question 11 of the survey asked survey participants which environmentally friendly car washing practices they were aware of. Practices asked about included use of a commercial car wash; washing cars less frequently; washing vehicles on pervious surfaces at home; using waterless or biodegradable car washing products; calling the spill control hotline in the event of a spill; and avoiding washing of the engine or undercarriage. The baseline survey results are summarized in Figure 5-4 which suggest that the most well-known BMP prior to implementation of the E&O program was to use a commercial car wash (76 percent). Lesser known BMPs that participants were aware of included washing a vehicle less often (43 percent), washing a vehicle with biodegradable soap (31 percent), and washing a vehicle on a pervious surface (28 percent). Of the remaining BMPs (waterless car washing, call spill control hotline, and avoid washing engine, undercarriage, mounted equipment, or tires), less than 20 percent of participants indicated they were aware of them prior to taking the survey.

8. Where Do You Think It is Best for the Environment to Wash your Vehicle?



**Figure 5-2 Awareness of Best Car Washing Location (Baseline Responses Only)**

9. Did You Know that Car Wash Wastewater can Pollute Our Streams, Lakes, and Rivers?



**Figure 5-3 Awareness of Car Washing Wastewater Impacts (Baseline Responses Only)**

11. Before Taking this Survey, How Many Environmentally Friendly Car Washing Methods Were You Aware of? Select All That Apply.

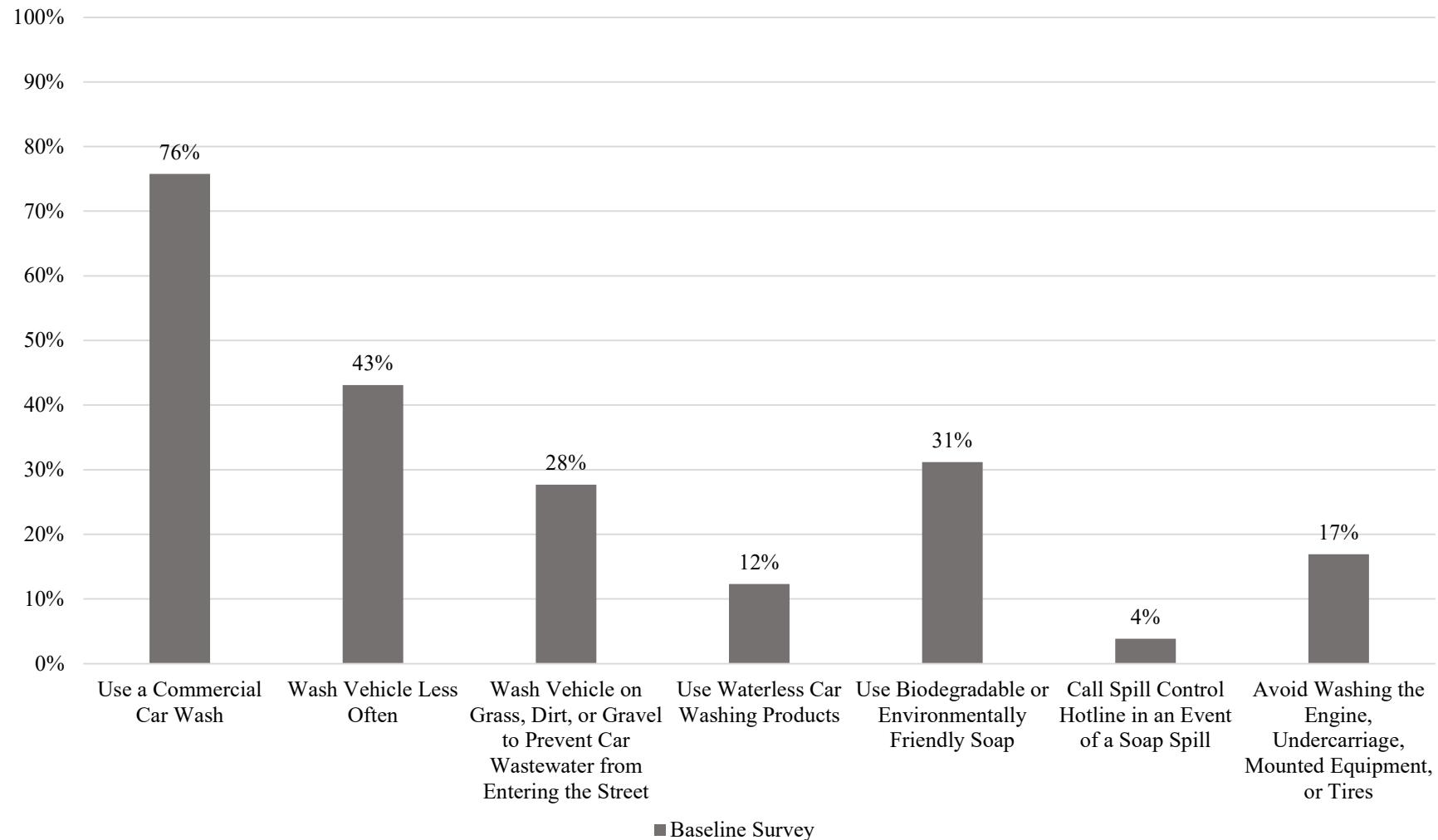


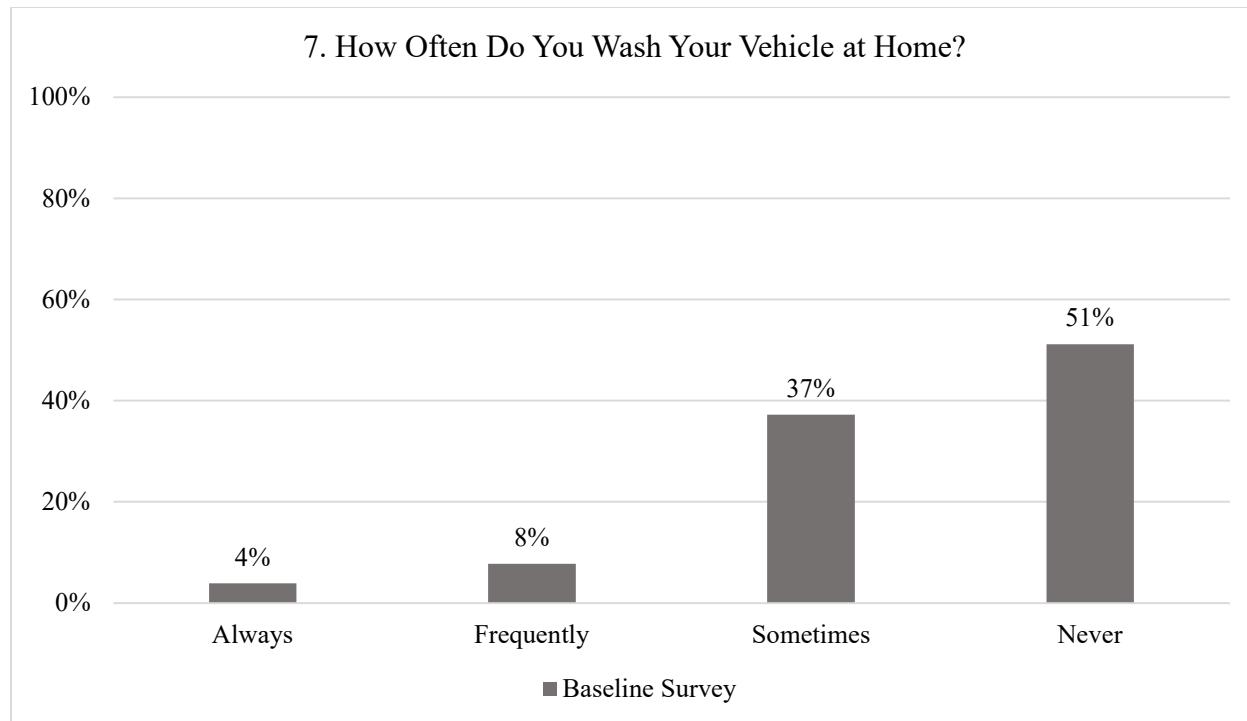
Figure 5-4 Awareness of Car Washing BMPs (Baseline Responses Only)

Use of car washing BMPs prior to the E&O program being implemented was measured through Questions 7 and 10 of the survey. Questions 7 and 10 asked participants about the frequency they wash their car at home and which car washing BMPs they use. Question 7 was asked to understand how widely residential car washing (washing cars at home) is used as well as to determine if a change in frequency occurred during the project (by comparing baseline to follow-up responses). According to the baseline survey responses shown in Figure 5-5, roughly half of the participants before the E&O program washed their vehicles at home with some frequency (49 percent), while the other half (51 percent) indicated they never wash their car at home.

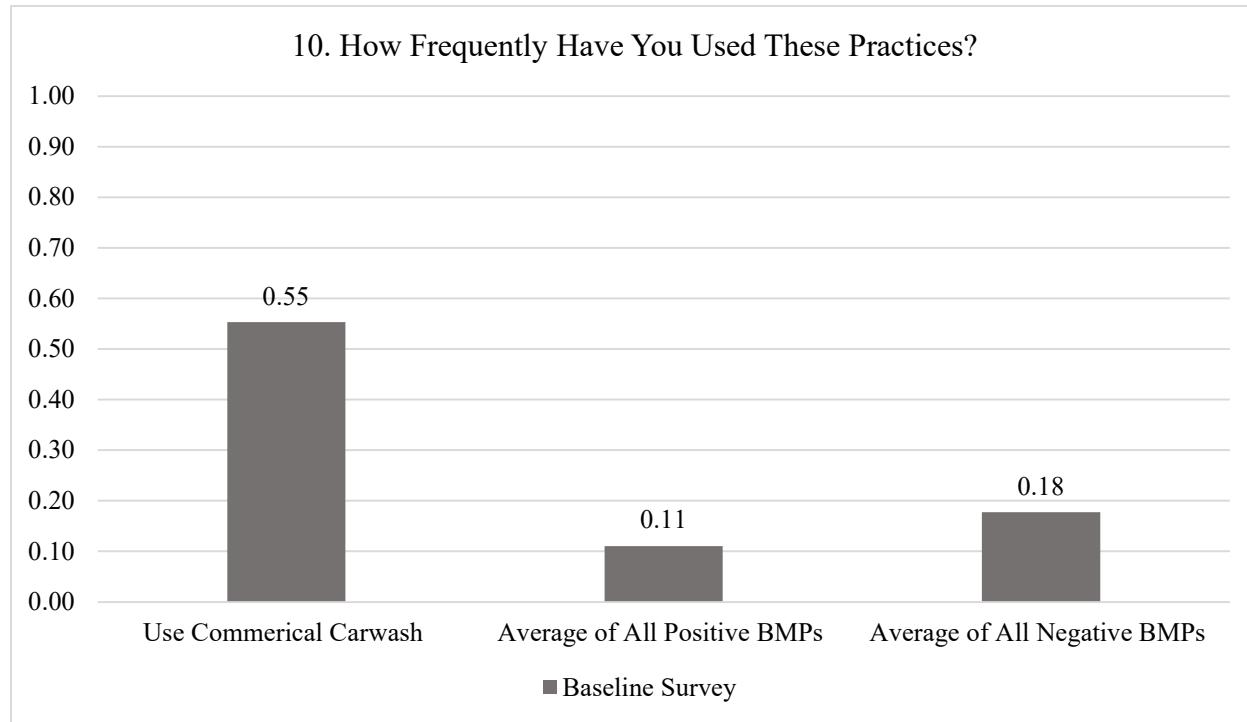
The intent of Question 10 was to understand to what extent the target audience used specific car washing BMPs prior to implementation of the E&O program. Potential responses to Question 10 included five preferred car washing BMPs as well as three non-environmentally friendly practices to limit social desirability bias. Section 6 of the QAPP and Section 5.0 of this document provide additional discussion on social desirability bias and how it was addressed in this study. The specific preferred car washing BMPs and non-environmentally friendly practices are listed in the footnotes of Table 5-1.

The results of Question 10 are shown in Figure 5-6. The three categories shown in the figure were developed by grouping responses into “Use of commercial car wash” (use a commercial car wash), “Average of all positive BMPs” (includes all positive at-home BMPs), or “Average of all negative BMPs” (includes all negative at-home BMPs). Commercial car wash usage was kept separate from the positive at-home BMPs as respondents who selected commercial car wash as a BMP tended to only select that BMP. Each BMP or practice was also associated with a Likert Scale number value as described in Section 13.1 of the study QAPP. Table 5-1 includes the Likert Scale values for car washing BMPs and non-environmentally friendly practices. The value associated with each category is the average of the BMP Likert values included in that category; higher positive average values indicate better behavior, while lower (including negative) values indicate worse behavior.

Responses to Question 10 indicate that participants, on average, are using commercial car washes at least “frequently” (associated with a 0.55 Likert scale value as shown in Table 5-1). All positive BMPs appear to be, on average, used less frequently than “sometimes” (associated with a 0.25 Likert scale value as shown in Table 5-1) and more than “never” (associated with a -1 Likert scale value). Because the average value for non-environmentally friendly practices is slightly positive (approaching a 1.0 Likert scale value as shown in Table 5-1), it can be assumed that participants use these practices to some extent on average. Graphs showing individual baseline response data (Appendix C.1 of the study TER) suggests that non-environmentally friendly practices are generally used “sometimes” by participants and potentially more frequently in the case of washing vehicles on pavement.



**Figure 5-5 Adoption of Preferred Car Washing Location (Baseline Responses Only)**



**Figure 5-6 Frequency of Preferred Car Washing BMP Adoption (Baseline Responses Only)**

**Table 5-1 Likert Scales for Car washing BMPs and Non-Environmentally Friendly Practices**

<b>Response to Question 10</b>	<b>Car Washing BMPs (Positive BMPs) Likert Scale<sup>(1)</sup></b>	<b>Non-Environmentally Friendly Practices (Negative BMPs) Likert Scale<sup>(2)</sup></b>
Always	1	-1
Frequently	0.5	-0.5
Sometimes	0.25	-0.25
Never	-1	1
Not Applicable	0	0

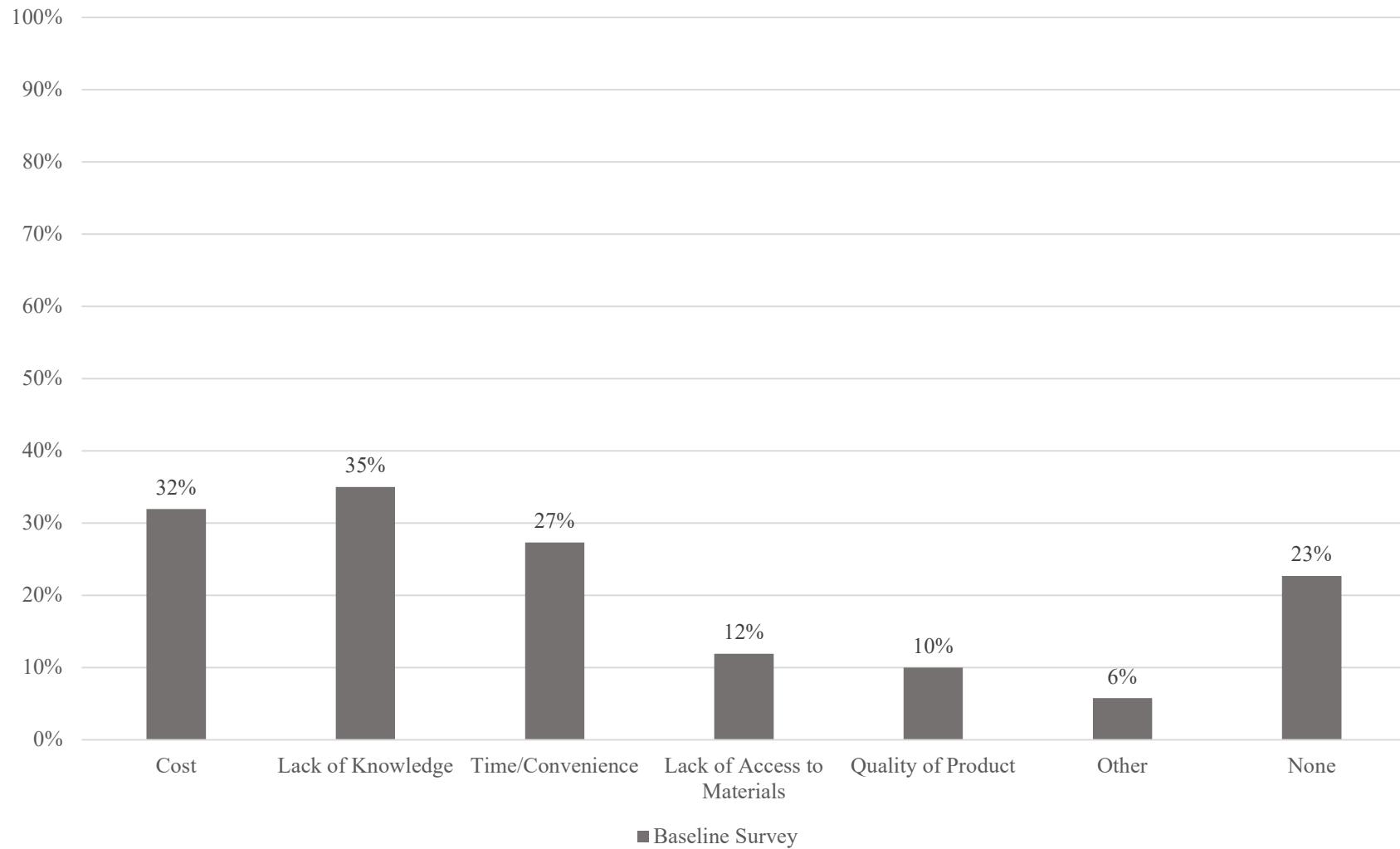
Notes:

<sup>(1)</sup>Car washing or Positive BMPs include: wash car on grass or gravel, use biodegradable or environmentally friendly soap, and contain soap spills immediately or call spill control hotline in the event of a soap spill.

<sup>(2)</sup>Non-environmentally friendly practices or Negative BMPs include: wash car on pavement; drain/hose water and soap into the street; and wash vehicle engine, undercarriage, or mounted equipment.

Barriers to adopting the BMPs listed in Question 10 were identified prior to implementation of the E&O program. Questions about barriers were included to assist with identifying recommendations to improve the E&O program. Respondents were asked to select one or more options from a specified list, including cost, lack of knowledge, time or convenience, lack of access to materials, quality of product, other barrier, or no barriers. The responses for each barrier are summarized in Figure 5-7. The top three barriers identified before the E&O program was implemented included the perceived cost (32 percent), time or convenience (27 percent), or lack of knowledge (35 percent). The remaining barriers (lack of access, quality of products, and other) were selected by less than 15 percent of the respondents, and “no barriers” was selected by 23 percent of the respondents.

13. Which of These Categories are Barriers that Prevent You from Practicing Environmentally Friendly Car Wash Techniques? Select All That Apply.



**Figure 5-7 Barriers Identified to Adopting Car Wash BMPs (Baseline Responses Only)**

### 5.1.2 Baseline Observational Results

Observational data were collected during the study to validate the findings of the survey responses. Data were collected during drive-by visits to the target neighborhoods and recording any instances of car washing practices at those residences. More details about the observational data collection are described in Sections 7 and 8 of the study QAPP and a copy of the filled out observational data forms can be found in Appendix C.2. During the baseline observational drive-by visits, four residential car washes were observed over two separate weekends in the three target neighborhoods. A total of approximately 700 homes are located within the three neighborhoods and were all observed during each drive-by visit (two drive-by visits performed each weekend). Of the four residential car washes observed, three occurred on impervious surfaces and two likely resulted in water reaching the storm drain. Washing of the tires on the vehicle was also observed at two of the three residential car washes. The number of observations of residential car washing (n=4) were too low to use to validate the survey responses. To supplement the observational data, car wash usage data were requested from commercial car washes, which is discussed in Section 5.3.3.

## 5.2 Objective #2: Develop and implement an E&O program targeting adoption of preferred car washing BMPs

*Succinct Objective Summary: An E&O program targeting the population of the City of Yakima and the use of preferred car washing BMPs was developed and implemented during the study.*

Prior to the study, there was no known E&O program in the City of Yakima or Yakima County that addresses the impacts of and preferred practices to manage car wash wastewater. An E&O program to address these behaviors was developed as part of this study (Appendix D of study QAPP) and was implemented to target the general public, specifically those City of Yakima residents who drive one or more vehicles, about the impacts of car wash wastewater entering storm drains and preferred car washing BMPs that will prevent the car wash wastewater from entering the storm system.

The materials that were developed for the E&O program included postcards, doorknockers (brochures), social media posts, stickers (replaced by tote bags and hand sanitizer pens due to unavailability of the stickers), and towels for use during car washing (Appendix D of the study QAPP). The postcards and doorknockers were delivered in-person to homes in the target neighborhoods. The other materials, excluding social media posts, were distributed at the Central Washington State Fair. Table 5-2 below includes a schedule of E&O material dissemination during the study. Materials used for the E&O program for this study can be found in Appendix D of the study QAPP.

**Table 5-2 E&O Program Schedule During Study**

E&O Program Schedule	Aug		Sept		Oct	
Mail Postcard to Target Neighborhoods	X					
Deploy E&O Social Media Posts*		X	X	X	X	
Deploy Doorknocker (Brochure) to Target Neighborhoods			X			
Deploy E&O Materials at Fair <sup>(1)</sup>				X	X	

Notes:

(1)Part of E&amp;O program planned to continue after study.

The distribution of the E&O program materials was modified for the study from what will typically be implemented to accommodate data collection. Specifically, it is not anticipated that in-person delivery of E&O materials (e.g., doorknockers, postcards) will occur in the future. The in-person delivery was included as part of the study for target neighborhoods to increase awareness and survey responses where observational data will be collected. Before the start of data collection, it was anticipated that future implementation of the E&O program would distribute the materials through social media posts during the summer months, when car washing is expected to occur, and at the Central Washington State Fair. Section 5.4 of this document provides additional discussion and recommendations about how E&O materials should be disseminated in the future.

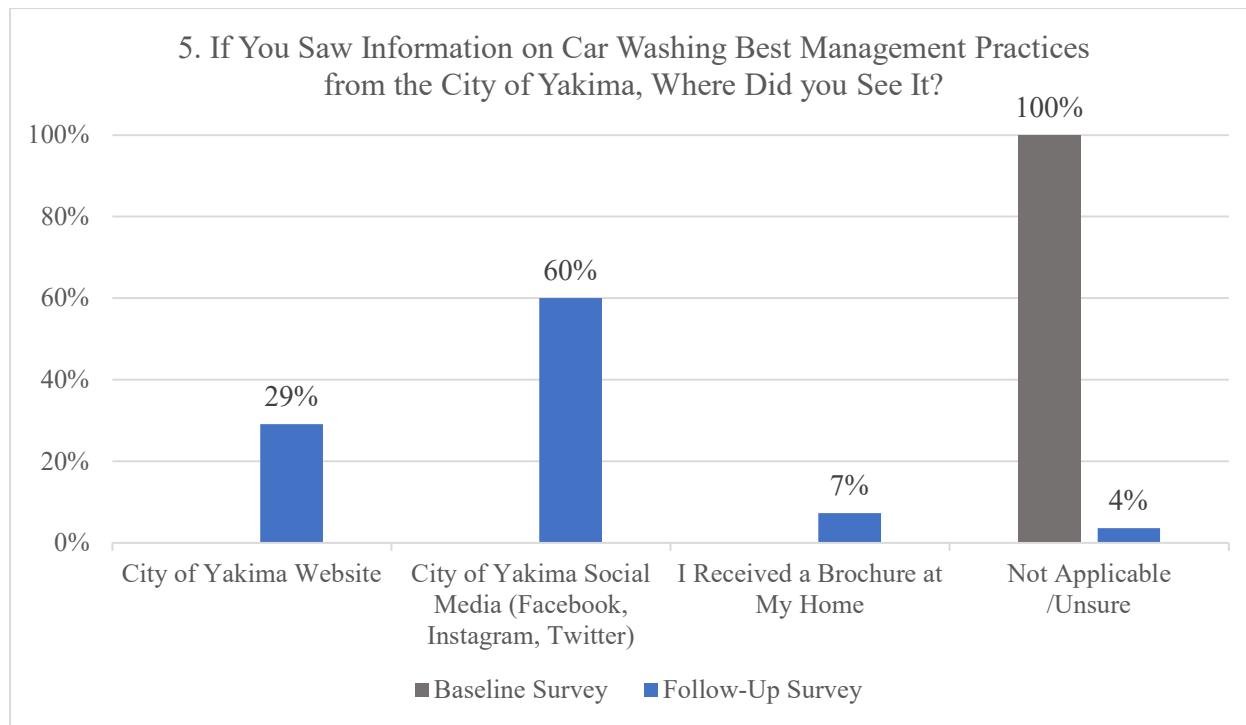
E&O materials and the surveys were also developed in English and Spanish as the population of the City of Yakima is 45.7 percent Hispanic or Latino (United States Department of Commerce, 2019). The portion of respondents that completed the English survey (95 percent baseline and 85 percent follow-up) was significantly higher compared to those who completed the Spanish survey (2 percent baseline and 5 percent follow-up). However, a number of respondents who completed the English survey indicated the primary language spoken in their household was Spanish (3 percent baseline and 8 percent follow-up). The estimated total number of Spanish-speaking respondents was 5 percent for the baseline survey and 13 percent for the follow-up survey. Additional discussion regarding difference in response rates is addressed in Section 5.4. The results presented in this section combine responses from both the English and Spanish surveys. Following the study, E&O materials are expected to continue to be developed in English and Spanish.

### 5.3 Objective #3: Measure adoption of targeted behaviors by the target audience

*Succinct Objective Summary: No statistically significant change in awareness or adoption of targeted behavior was measured during the study, except for a decrease in use of commercial car washes and a decrease in awareness of at-home car washing BMPs. The decrease in use of commercial car washes appears to be a market trend, caused by COVID-19 impacts, that has been observed by commercial car washes in Yakima as well as throughout the U.S. The decrease in awareness of at-home car washing BMPs is maybe due to the low sample size and corresponding reduced confidence interval achieved. As such, the decrease likely represents a difference between the samples collected and not necessarily a decrease in awareness.*

### 5.3.1 Follow-Up Survey Results and Comparison

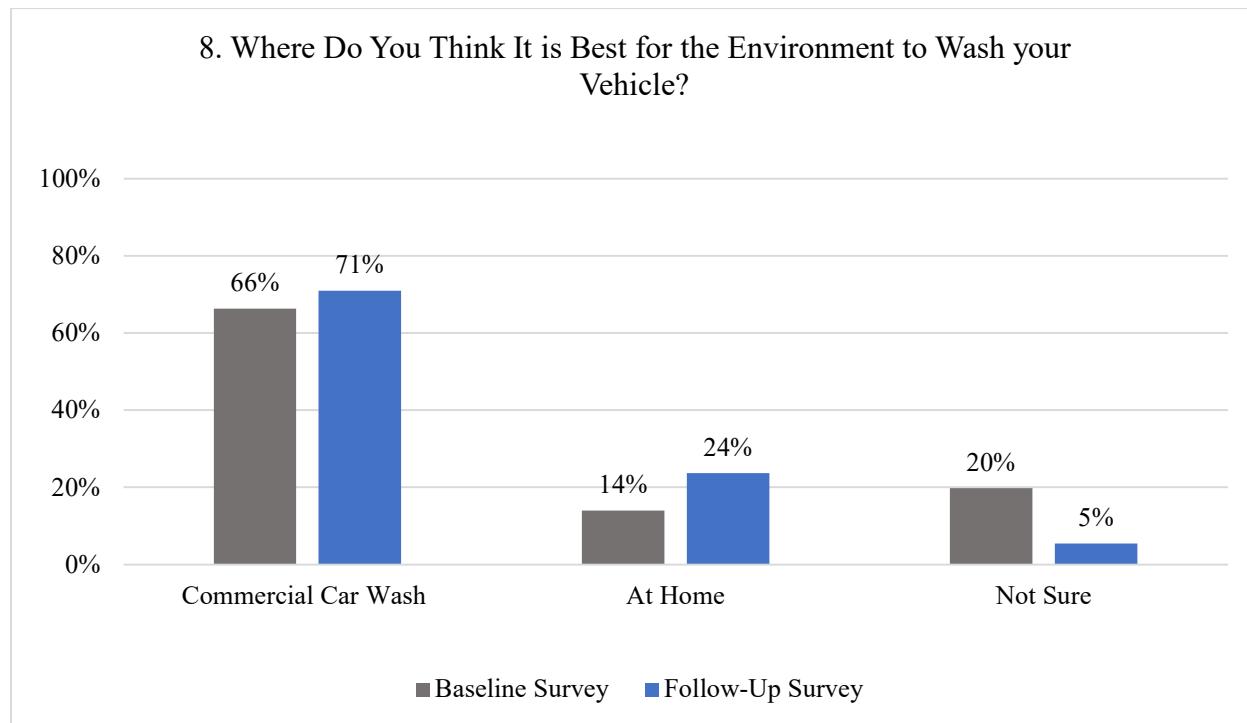
The following paragraphs focus on the results of the follow-up survey responses (collected after the E&O program was implemented) and a comparison of follow-up survey responses to baseline survey responses. The follow-up survey responses were collected using the same survey as the baseline survey responses. Responses were designated as follow-up responses if participants responded yes to Question 5 of the survey indicating that they had seen information on car washing BMPs from the City of Yakima. Responses to Question 5 are summarized in Figure 5-8 which also shows that if the respondent saw the car wash information, where they saw it. If the respondent indicated they had not seen information on car washing BMPs from the City of Yakima, the survey response was designated as a baseline survey response (designated as 100 percent for not applicable in Figure 5-8). The comparison between baseline and follow-up survey responses in the following paragraphs will provide a measurement of changes in awareness, adoption, or barriers related to the impacts of car wash wastewater and car washing BMPs following the implementation of the E&O program.



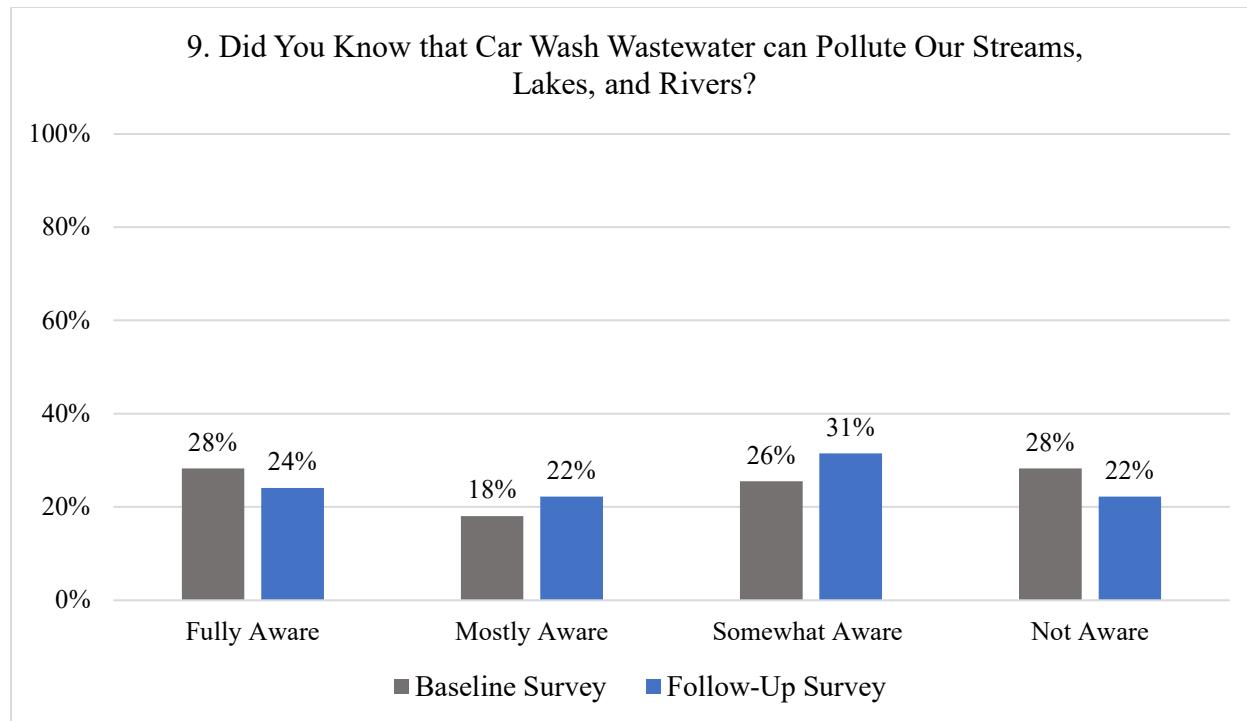
**Figure 5-8 Question Used to Distinguish Baseline and Follow-Up Survey Responses**

As mentioned in Section 5.1.1, Questions 8, 9, and 11 were used to gauge awareness of the target population. Questions 8 and 9 of the survey were used to determine what participants believed the best environment was to wash their vehicle and whether they were aware that car wash wastewater can pollute water bodies, respectively. Question 11 asked participants which car washing BMPs they were aware of. Figure 5-9, Figure 5-10, and Figure 5-11 provide a visual comparison of the survey follow-up and the baseline responses. Results shown in these figures indicate minor, likely insignificant change (less than 5 percent difference) occurred relating to awareness of the impacts of car wash wastewater and car washing BMPs. The slight increases and decreases in percentages between baseline and follow-up responses are expected as the baseline and follow-up survey responses are not paired datasets (where paired datasets use the same participants). More significant changes from baseline to follow-up responses were observed for

Question 8. Specifically, when comparing baseline responses to follow-up responses, fewer participants responded with “not sure” (-15 percent difference) when asked where they thought it was the best environment to wash a vehicle. However, the percent of participants who selected either “commercial car wash” or “at home” also increased, by 4 percent and 10 percent, respectively. The change could therefore reflect some mixture of an increase in awareness of commercial car washing being better for the environment with a reduction in people using commercial car washes, which is discussed later in this section and Section 5.3.3. Further discussion on whether the changes in awareness related to Question 8-11 was significant is included in Section 5.3.4. Based on the survey data, a change in awareness was not observed for impacts of car wash wastewater or car washing BMPs, while a slight change in the use of a commercial car wash versus at-home car washing was observed.

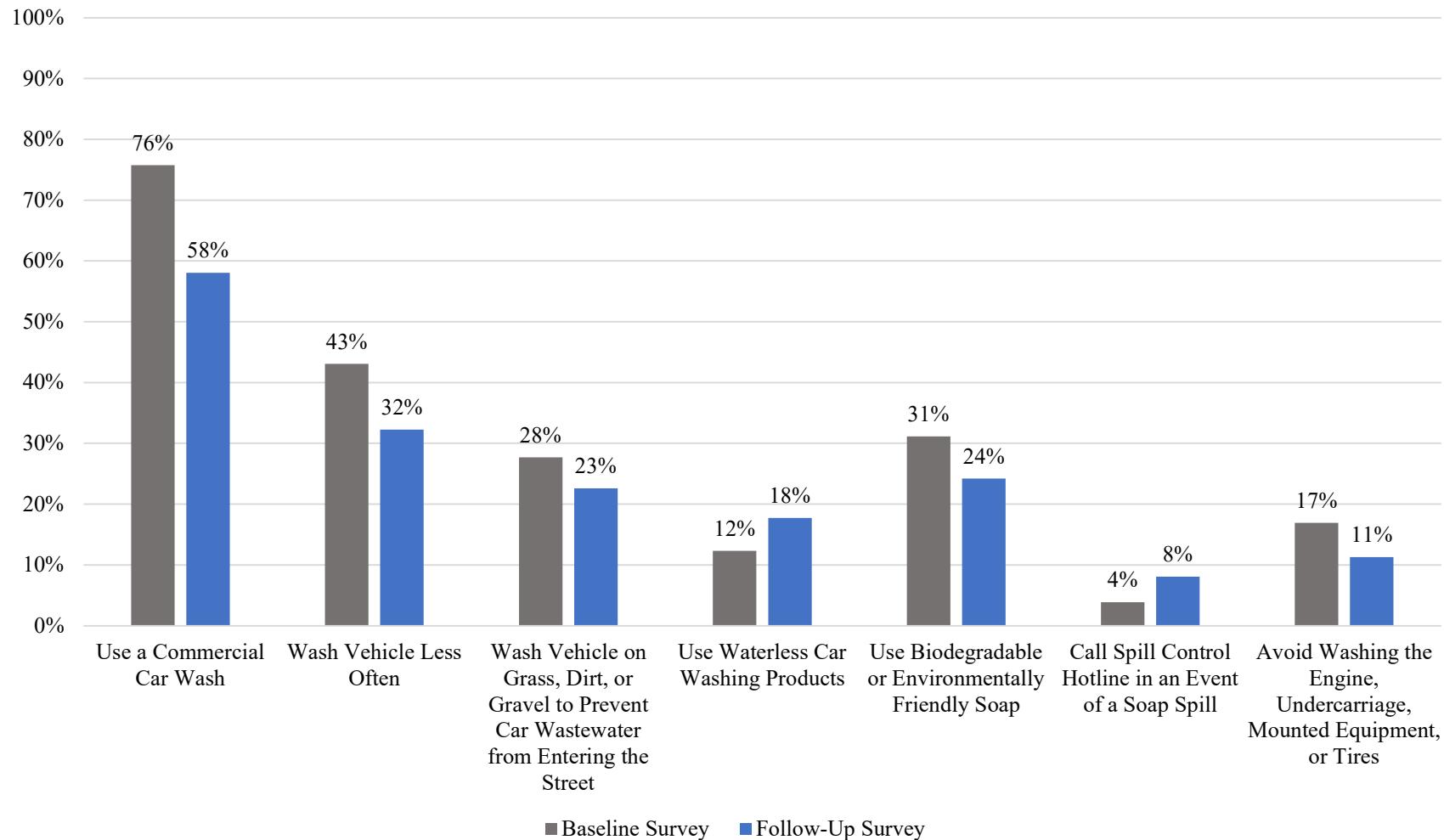


**Figure 5-9 Awareness of Best Car Washing Location**



**Figure 5-10 Awareness of Car Washing Wastewater Impacts**

11. Before Taking this Survey, How Many Environmentally Friendly Car Washing Methods Were You Aware of? Select All That Apply.

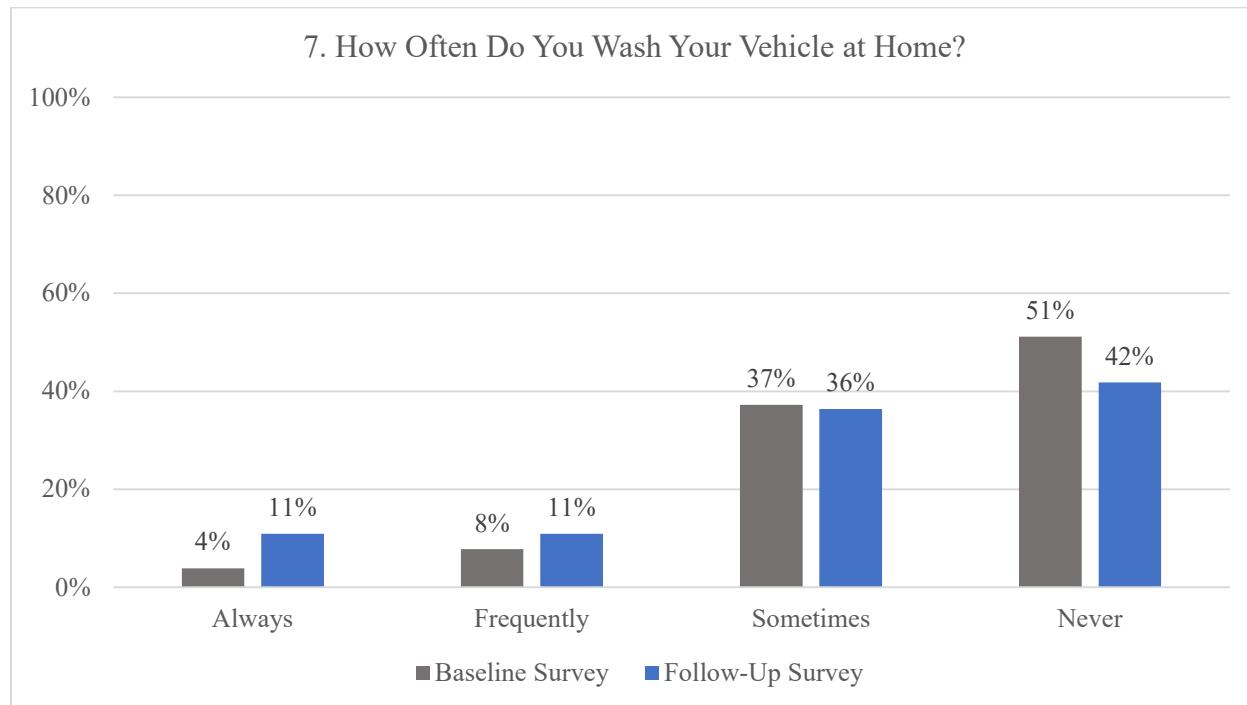


**Figure 5-11 Awareness of Car Washing BMPs**

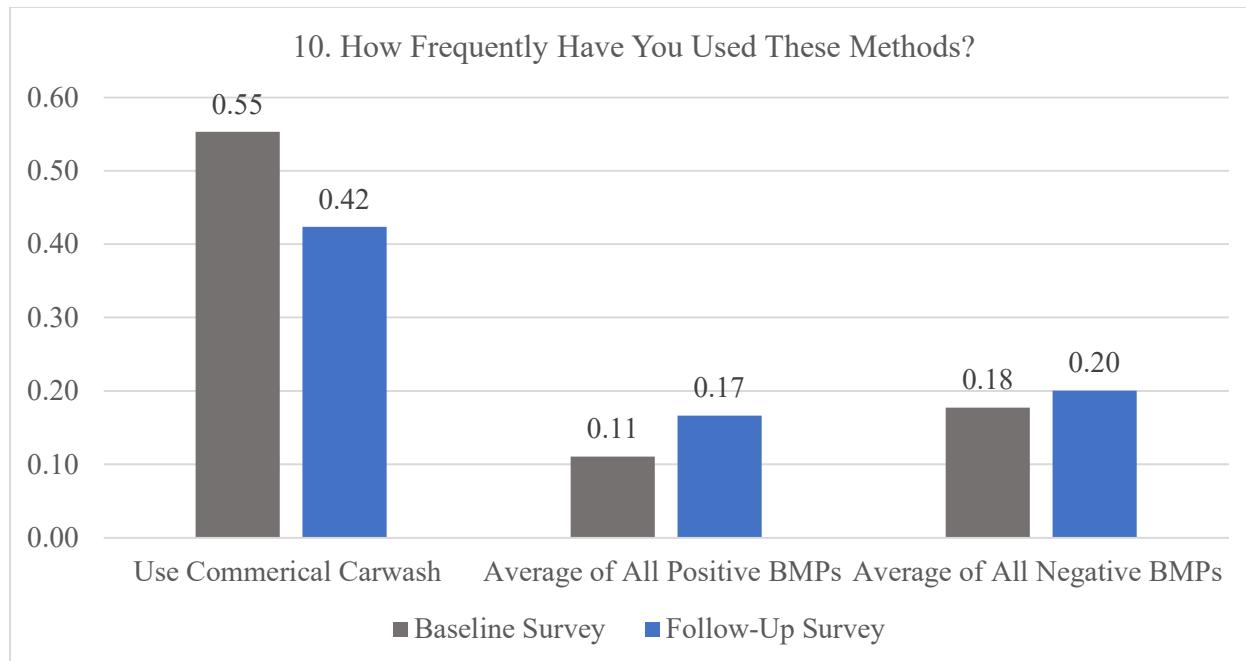
As mentioned in Section 5.1.1, Questions 7 and 10 were used to understand adoption of the targeted behavior (use of car washing BMPs). Figure 5-12 and Figure 5-13 show the follow-up responses as well as the baseline responses for comparison. Figure 5-13 was developed as described previously in Section 5.1.1. Table 5-1 includes the Likert Scales used for the three categories (use commercial car wash, average of all positive BMPs, and average of all negative practices).

In general, the follow-up survey results to Questions 7 and 10 did not differ greatly from the baseline survey results. Differences less than 5 percent in Figure 5-12 or 0.05 in Figure 5-13 were assumed to be insignificant, as the baseline and follow-up survey responses are not paired datasets. Larger changes were observed between baseline and follow-up survey responses for Question 7. In the follow-up survey, 58 percent of participants responded they wash their car with some frequency as opposed to 49 percent of participants who responded to the baseline survey. This may indicate that an increase in residential car washing is occurring and appears to be consistent with the results related to Question 10.

A decrease in the average use of commercial car washes was observed in the results of Question 10. Figure 5-13 shows the average score decreases 0.13 points. As mentioned in Section 5.1.1, this decrease corresponds to a decrease in the frequency that the BMP is used on average by participants. This decrease in use of commercial car washes was also observed in the commercial car wash usage data, which may indicate that residents of Yakima are tending to use commercial car washes less which is consistent with responses to Question 7 (Figure 5-12) indicating an increase of 9 percent in respondents who wash their car at home. Additional discussion on the decreasing use of commercial car washes is described in Section 5.3.3 and was found to be a statistically significant change (Section 5.3.4).



**Figure 5-12 Adoption of Preferred Car Washing Location**



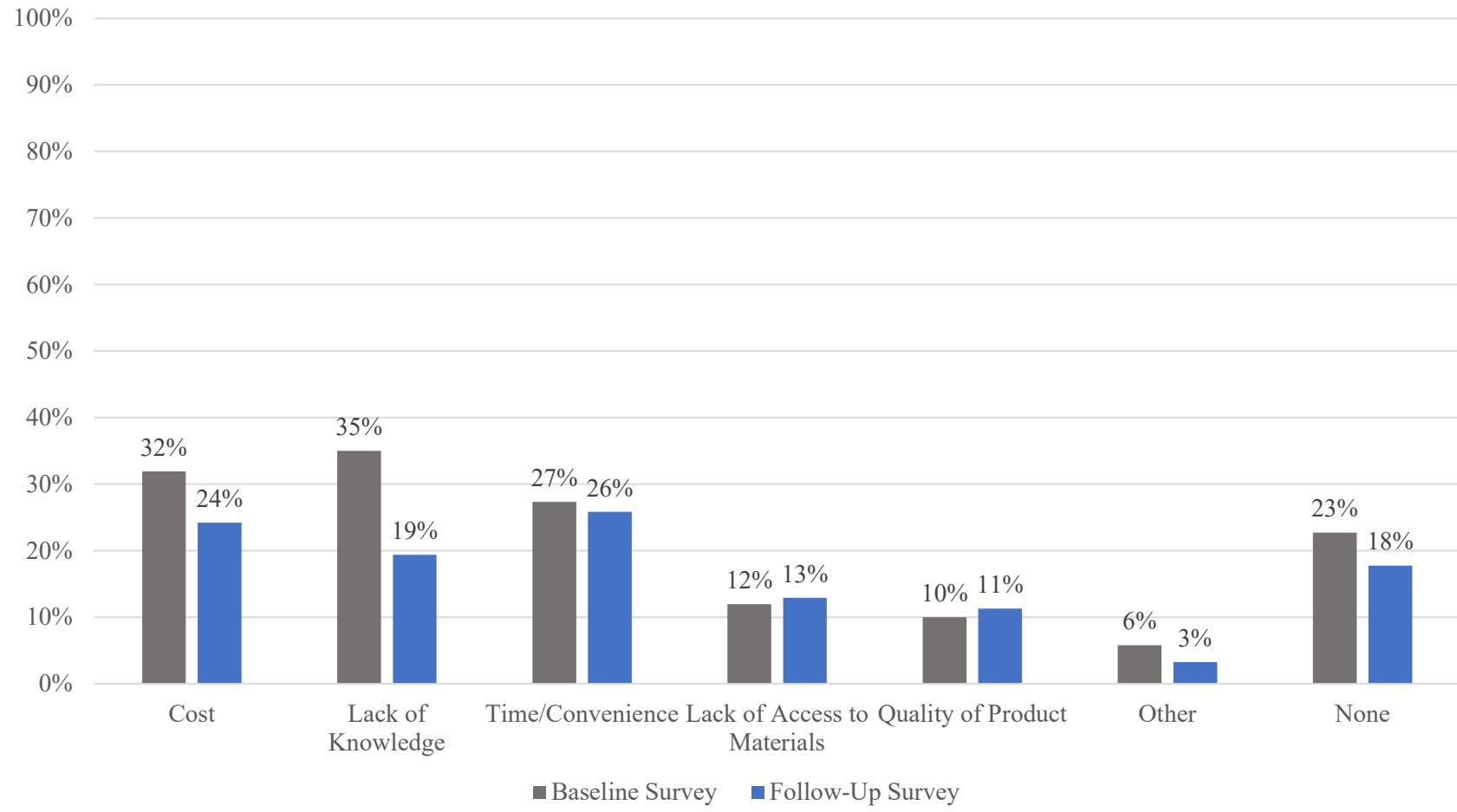
**Figure 5-13 Frequency of Preferred Car Washing BMP Adoption**

The barriers identified in the follow-up survey responses are shown on Figure 5-14. Barriers mentioned in the follow-up survey responses were generally mentioned at about the same frequency (less than 5 percent difference) as barriers in the baseline survey responses. However, a decrease (-16 percent) in mentions of “lack of knowledge” as a barrier may indicate an increasing awareness of car washing BMPs. It is anticipated that future E&O programs targeting the adoption of car washing BMPs may continue to lower this barrier.

Other responses that appeared to decrease (baseline compared to follow-up data) during the study were cost (-8 percent) and “no barriers” (-7 percent). The reason for the decrease in the target audience’s perception of cost as a barrier is unknown. While lack of knowledge (awareness) was addressed in the E&O program, the cost of using car washing BMPs was not. The lower number of participants who selected “no barrier” suggests the E&O program may be reducing the number of perceived barriers for the target audience.

Despite some decreases in number of mentions between baseline and follow-up survey responses, lack of knowledge, cost, and time/convenience were the most noted barriers related to adopting car washing BMPs. As mentioned previously, lack of knowledge may continue to be reduced as a barrier with the continuation of the E&O program and improving/increasing methods for disseminating the E&O materials. The number of responses for time/convenience however did not significantly change (less than 5 percent change) between baseline and follow-up survey responses. As a result, the recommendations to the E&O program will address cost and time/convenience to increase the effectiveness of future implementations of the E&O program. Recommendations to improve the E&O program and address these barriers are summarized in Sections 5.4.

13. Which of These Categories are Barriers that Prevent You from Practicing Environmentally Friendly Car Wash Techniques? Select All That Apply.



**Figure 5-14 Barriers Identified to Adopting Car Wash BMPs**

### 5.3.2 Follow-Up Observational Results

Follow-up observational drive-by visits were conducted in the target neighborhoods following the Central Washington State Fair. No residential car washing was observed during two separate weekends in the target neighborhoods. In all, four at-home car washing events were observed for the baseline drive-by visit and none were observed for the follow-up visit. Because of the low number of car washing events observed during the study, the survey and observational data could not be compared for consistency.

### 5.3.3 Commercial Car Wash Usage Results

To supplement the observational data collected during the study, five car wash locations in the City of Yakima limits were contacted to request car wash usage data in the form of number of car washes sold per week or month. While there are more car washes in the City of Yakima limits, these car washes were selected because of their proximity to the target neighborhoods and freeways or large arterials. Of these locations, only two were successfully reached and no quantitative data were acquired. One of the locations verbally indicated that he had observed a decrease in car washes per week: in previous years approximately 110 to 120 car washes per week were purchased but in 2021 he estimated 20 to 30 car washes have been purchased per week. The individual on the phone stated that he would provide data; however, at the time of writing this document, none had been received. Another location provided a contact to email for the data request, but a response to the data request was not received. The other three locations were contacted three times over a period of three weeks. At these locations, the phone was not answered. One location's voicemail inbox was full and voicemail messages with callback numbers were left for the other two locations. No response was received from the three locations. In all, no quantitative data were provided, though the verbal data provides an estimate of the usage of commercial car washes in Yakima and may align with national trends observed in the car wash industry.

According to a market analysis report for commercial car washes in the United States published by Grand View Research, the commercial car wash industry experienced a drop in sales in 2020 and 2021, likely due to effects of COVID-19 (Varma, 2021). This aligns with the observations made by the manager of Elephant Super Car Wash regarding car wash usage in the City of Yakima. However, observations of newer commercial car washes (including a Splash Express Car Wash located south of the City of Yakima) made by participating entities indicate that some of the commercial car wash businesses have not seen a reduction in commercial car wash usage. Because this observation does not match the observations by Elephant Super Car Wash and data in the market analysis report, additional in-person data requests are recommended in Section 5.4 if jurisdictions elect to implement further surveys in the future. An example data request letter and form will be included with the final TER, in the event that this study is conducted in the future.

### 5.3.4 Results of Statistical Comparison

A statistical analysis was conducted to determine if there is a statistically significant change in awareness or adoption of car washing BMPs observed during the study (included in Appendix C.3 of the study TER). The analysis was performed according to procedures in Section 13.2 of the study QAPP. Table 5-3 includes a summary of the results of the analysis.

**Table 5-3 Awareness & Adoption Statistical Comparison Results**

Topic for Comparison	P-value	Statistically Significant Difference? (P-value < 0.05)
Awareness of Car Wastewater Impact on Receiving Waters	0.477	No
Awareness of Commercial Car Wash BMP	0.664	No
Awareness of Residential Car Wash BMPs	0.009	Yes <sup>(1)</sup>
Commercial Car Wash BMP Adoption	0.010	Yes <sup>1</sup>
Residential Car Wash BMPs Adoption	0.153	No
Non-Environmentally Friendly Practices Adoption	0.465	No

Notes:

<sup>(1)</sup>Denotes a statistically significant decrease in awareness or adoption.

The results of the statistical comparison indicated that a statistically significant change was not observed for awareness or adoption, with the exception of awareness of residential car wash BMPs and commercial car wash BMP adoption. However, the change was a significant decrease in awareness of residential car wash BMPs and adoption of commercial car wash usage. This means the data suggests fewer people were aware of residential car wash BMPs during the follow-up survey compared to the baseline survey. The decrease in awareness of residential car wash BMPs is likely due to the smaller sample sizes and corresponding lower confidences achieved for the baseline and follow-up survey responses. As discussed at the beginning of Section 5.0, a smaller sample size results in less confidence that the sample represents the population and could create differences between the two samples that do not reflect an actual change. As such, it is expected that the statistically significant change represents a difference between the samples, not a decrease in awareness.

The decrease in commercial car wash usage appears to correlate with the findings of the commercial car wash usage data described in Section 5.3.3. The industry report obtained indicates that a market-wide decrease in commercial car wash usage has occurred over the last few years due to COVID-19 impacts. However, due to conflicting observations of commercial car wash usage in the City of Yakima and in Yakima County, the decrease may be a result of the smaller sample sizes as described previously. To better understand the causes for the significant decrease, recommendations to improve survey response rates are included in Section 5.4 for future studies. Moreover, to attain a statistically significant change or increase in awareness or adoption of the BMPs for the study, recommendations to modify the E&O program are included in Section 5.4.

#### 5.4 Objective #4: Develop recommendations based on the study findings and use the recommendations to revise and implement a modified E&O program

*Succinct Objective Summary: Based on the results of the study, recommendations have been developed to increase the reach of the E&O program to the general public, increase the reach of the E&O program to Spanish-speaking communities, improve the E&O program messaging and materials, and improve general survey response rate, if surveys are used to collect data in future years.*

While some statistically significant changes were observed in the survey data, those changes were primarily attributed to potential commercial car wash market trends and a smaller sample size and corresponding lower confidence intervals. As a result, the findings of this report suggest that no significant change was observed for awareness of car wash wastewater impacts or car washing BMPs, or adoption of car washing BMPs. Moreover, the lower sample size makes it difficult to draw meaningful conclusions. Therefore, recommendations for implementations of future E&O programs (summarized in Table 5-4.) will focus on the following elements:

- *Increase E&O program reach to general public* – Because of the low survey response rate, it is assumed that the E&O materials are not reaching the target audience. It is recommended that future efforts focus on disseminating the materials more effectively to reach a larger portion of the target audience.
- *Increase E&O program reach and survey participation in Spanish-speaking communities* – The population of Yakima is 45.7 percent Hispanic or Latino however only 5 percent and 13 percent of respondents completed the Spanish version of the survey or indicated Spanish was the primary language spoken in their home. While it is not possible to draw conclusions about the portion of the Hispanic or Latino population who responded to the survey based on this information, these results suggest that the portion of responses from this population maybe low when compared to the total population. It is recommended that future efforts focus on methods to disseminate materials more effectively to reach a larger portion of the target audience which speaks Spanish.
- *E&O Program Messages and Materials* – Verbal feedback was provided by survey respondents to the participating entities during the Central Washington State Fair that the survey and E&O materials used terms that the respondents did not understand. The feedback obtained during the fair was used to revise the E&O materials to be more easily understood by the general public. Social media posts were also revised to be more easily understood by the general public and were revised to make them more interactive. Also included in this category are revisions to the messaging to address barriers identified during the study (lack of knowledge, cost, time/convenience). Revised E&O materials are compiled in Appendix G of this report.
- *Improve general survey response rate* – Considering the response rate for the survey was significantly lower than the target, recommendations were developed for potential future surveys to improve response rate and increase representativeness of the target population. This category includes methods such as revising the language used to make the survey more easily understood by the general public and updating how the survey is disseminated. These recommendations would only apply if the E&O program was used to conduct another study. A revised survey is provided in Appendix G of this report.

The recommendations in **Table 5-4** are meant to be general recommendations for the study. Each participating entity intends to scale the recommendations to meet their jurisdiction's needs and available resources. The recommendations selected by the jurisdiction to implement are included in Table 5-5, along with a summary of budget and staff allocated to implement the recommendation.

**Table 5-4 E&O Program and Survey Recommendations**

Category	Recommendation	Methods
INCREASE E&O PROGRAM REACH TO GENERAL PUBLIC	Send E&O materials with utility bill.	E&O materials could be included as an insert with the utility bill, or link to a website with electronic versions of the E&O materials.
	Post E&O materials to webpage to serve as reference material for the general public.	E&O materials, such as the brochure or flier, could be posted on the City of Yakima website or another organization's website to reach a wider audience.
	Focus on face-to-face distribution of E&O materials and surveys as this format produced large quantities of responses in a shorter time frame (Nulty, 2008).	<p>Continue to designate representatives to physically handout E&amp;O materials, including the brochure developed for the study, at locations such as:</p> <ul style="list-style-type: none"> <li>• The annual Central Washington State Fair</li> <li>• Other community events (for example, sporting events such as local soccer and baseball games, festivals, etc.) that take place in 2022 or later during the duration of the E&amp;O program</li> </ul>
INCREASE E&O PROGRAM REACH AND SURVEY PARTICIPATION TO SPANISH SPEAKING COMMUNITY	Market the E&O program using forms of media that the community uses.	From discussions with the translator for the study who is familiar with stormwater outreach and is immersed in the Spanish-speaking community, mail is a great format to reach the Spanish-speaking community regardless of their age (see methods to increase E&O program reach to general public for utility bill mailer example).
	Embrace cultural immersion <sup>(1)</sup> to develop the most effective product (Apkem, 2020).	<p>Get involved with this community by: Visit and provide outreach to secondary schools, multicultural clubs at secondary schools, community centers, neighborhoods, or other locations beginning in 2022 where target audience lives and works</p> <ul style="list-style-type: none"> <li>• Beginning in 2022, review multi-cultural media to learn more about diverse cultural groups to understand what they find valuable</li> </ul>

CATEGORY	RECOMMENDATION	METHODS
E&O PROGRAM MESSAGING AND MATERIALS	Due to potential decrease in commercial car wash usage and cost barrier identified during the study, we recommend E&O materials emphasize at-home BMPs if use of a commercial car wash isn't an option.	Develop social media posts and other materials focusing on at-home BMPs, specifically diverting car wash wastewater from entering storm drains or using pervious surfaces to wash cars if use of a commercial car wash isn't an option.
	Revise language in E&O material to be more accessible to the general public.	Replace terms such as "BMP", "prohibit", etc. with simpler terminology that is more accessible to a wider audience.
	Revise messaging of E&O material to limit the association of high-cost, time/convenience barriers with at-home BMPs.	Revise messaging of E&O materials to emphasize that diverting water can be done with items from around the house (i.e., towels, horizontal wooden beams, boxes, etc.) (City of Kirkland, n.d.), and that other BMPs can be used or obtained at low cost and low time commitment.
	Revise social media E&O material to increase interaction with the posts and educational material.	Revise social media to use or incorporate questions to increase number of comments and increase the likelihood of the post appearing in a feed. Beginning in 2022, use the following techniques to make the social media more interactive: <ul style="list-style-type: none"> <li>Ask community leaders to share social media posts</li> <li>Designate a staff member to respond to comments on a regular basis or for a specific date, to make posts more interactive</li> </ul>
	Host demonstrations of preferred at-home car washing procedures to increase interaction with E&O material.	Beginning in 2022, host demonstrations of preferred car washing procedures, in particular diverting water from the storm drain system, at the Central Washington State Fair.

CATEGORY	RECOMMENDATION	METHODS
IMPROVE SURVEY RESPONSE AND VERIFICATION	Place demographic questions at the end of the survey rather than up front to avoid stereotyping bias (Action Research, 2021); (Gladwell, 2005)	Reorder the survey questions so demographic questions are at the end or eliminate demographic questions entirely.
	Revise language in survey so it is easier for the general public to understand.	Replace terms such as “BMP”, “prohibit”, etc. with simpler terminology that is more accessible to a wider audience.
	Compensate survey participants for their time (Kost & Correa da Rosa, 2018).	If the survey is used again, consider providing a link to the survey or paper copy with utility bill and a one-time small credit to the bill if the survey is completed.
	Shorten surveys to only a few questions (Kost & Correa da Rosa, 2018).	Reduce the number of survey questions to approximately five, potentially by focusing on fewer BMPs to keep the word count down.
	Focus on face-to-face distribution of surveys as this format produced large quantities of responses in a shorter time frame (Nulty, 2008).	Continue to host the fair booth at the annual Central Washington State Fair. Consider other community events beginning in 2022 that take place during the dry season (for example, sporting events such as local soccer and baseball games, festivals, etc.) to distribute E&O surveys. Attempt to collect commercial car wash usage data in person to verify survey data using the commercial car wash usage data request letter and form.

Notes:

<sup>(1)</sup>Cultural immersion: gaining insight to the lifestyle and values of an unfamiliar culture (Apkem, 2020).

## 6.0 CONCLUSIONS

The goal of the study was to evaluate the effectiveness of a new E&O program in the City of Yakima. The program informed City residents about preferred car washing BMPs and impacts on car wash wastewater on receiving water bodies through E&O materials. The English and Spanish E&O materials distributed included postcards and doorknockers delivered to three target neighborhoods; stickers, towels, and other materials distributed at the Central Washington State Fair; and information related to preferred car washing BMPs posted on the City's social media accounts. Survey and observational data collected before (baseline) and after (follow-up) the E&O program was used to measure public awareness of car washing impacts on receiving water quality, awareness of preferred car washing BMPs, and adoption of using preferred car washing BMPs.

During the study, survey and observational data were collected to measure the residents' awareness of car wash water impacts on receiving water bodies, as well as the awareness and adoption of preferred car washing BMPs. The survey results were analyzed to compare the awareness and adoption of the target behavior before and after the E&O program was implemented. A statistical analysis was used to measure the change in the awareness and adoption of preferred car washing BMPs. Survey responses were also used to identify barriers to adoption of preferred car washing BMPs and inform recommendations for future E&O programs. Observational drive-by and commercial car wash usage data were collected in an attempt to verify the survey results. The following paragraphs summarize the results of the study by objective.

*Study Objective #1:* Understand to what extent the target audience currently uses preferred car washing BMPs.

From the survey responses, the most commonly reported preferred car washing BMP was commercial car washing, which was also the practice that respondents were most aware of. The least commonly reported preferred car washing BMP was calling the spill control hotline in the event of a soap spill. Respondents also indicated they used non-environmentally friendly practices, which were reported as a group instead of by individual practices. Respondents indicated using non-environmentally friendly practices approximately as often as the preferred BMPs, excluding commercial car washing.

*Study Objective #2:* Develop and implement an E&O program targeting adoption of preferred car washing BMPs.

An E&O program targeting the City of Yakima's use of preferred car washing BMPs was developed and implemented during the study. The program identified preferred car washing BMPs and the impacts of car wash wastewater entering storm drains for the residents who drive one or more personal vehicles. A program icon, slogan, and E&O materials were developed in English and Spanish which included doorknockers (brochures), post cards, social media posts, towels, tote bags, and hand sanitizer pens. The postcards and doorknockers were delivered to homes in the target neighborhoods. The other materials, excluding social media posts, were distributed at the Central Washington State Fair. Social media posts were uploaded, on average, three times a month to Facebook, Instagram, and Twitter.

*Study Objective #3:* Measure adoption of targeted behaviors by the target audience.

The baseline and follow-up surveys were used to measure the target audience's understanding and adoption of the preferred BMPs. During the study, the desired sample size was 500 to 1,000 responses for each of

the baseline and follow-up surveys. This desired sample size would have provided a 95 to 97 percent confidence interval that the data collected was representative of the targeted population. The actual sample sizes collected during the study were 260 and 62 for the baseline survey data and follow-up survey data, respectively. A lower sample size results in a lower confidence interval that the sample is representative of the target population. During the study, no statistically significant change in the targeted behavior awareness or adoption was indicated, except for a decrease in awareness of at-home car washing BMPs and decrease in commercial car wash use. This decrease in awareness is likely not representative of an actual decrease in awareness rather a result of the smaller sample size and associated lower confidence interval achieved. The decrease in commercial car wash use appears to match a COVID-19 market trend in the commercial car wash industry; however, more commercial car wash data is needed to determine whether that trend is occurring in the City of Yakima.

The most identified barriers for not using preferred BMPs included cost, time/convenience, and lack of knowledge. Of the three barriers a statistically significant change (between baseline and follow up data) was observed: an 8 percent decrease was observed in number of times cost was reported and a 16 percent decrease was observed in the number of times lack of knowledge was reported. The decrease in number of times lack of knowledge was reported suggests that participants may have become more aware of the preferred car washing BMPs. It is expected that with the continuation of an E&O program, lack of knowledge would continue to decrease. Because cost was not addressed by the E&O program, the reason for the 8 percent decrease is unknown. However, the lower number of participants who selected “no barrier” suggests the E&O program may be reducing the number of perceived barriers for the target audience. Recommendations for reducing these barriers are addressed in the recommendations (Objective #4).

Observational data and commercial car wash usage data were collected to verify the survey results. During drive-by visits in the target neighborhoods before E&O implementation, city staff observed only four instances of residential car washing during two drive-by visits. However, during the follow-up drive-by visits, evidence of residential car washing was not observed at all. Since no follow-up observational data were collected, observational data were not used to verify the survey data. Five City of Yakima commercial car wash locations were contacted multiple times to request car wash usage data to supplement the observational data. Out of the locations contacted, only one location responded by stating that the company has observed a decrease in car washes per week compared to previous years.

***Study Objective #4:*** Develop recommendations based on the study findings and use the recommendations to revise and implement a modified E&O program.

The results from this study indicated that additional effort should be made to increase the sample size for the survey, increase the reach of the E&O program, and address barriers by the E&O materials. Specifically, the recommendations for the project can be separated into four categories:

- Increase E&O program reach for the general public
- Increase E&O program reach and survey participation for the Spanish speaking communities
- Improve E&O program message and materials (to address barriers)
- Improve survey response and verification of the survey results

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## APPENDICES

*Appendix A: Survey Questions*

## English Online Survey

## Car Wash Wastewater Management E&O Effectiveness Survey

Take the survey to help preserve our natural environment and receive a carwash voucher!

**This five-minute survey developed by Osborn Consulting, Inc. is part of a research study to understand current methods of car washing in the City of Yakima. Your anonymous response will vitally impact future education and outreach programs implemented by the City of Yakima to help preserve our natural environment.**

**The first 200 City of Yakima residents who take the survey and bring a printout or screenshot of the survey confirmation page to the Stormwater Booth in the SunDome at the Central Washington State Fair, will receive a voucher for a free commercial car wash in Yakima. The next 500 City of Yakima residents who do the same, will receive a \$3 off coupon at a commercial car wash in Yakima.**

\* 1. Where do you live?

- City of Yakima
- Outside of City of Yakima limits, but within Yakima County
- Other

## Car Wash Wastewater Management E&O Effectiveness Survey

\* 2. What is the primary language spoken in your household?

- English
- Spanish
- Other (please specify)

## Car Wash Wastewater Management E&O Effectiveness Survey

\* 3. Do you drive a personal vehicle?

Yes

No

## Car Wash Wastewater Management E&O Effectiveness Survey

\* 4. Have you seen information on car washing best management practices from the City of Yakima, and if so, how recently?

- I have not seen any information
- In the last week
- 2-3 weeks ago
- One to two months ago
- Over two months ago

## Car Wash Wastewater Management E&O Effectiveness Survey

\* 5. If you saw information on car washing best management practices from the City of Yakima, where did you see it?

- City of Yakima website
- City of Yakima social media (Facebook, Instagram, Twitter)
- I received a brochure at my home
- Not applicable/I have not seen any information

## Car Wash Wastewater Management E&O Effectiveness Survey

\* 6. Which of the following best describes how often you wash your vehicle?

- More than once a month
- Once a month
- 2-3 times a year
- Once a year
- Never

## Car Wash Wastewater Management E&O Effectiveness Survey

\* 7. How often do you wash your vehicle at home?

- Always
- Frequently
- Sometimes
- Never

\* 8. Where do you think is the best environment to wash your vehicle?

- Commercial car wash
- At home
- Not sure

## Car Wash Wastewater Management E&O Effectiveness Survey

\* 9. Did you know that car wash wastewater can pollute our streams, lakes, and rivers?

- Fully aware
- Mostly aware
- Somewhat aware
- Not aware

## Car Wash Wastewater Management E&O Effectiveness Survey

\* 10. How frequently have you used these methods? Select all that apply.

	Always	Frequently	Sometimes	Never	Not applicable
Wash car at home	<input type="radio"/>				
Use a commercial car wash	<input type="radio"/>				
Wash car on pavement	<input type="radio"/>				
Wash car on grass or gravel	<input type="radio"/>				
Use waterless car washing products	<input type="radio"/>				
Use biodegradable or environmentally friendly soap	<input type="radio"/>				
Drain/hose water and soap into the street	<input type="radio"/>				
Contain soap spills immediately or call spill control hotline in an event of a soap spill	<input type="radio"/>				
Wash vehicle engine, undercarriage, mounted equipment, or tires	<input type="radio"/>				

## Car Wash Wastewater Management E&O Effectiveness Survey

\* 11. Before taking this survey, how many environmentally friendly car washing methods were you aware of? Select all that apply.

- Use a commercial car wash
- Wash vehicle less often
- Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street
- Use waterless car washing products
- Use biodegradable or environmentally friendly soap
- Call spill control hotline in an event of a soap spill
- Avoid washing the engine, undercarriage, mounted equipment, or tires

## Car Wash Wastewater Management E&O Effectiveness Survey

\* 12. How willing are you to change your car washing methods to be more environmentally friendly?

- All in!
- Mostly willing
- Somewhat willing
- Not at all willing
- Not applicable

## Car Wash Wastewater Management E&O Effectiveness Survey

\* 13. Which of these categories are barriers that prevent you from practicing environmentally friendly car wash techniques? Select all that apply.

- Cost
- Lack of Knowledge
- Time/Convenience
- Lack of access to materials
- Quality of product
- Other
- None

## Car Wash Wastewater Management E&O Effectiveness Survey

### Confirmation Page

**Take a screenshot or print this page before pressing "DONE" and be one of the first 200 City of Yakima residents to show it at the Stormwater Booth in the SunDome at the Central Washington State Fair to receive a free commercial car wash voucher! The next 500 City of Yakima residents will receive will receive a \$3 off coupon at a commercial car wash in Yakima.**

## Spanish Online Survey

## **¡Tome la encuesta para ayudar a preservar nuestro medio ambiente natural y recibe un cupón para lavado de coches!**

**Esta encuesta de cinco minutos desarrollado por Osborn Consulting, Inc. es parte de un estudio de investigación para comprender los métodos actuales para lavado de coches en la Ciudad de Yakima. Su respuesta anónima tendrá un impacto vital en los futuros programas de educación y programas alcance implementado por la Ciudad de Yakima para ayudar a preservar nuestro medio ambiente natural.**

**Los primeros 200 residentes de la Ciudad de Yakima que tomen la encuesta y lleven una copia impresa o una captura de pantalla de la página para confirmación de la encuesta a la Stormwater Booth en el SunDome en la Feria Estatal Central de Washington, recibirán un cupón para un lavado de coches comercial gratuito en Yakima. Los próximos 500 residentes de la Ciudad de Yakima que hagan lo mismo, recibirán un cupón de descuento de \$3 en un lavadero de coches comercial en Yakima.**

**\* 1. ¿Dónde vive?**

- La Ciudad de Yakima
- Fuera de los límites de la Ciudad de Yakima, pero dentro del Condado de Yakima
- Otro

\* 2. ¿Cuál es el idioma principal en su hogar?

- Inglés
- Español
- Otro (por favor, especifica)

\* 3. ¿Conduce un vehículo personal?

Sí

No

\* 4. ¿Ha visto información sobre las mejores prácticas de gestión en lavado de coches de la Ciudad de Yakima, y si es así, qué tan recientemente?

- No he visto ninguna información
- En la última semana
- Hace dos a tres semanas
- Uno a dos meses atrás
- Hace más de dos meses

\* 5. ¿Si vio información sobre las mejores prácticas de gestión en lavado de coches de la Ciudad de Yakima, dónde lo vio?

- Sitio web de la Ciudad de Yakima
- Redes sociales de la Ciudad de Yakima (Facebook, Instagram, Twitter)
- Recibí un folleto en mi casa
- No aplicable/No he visto ninguna información

\* 6. ¿Con qué frecuencia lava su vehículo en casa?

- Siempre
- Frecuentemente
- A veces
- Nunca

\* 7. ¿Cuál de los siguientes describe mejor la frecuencia con la que lava su vehículo?

- Más de una vez al mes
- Una vez al mes
- Dos a tres veces al año
- Una vez al año
- Nunca

\* 8. ¿Dónde cree que es mejor para el medio ambiente para lavar su vehículo?

- Lavado de coche comercial
- En casa
- No seguro

\* 9. ¿Sabía que las aguas residuales de lavado de coches pueden contaminar nuestros arroyos, lagos y ríos?

- Plenamente consciente
- Mayormente consciente
- A veces consciente
- No consciente

\* 10. ¿Con qué frecuencia ha utilizado estos métodos? Selecciona todos los que se aplican.

	Siempre	Frecuentemente	A veces	Nunca	No aplicable
Lavar el coche en casa	<input type="radio"/>				
Use un lavado de coches comercial	<input type="radio"/>				
Lavar el coche en el pavimento	<input type="radio"/>				
Lavar el coche en el sacate/pasto o grava	<input type="radio"/>				
Usa productos de lavado de autos sin agua	<input type="radio"/>				
Usa jabón biodegradable o respetuoso con el medio ambiente	<input type="radio"/>				
Drenar/manguera de agua y jabón en las calles	<input type="radio"/>				
Contener derrames de jabón inmediatamente o llamar a la línea directa de control de derrames en caso de un derrame de jabón	<input type="radio"/>				
Lavar el motor del vehículo, el chasis, el equipamiento montado, o las llantas	<input type="radio"/>				

\* 11. ¿Antes de tomar esta encuesta, cuántos métodos de lavado de coches respetuosos con el medio ambiente conocía? Selecciona todo lo que se aplica

- Use un lavado de coches comercial
- Vehículo de lavado con menos frecuencia
- Lavar el vehículo en el sacate/pasto, tierra o grava para evitar que las aguas residuales del coche entren en la calle
- Usa productos de lavado de autos sin agua
- Usa jabón biodegradable o respetuoso con el medio ambiente
- llamar a la línea directa de control de derrames en caso de un derrame de jabón
- Evitar lavar el motor del vehículo, el chasis, el equipamiento montado, o las llantas

\* 12. ¿Qué tan dispuesto está a cambiar sus métodos de lavado de coches para ser más respetuoso con el medio ambiente?

- Definitiva!
- Más dispuesto
- Algo dispuesto
- No en absoluto dispuesto
- No aplicable

\* 13. ¿Cuáles de estas categorías son barreras que le impiden practicar técnicas de lavado de coches respetuosas con el medio ambiente? Selecciona todo lo que se aplica.

- El costo
- Falta de conocimiento
- Tiempo/Conveniencia
- Falta de acceso a los materiales
- Calidad de producto
- Otro
- Ninguno

## Página de confirmación

**¡Tome una captura de pantalla o imprima esta página antes de pulsar 'HECHO' y sea uno de los primeros 200 residentes de la Ciudad de Yakima para mostrarlo en el Stormwater Booth en el SunDome en la Feria Estatal Central de Washington para recibir un cupón de lavado de coche comercial gratis! Los próximos 500 residentes de la Ciudad de Yakima recibirán un cupón de descuento de \$3 en un lavado de coches comercial en Yakima.**

## English Paper Survey

# Car Wash Wastewater Management Education and Outreach Effectiveness Study Survey

*This five-minute survey developed by Osborn Consulting, Inc. is part of a research study to understand current methods of car washing in the City of Yakima. Your anonymous response will vitally impact future education and outreach programs implemented by the City of Yakima to help preserve our natural environment.*

**1) Where do you live?**

- a. City of Yakima
- b. Outside of City of Yakima limits, but within Yakima County
- c. Other

**2) What is the primary language spoken in your household?**

- a. English
- b. Spanish
- c. Other: \_\_\_\_\_

**3) Do you drive a personal vehicle?**

- a. Yes
- b. No

**4) Have you seen information on car washing best management practices from the City of Yakima, and if so, how recently?**

- a. I have not seen any information
- b. In the last week
- c. 2-3 weeks ago
- d. One to two months ago
- e. Over two months ago

**5) If you saw information on car washing best management practices from the City of Yakima, where did you see it?**

- a. City of Yakima website
- b. City of Yakima social media (Facebook, Instagram, Twitter)
- c. I received a brochure at my home
- d. Not applicable/I have not seen any information

**6) Which of the following best describes how often you wash your vehicle?**

- a. More than once a month
- b. Once a month
- c. 2-3 times a year
- d. Once a year
- e. Never

**7) How often do you wash your vehicle at home?**

- a. Always
- b. Frequently
- c. Sometimes
- d. Never

**8) Where do you think it is best for the environment to wash your vehicle?**

- a. Commercial car wash
- b. At home
- c. Not sure

**9) Did you know that car wash wastewater can pollute our streams, lakes, and rivers?**

- a. Fully aware
- b. Mostly aware
- c. Somewhat aware
- d. Not aware

**10) How frequently have you used these methods? Select all that apply.**

	<b>Always</b>	<b>Frequently</b>	<b>Sometimes</b>	<b>Never</b>
<b>Wash car at home</b>				
<b>Use a commercial car wash</b>				
<b>Wash car on pavement</b>				
<b>Wash car on grass or gravel</b>				
<b>Use waterless car washing products</b>				
<b>Use biodegradable or environmentally friendly soap</b>				
<b>Drain/hose water and soap into the street</b>				
<b>Contain soap spills immediately or call spill control hotline in an event of a soap spill</b>				
<b>Wash vehicle engine, undercarriage, mounted equipment, or tires</b>				

**11) Before taking this survey, how many environmentally friendly car washing methods were you aware of? Select all that apply**

- Use a commercial car wash
- Wash vehicle less often
- Wash vehicle on grass, dirt or gravel to prevent car wastewater from entering the street
- Use waterless car washing products
- Use biodegradable or environmentally friendly soap
- Call spill control hotline in an event of a soap spill
- Avoid washing the engine, undercarriage, mounted equipment, or tires

**12) How willing are you to change your car washing methods to be more environmentally friendly?**

- a. All in!
- b. Mostly willing
- c. Somewhat willing
- d. Not at all willing
- e. Not applicable

**13) Which of these categories are barriers that prevent you from practicing environmentally friendly car wash techniques?**

- Cost
- Lack of Knowledge
- Time/Convenience
- Lack of access to materials
- Quality of product
- Other
- None

## Spanish Paper Survey

# **Educación para la gestión de aguas residuales en lavado de coches y encuesta de estudio sobre efectividad de alcance**

*Esta encuesta de cinco minutos desarrollado por Osborn Consulting, Inc. es parte de un estudio de investigación para comprender los métodos actuales para lavado de coches en la Ciudad de Yakima. Su respuesta anónima tendrá un impacto vital en los futuros programas de educación y programas alcance implementado por la Ciudad de Yakima para ayudar a preservar nuestro medio ambiente natural.*

## **1) ¿Dónde vive?**

- a. City of Yakima
- b. Fuera de los límites de la Ciudad de Yakima, pero dentro del Condado de Yakima
- c. Otro

## **2) ¿Cuál es el idioma principal en su hogar?**

- a. Inglés
- b. Español
- c. Otro: \_\_\_\_\_

## **3) ¿Conduce un vehículo personal?**

- a. Sí
- b. No

## **4) ¿Ha visto información sobre las mejores prácticas de gestión en lavado de coches de la Ciudad de Yakima, y si es así, qué tan recientemente?**

- a. No he visto ninguna información
- b. En la última semana
- c. Hace dos a tres semanas
- d. Uno a dos meses atrás
- e. Hace más de dos meses

**5) ¿Si vio información sobre las mejores prácticas de gestión en lavado de coches de la Ciudad de Yakima, dónde lo vio?**

- a. Sitio web de la Ciudad de Yakima
- b. Redes sociales de la Ciudad de Yakima (Facebook, Instagram, Twitter)
- c. Recibí un folleto en mi casa
- d. No aplicable/No he visto ninguna información

**6) ¿Cuál de los siguientes describe mejor la frecuencia con la que lava su vehículo?**

- a. Más de una vez al mes
- b. Una vez al mes
- c. Dos a tres veces al año
- d. Una vez al año
- e. Nunca

**7) ¿Con qué frecuencia lava su vehículo en casa?**

- a. Siempre
- b. Frecuentemente
- c. A veces
- d. Nunca

**8) ¿Dónde cree que es mejor para el medio ambiente para lavar su vehículo?**

- a. Lavado de coche comercial
- b. En casa
- c. No seguro

**9) ¿Sabía que las aguas residuales de lavado de coches pueden contaminar nuestros arroyos, lagos y ríos?**

- a. Plenamente consciente
- b. Mayormente consciente
- c. A veces consciente
- d. No consciente

**10) ¿Con qué frecuencia ha utilizado estos métodos? Selecciona todos los que se aplican.**

	<b>Siempre</b>	<b>Frecuentemente</b>	<b>A veces</b>	<b>Nunca</b>
<b>Lavar el coche en casa</b>				
<b>Use un lavado de coches comercial</b>				
<b>Lavar el coche en el pavimento</b>				
<b>Lavar el coche en el sacate/pasto o grava</b>				
<b>Usa productos de lavado de autos sin agua</b>				
<b>Usa jabón biodegradable o respetuoso con el medio ambiente</b>				
<b>Drenar/manguera de agua y jabón en las calles</b>				
<b>Contener derrames de jabón inmediatamente o llamar a la línea directa de control de derrames en caso de un derrame de jabón.</b>				
<b>Lavar el motor del vehículo, el chasis, el equipamiento montado, o las llantas</b>				

**11) ¿Antes de tomar esta encuesta, cuántos métodos de lavado de coches respetuosos con el medio ambiente conocía? Selecciona todo lo que se aplica.**

- Usar un lavado de coches comercial
- Vehículo de lavado con menos frecuencia
- Lavar el vehículo en el sacate/pasto, tierra o grava para evitar que las aguas residuales del coche entren en la calle
- Usar productos de lavado de autos sin agua
- Usar jabón biodegradable o respetuoso con el medio ambiente
- Llamar a la línea directa de control de derrames en caso de un derrame de jabón
- Evitar lavar el motor del vehículo, el chasis, el equipamiento montado, o las llantas

**12) ¿Qué tan dispuesto está a cambiar sus métodos de lavado de coches para ser más respetuoso con el medio ambiente?**

- a. Definitiva!
- b. Más dispuesto
- c. Algo dispuesto
- d. No en absoluto dispuesto
- e. No aplicable

**13) ¿Cuáles de estas categorías son barreras que le impiden practicar técnicas de lavado de coches respetuosas con el medio ambiente?**

- o El costo
- o Falta de conocimiento
- o Tiempo/Conveniencia
- o Falta de acceso a los materiales
- o Calidad de producto
- o Otro
- o Ninguno

*Appendix B: Observational Data Form*

## Observational Data Form #\_\_\_\_\_

Name of the Inspector: \_\_\_\_\_

Inspection Date and Time: \_\_\_\_\_

Jurisdiction the inspector works for: \_\_\_\_\_

Location of the observed evidence of residential car wash (neighborhood, street name, etc.):  
\_\_\_\_\_  
\_\_\_\_\_

Were any of the following car wash practices observed?

- Vehicle washed on pervious surface (grass, dirt, or gravel) and wash water not entering street
- Vehicle washed on impervious surface
- Washing of the engine, undercarriage, mounted equipment, or tires
- Objects used to divert car wash wastewater away from storm drain to permeable surface
- Other, please specify \_\_\_\_\_

Is there evidence of car wash wastewater entering the storm drain?

- Yes
- No

Please provide a brief description of what you observed (for example: no barriers used to prevent wash water from entering storm drain, barriers used to prevent wash water from entering storm drain but is not effective, etc.)

  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*Appendix C: Data Analysis*

Appendix C.1: Survey Data Analysis

## BASELINE SURVEY DATA ANALYSIS

OCI Respondent Number	Based on Q4 response, what was the date E&O was viewed by respondent?	Pre or Post	FLAGGED	Flag reasoning	1			2			3	
					Where do you live?			What is the primary language spoken in your household?			Do you drive a personal vehicle?	
					City of Yakima	Outside of City of Yakima limits, but within Yakima County	Other	English	Spanish	Other (please specify)	Yes	No
S-A 13	N/A	Pre	XND	Does not drive personal vehicle	La Ciudad de Yakima			Inglés				No
E-A 40	N/A	Pre	XND	Does not drive personal vehicle		Outside of City of Yakima limits, but within Yakima County		English				No
E-A 144	N/A	Pre	XNT	Test, Q10- 1/9 answered			Other			TEST	Yes	
E-A 145	N/A	Pre	XNT	Test, Q10- 1/9 answered			Other			TEST	Yes	
E-A 368		Pre	XNT	Test			Other			TEST2	Yes	
E-A 15		Pre	XNT	Test			Other			TEST	Yes	
E-A 87	N/A	Pre	XNI	Inconsistent answer Q7 & Q10		Outside of City of Yakima limits, but within Yakima County		English			Yes	
E-A 250	N/A	Pre	XNI	Inconsistent answer Q7 & Q10	City of Yakima			English			Yes	
E-A 284	N/A	Pre	XNI	Inconsistent answer Q7 & Q10	City of Yakima					Both	Yes	
E-A 285	N/A	Pre	XNI	Inconsistent answer Q7 & Q10, Q11-13 No Ans	City of Yakima			English			Yes	
E-A 310	N/A	Pre	XNI	Inconsistent answer Q7 & Q10	City of Yakima			English			Yes	
S-A 11	N/A	Pre	XNI	Inconsistent answer Q7 & Q10	La Ciudad de Yakima				Español		Sí	
E-A 363	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 154	N/A	Pre	XN, XND	Q2 response - Not a recognized spoken language	City of Yakima					elvish		No
E-A 178	N/A	Pre	XN	Q2 response - Not a recognized spoken language	City of Yakima					Guess	Yes	
E-A 28	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 45	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 69	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 71	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 119	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 157	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 208	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 253	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 271	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 275	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 301	N/A	Pre	XNO	Outside of Yakima County			Other		Spanish		Yes	
E-A 316	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 344	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 350	N/A	Pre	XNO	Outside of Yakima County			Other	English			Yes	
E-A 105	N/A	Pre	XRU	Q9- No Answer, Q10- No Answer		Outside of City of Yakima limits, but within Yakima County		English			Yes	
E-A 146	N/A	Pre	XRU	Q9- No Answer, Q10- No Answer		Outside of City of Yakima limits, but within Yakima County		English			Yes	
E-A 283	N/A	Pre	XRU	Q5- No Answer, Q6- No Answer, Q7- No Answer, Q8- No Answer, Q9- No Answer		Outside of City of Yakima limits, but within Yakima County		English			Yes	
E-A 296	N/A	Pre	XRU	Q10- 8/9 answered		Outside of City of Yakima limits, but within Yakima County		English			Yes	
E-A 297	N/A	Pre	XRU	Q5- No Answer		Outside of City of Yakima limits, but within Yakima County			Spanish		Yes	
E-A 327	N/A	Pre	XRU	Q10- No Answer		Outside of City of Yakima limits, but within Yakima County		English			Yes	
E-A 11	N/A	Pre	XRU	Q10- No Answer	City of Yakima			English			Yes	
E-A 80	N/A	Pre	XRU	Q10- No Answer	City of Yakima			English			Yes	
E-A 89	N/A	Pre	XRU	Q9- No Answer, Q10- No Answer	City of Yakima				Spanish		Yes	
E-A 216	N/A	Pre	XRU	Q10- 8/9 answered	City of Yakima			English			Yes	
E-A 172	N/A	Pre	XRU	Q5- No Answer, Q6- No Answer, Q7- No Answer	City of Yakima			English			Yes	
E-A 162	N/A	Pre	XRU	Q10- 7/9 answered	City of Yakima			English			Yes	
E-A 217	N/A	Pre	XRU	Q10- 8/9 answered	City of Yakima			English			Yes	
E-A 218	N/A	Pre	XRU	Q10- 8/9 answered	City of Yakima			English			Yes	
E-A 247	N/A	Pre	XRU	Q10- No Answer	City of Yakima			English			Yes	
E-A 306	N/A	Pre	XRU	Q5 and part of Q10 unanswered	City of Yakima			English			Yes	
E-A 322	N/A	Pre	XRU	Q10- 4/9 answered	City of Yakima			English			Yes	
E-A 326	N/A	Pre	XRU	Q8 - 8/9 answered	City of Yakima			English			Yes	
E-A 17	N/A	Pre	XRU	Q10 - Part a	City of Yakima			English			Yes	

	4					5			6					7				8			9									
	Have you seen information on car washing best management practices from the City of Yakima, and if so, how recently?					If you saw information on car washing best management practices from the City of Yakima, where did you see it?			Which of the following best describes how often you wash your vehicle?					How often do you wash your vehicle at home?				Where do you think is the best environment to wash your vehicle?			Score Per Respondent	Did you know that car wash wastewater can pollute our streams, lakes, and rivers?								
OCI Respondent Number	I have not seen any information		In the last week	2-3 weeks ago	One to two months ago	Over two months ago	City of Yakima website	City of Yakima social media (Facebook)	I received a brochure at my home	Not applicable /I have not seen any information	More than once a month	Once a month	2-3 times a year	Once a year	Never	Always	Frequently	Sometime	Never	Commercial car wash	At home	Not sure	Fully aware	Mostly aware	Somewhat aware	Not aware				
S-A 13	No he visto ninguna información									No aplicab	Más de una vez al mes									A veces			Lavado de coche comercial			1	Mayormente consciente			0.5
E-A 40	I have not seen any information									Not applicable/I have not seen at	2-3 times a year									Sometimes			Not sure	0	Somewhat aware			0.25		
E-A 144	I have not seen any information									Not applic	More than once a month									Always			At home	-1	Not aware			-1		
E-A 145	I have not seen any information									Not applic	More than once a month									Always			At home	-1	Not aware			-1		
E-A 368			Over two months ago							Not applic	More than once a month									Frequently			Commercial car wash	1	Fully aware			1		
E-A 15			Over two months ago					City of Yakima website			More than once a month									Frequently			Commercial car wash	1	Fully aware			1		
E-A 87	I have not seen any information									Not applic	More than once a month									Always			Commercial car wash	1	Not aware			-1		
E-A 250	I have not seen any information									Not applic	More than once a month									Never			Commercial car wash	1	Somewhat aware			0.25		
E-A 284	I have not seen any information									Not applic	More than once a month									Always			At home	-1	Not aware			-1		
E-A 285	I have not seen any information									Not applic	More than once a month									Never			Commercial car wash	1	Not aware			-1		
E-A 310	I have not seen any information									Not applicable/I have not seen any information						Never				Never			At home	-1	Fully aware			1		
S-A 11	No he visto ninguna información									No aplicab	Más de una vez al mes									Frecuentemente			Lavado de coche comercial	1	No consciente			-1		
E-A 363	I have not seen any information									Not applicable/I have	Once a month									Frequently			Commercial car wash	1	Somewhat aware			0.25		
E-A 154	I have not seen any information									Not applicable/I have not seen any information						Never				Never			Not sure	0	Fully aware			1		
E-A 178	I have not seen any information									Not applicable/I have not seen any information						Never				Never			Not sure	0	Not aware			-1		
E-A 28	I have not seen any information									Not applic	More than once a month									Sometimes			Not sure	0	Somewhat aware			0.25		
E-A 45	I have not seen any information									Not applic	More than once a month									Never			Not sure	0	Somewhat aware			0.25		
E-A 69	I have not seen any information									Not applicable/I have	Once a month									Frequently			Commercial car wash	1	Fully aware			1		
E-A 71	I have not seen any information									Not applicable/I have not seen at	2-3 times a year									Never			Commercial car wash	1	Fully aware			1		
E-A 119	I have not seen any information									Not applicable/I have not seen at	2-3 times a year									Sometimes			Commercial car wash	1	Somewhat aware			0.25		
E-A 157	I have not seen any information									Not applic	More than once a month									Frequently			Commercial car wash	1	Mostly aware			0.5		
E-A 208	I have not seen any information									Not applicable/I have not seen any information						Never				Never			At home	-1	Mostly aware			0.5		
E-A 253	I have not seen any information									Not applic	More than once a month									Never			Commercial car wash	1	Fully aware			1		
E-A 271	I have not seen any information									Not applicable/I have not seen any information						Never				Sometimes			Not sure	0	Not aware			-1		
E-A 275	I have not seen any information									Not applic	More than once a month									Sometimes			Commercial car wash	1	Fully aware			1		
E-A 301	I have not seen any information									Not applic	More than once a month									Frequently			Commercial car wash	1	Not aware			-1		
E-A 316	I have not seen any information									Not applic	Once a month									Sometimes			Commercial car wash	1	Mostly aware			0.5		
E-A 344	I have not seen any information									Not applic	2-3 times a year									Sometimes			Commercial car wash	1	Not aware			-1		
E-A 350	I have not seen any information									Not applicable/I have not seen at	2-3 times a year									Never			Not sure	0	Somewhat aware			0.25		
E-A 105	I have not seen any information									Not applicable/I have	Once a month									Sometimes			Not sure	0	Somewhat aware			0		
E-A 146	I have not seen any information									Not applicable/I have	Once a month									Frequently			Not sure	0	Somewhat aware			0		
E-A 283	I have not seen any information										Once a month												Not sure	0	Somewhat aware			0		
E-A 296	I have not seen any information									Not applic	More than once a month																			

## Questions

10

How frequently have you used these methods? Select all that apply.



these categories are barriers that prevent you from practicing  
mentally friendly car wash techniques? Select all that apply.

OCI Responda nt Number	Lack of Knowledg e	Time/Con venience	Lack of access to materials	Quality of product	Other	None
S-A 13		Tiempo/Conveniencia				
E-A 40	Lack of Kn	Time/Conv	Lack of access to materials			
E-A 144						
E-A 145						
E-A 368					None	
E-A 15					None	
E-A 87					None	
E-A 250						
E-A 284		Time/Convenience				
E-A 285						
E-A 310			Lack of access to materials			
S-A 11	Falta de conocimiento					
E-A 363	Lack of Knowledge					
E-A 154						
E-A 178						
E-A 28		Time/Convenience				
E-A 45		Time/Convenience				
E-A 69					None	
E-A 71		Time/Conv	Lack of access to materials			
E-A 119	Lack of Knowledge					
E-A 157			Lack of access to materials			
E-A 208					None	
E-A 253		Time/Conv	Lack of acc	Quality of product		
E-A 271		Time/Convenience				
E-A 275	Lack of Kn	Time/Convenience				
E-A 301		Time/Convenience				
E-A 316	Lack of Knowledge					
E-A 344		Time/Convenience				
E-A 350					None	
E-A 105						
E-A 146						
E-A 283	Lack of Kn	Time/Convenience				
E-A 296	Lack of Knowledge					
E-A 297	Lack of Knowledge					
E-A 327						
E-A 11						
E-A 80						
E-A 89						
E-A 216	Lack of Kn	Time/Convenience				
E-A 172						
E-A 162					None	
E-A 217	Lack of Knowledge					
E-A 218					Other	
E-A 247						
E-A 306						
E-A 322	Lack of Knowledge					
E-A 326		Time/Convenience				
E-A 17	Lack of Knowledge					

			1		2		3
			Where do you live?		What is the primary language spoken in your household?		Do you drive a personal vehicle?
S-A 14	N/A	Pre	XRU	Q13 unanswered	La Ciudad de Yakima		
E-A 4	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 8	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 14	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 1	N/A	Pre		City of Yakima		English	Yes
E-A 2	N/A	Pre		City of Yakima		English	Yes
E-A 3	N/A	Pre		City of Yakima		English	Yes
E-A 6	N/A	Pre		City of Yakima		English	Yes
E-A 7	N/A	Pre		City of Yakima		English	Yes
E-A 10	N/A	Pre		City of Yakima		English	Yes
E-A 16	N/A	Pre		City of Yakima		English	Yes
E-A 18	N/A	Pre		City of Yakima		English	Yes
E-A 21	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 23	N/A	Pre		City of Yakima		English	Yes
E-A 26	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 27	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 29	N/A	Pre		City of Yakima		Spanish	Yes
E-A 30	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 32	N/A	Pre		City of Yakima		English	Yes
E-A 33	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 34	N/A	Pre		City of Yakima		English	Yes
E-A 35	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 36	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 37	N/A	Pre		City of Yakima		English	Yes
E-A 38	N/A	Pre		City of Yakima		English	Yes
E-A 41	N/A	Pre		City of Yakima		English	Yes
E-A 43	N/A	Pre		City of Yakima		English	Yes
E-A 44	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 46	N/A	Pre		City of Yakima		English	Yes
E-A 48	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 52	N/A	Pre		City of Yakima		English	Yes
E-A 53	N/A	Pre		City of Yakima		English	Yes
E-A 54	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 55	N/A	Pre		City of Yakima		English	Yes
E-A 56	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 59	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 60	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 61	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 65	N/A	Pre		City of Yakima		English	Yes
E-A 66	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 67	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 68	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 73	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 75	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 77	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 78	N/A	Pre		City of Yakima		English	Yes
E-A 82	N/A	Pre		City of Yakima		English	Yes
E-A 83	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 84	N/A	Pre		City of Yakima		English	Yes
E-A 86	N/A	Pre		City of Yakima		English	Yes
E-A 88	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 91	N/A	Pre		City of Yakima		English	Yes
E-A 92	N/A	Pre		City of Yakima		English	Yes
E-A 93	N/A	Pre		City of Yakima		English	Yes
E-A 96	N/A	Pre			Outside of City of Yakima limits, but within Yakima County	English	Yes
E-A 97	N/A	Pre		City of Yakima		English	Yes

	4					5			6			7			8			9			
	Have you seen information on car washing best management practices from the City of Yakima, and if so, how recently?					If you saw information on car washing best management practices from the City of Yakima, where did you see it?			Which of the following best describes how often you wash your vehicle?			How often do you wash your vehicle at home?			Where do you think is the best environment to wash your vehicle?		Score Per Respondent	Did you know that car wash wastewater can pollute our streams, lakes, and rivers?			Score Per Respondent
S-A 14	No he visto ninguna información					No aplicab	Más de una vez al mes			Siempre					No seguro	0			No concie	-1	
E-A 4	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year			Sometimes			Commercial car wash		1		Mostly aware		0.5		
E-A 8	I have not seen any information					Not applica	More than once a month			Sometimes			At home		-1		Somewhat aware		0.25		
E-A 14	I have not seen any information					Not applica	More than once a month			Never			Commercial car wash		1	Fully aware			1		
E-A 1	I have not seen any information					Not applicable/I have	Once a month			Never			Commercial car wash		1		Not aware		-1		
E-A 2	I have not seen any information					Not applicable/I have	Once a month			Sometimes			Commercial car wash		1	Fully aware			1		
E-A 3	I have not seen any information					Not applicable/I have not seen any informat	Once a year			Never			Commercial car wash		1	Fully aware			1		
E-A 6	I have not seen any information					Not applica	More than once a month			Sometimes			Commercial car wash		1	Fully aware			1		
E-A 7	I have not seen any information					Not applicable/I have	Once a month			Never			Commercial car wash		1	Mostly aware			0.5		
E-A 10	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year			Never			Commercial car wash		1	Mostly aware			0.5		
E-A 16	I have not seen any information					Not applicable/I have	Once a month			Sometimes			Not sure		0		Somewhat aware		0.25		
E-A 18	I have not seen any information					Not applicable/I have	Once a month			Sometimes			Commercial car wash		1	Mostly aware			0.5		
E-A 21	I have not seen any information					Not applica	More than once a month			Never			Commercial car wash		1		Somewhat aware		0.25		
E-A 23	I have not seen any information					Not applica	More than once a month			Frequently			Commercial car wash		1		Not aware		-1		
E-A 26	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year			Never			Commercial car wash		1		Not aware		-1		
E-A 27	I have not seen any information					Not applicable/I have	Once a month			Never			At home		-1		Not aware		-1		
E-A 29	I have not seen any information					Not applicable/I have	Once a month			Never			Commercial car wash		1		Somewhat aware		0.25		
E-A 30	I have not seen any information					Not applica	More than once a month			Sometimes			Commercial car wash		1	Fully aware			1		
E-A 32	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year			Never			Commercial car wash		1		Not aware		-1		
E-A 33	I have not seen any information					Not applica	More than once a month			Never			Commercial car wash		1		Somewhat aware		0.25		
E-A 34	I have not seen any information					Not applicable/I have	Once a month			Never			Commercial car wash		1	Mostly aware			0.5		
E-A 35	I have not seen any information					Not applica	More than once a month			Never			Not sure		0	Mostly aware			0.5		
E-A 36	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year			Never			Commercial car wash		1	Mostly aware			0.5		
E-A 37	I have not seen any information					Not applica	More than once a month			Never			Not sure		0		Not aware		-1		
E-A 38	I have not seen any information					Not applica	More than once a month			Sometimes			Commercial car wash		1		Somewhat aware		0.25		
E-A 41	I have not seen any information					Not applicable/I have	Once a month			Never			Commercial car wash		1		Not aware		-1		
E-A 43	I have not seen any information					Not applica	More than once a month			Never			Commercial car wash		1		Not aware		-1		
E-A 44	I have not seen any information					Not applicable/I have	Once a month			Sometimes			Not sure		0		Not aware		-1		
E-A 46	I have not seen any information					Not applicable/I have	Once a month			Never			Commercial car wash		1	Mostly aware			0.5		
E-A 48	I have not seen any information					Not applica	More than once a month			Sometimes			Commercial car wash		1		Not aware		-1		
E-A 52	I have not seen any information					Not applicable/I have	Once a month			Never			Commercial car wash		1		Not aware		-1		
E-A 53	I have not seen any information					Not applicable/I have	Once a month			Never			Commercial car wash		1		Somewhat aware		0.25		
E-A 54	I have not seen any information					Not applicable/I have	Once a month			Always			Commercial car wash		1	Fully aware			1		
E-A 55	I have not seen any information					Not applicable/I have	Once a month			Always			Commercial car wash		1		Not aware		-1		
E-A 56	I have not seen any information					Not applicable/I have	Once a month			Frequently			At home		-1		Somewhat aware		0.25		
E-A 59	I have not seen any information					Not applicable/I have	Once a month			Always			Not sure		0		Somewhat aware		0.25		
E-A 60	I have not seen any information					Not applicable/I have	Once a month			Never			Commercial car wash		1	Mostly aware			0.5		
E-A 61	I have not seen any information					Not applicable/I have	Once a month			Sometimes			At home		-1	Mostly aware			0.5		
E-A 65	I have not seen any information					Not applicable/I have	Once a month			Sometimes			Commercial car wash		1		Not aware		-1		
E-A 66	I have not seen any information					Not applicable/I have	Once a month			Sometimes			Commercial car wash		1		Not aware		-1		
E-A 67	I have not seen any information					Not applica	More than once a month			Frequently			Not sure		0	Mostly aware			0.5		
E-A 68	I have not seen any information					Not applicable/I have not seen any informat	Once a year			Sometimes			Commercial car wash		1		Not aware		-1		
E-A 73	I have not seen any information					Not applicable/I have	Once a month			Sometimes			Not sure		0	Mostly aware			0.5		
E-A 75	I have not seen any information					Not applicable/I have	Once a month			Sometimes			Not sure		0	Mostly aware			0.5		
E-A 77	I have not seen any information					Not applica	More than once a month			Sometimes			Not sure		0	Fully aware			1		
E-A 78	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year			Sometimes			Commercial car wash		1	Mostly aware			0.5		
E-A 82	I have not seen any information					Not applicable/I have	Once a month			Sometimes			Commercial car wash		1	Fully aware			1		
E-A 83	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year			Frequently			Commercial car wash		1	Fully aware			1		
E-A 84	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year			Sometimes			Commercial car wash		1		Not aware		-1		
E-A 86	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year			Sometimes			Commercial car wash		1	Fully aware			1		
E-A 88	I have not seen any information					Not applicable/I have	Once a month			Never			Commercial car wash		1		Not aware		-1		
E-A 91	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year			Sometimes			At home		-1		Not aware		-1		
E-A 92	I have not seen any information					Not applicable/I have	Once a month			Sometimes			Commercial car wash		1		Not aware		-1		
E-A 93	I have not seen any information					Not applicable/I have	Once a month			Never			At home		-1		Not aware		-1		
E-A 96	I have not seen any information					Not applicable/I have	Once a month			Never			Commercial car wash		1		Not aware		-1		
E-A 97	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year			Never			Commercial car wash		1		Somewhat aware		0.25		

How frequently have you used these methods? Select all that apply.

	Wash car at home		Use a commercial carwash			Wash car on Pavement				Wash car on grass or gravel				Use waterless car washing products				Use biodegradable or environmentally friendly soap				
S-A 14	Siempre					Nunca		Siempre					Nunca								Nunca	
E-A 4		Sometimes			Frequently				Frequently					Sometimes						Never		
E-A 8		Sometimes			Frequently					Sometimes				Never						Never		
E-A 14		Never	Always							Never				Never						Never		Not applica
E-A 1		Never	Always							Never				Never						Never		Never
E-A 2	Sometimes		Frequently						Sometimes				Never					Never			Frequently	
E-A 3		Never		Sometimes						Not applicable					Not applicable				Not applicable			Not applica
E-A 6	Sometimes		Frequently							Never				Never				Never	Always			
E-A 7		Never	Always							Not applicable				Not applicable				Not applicable				Not applica
E-A 10		Never	Always							Not applicable				Not applica	Always				Always			
E-A 16	Sometimes		Frequently					Frequently					Never					Never				Never
E-A 18	Sometimes		Frequently						Sometimes				Never					Never				Never
E-A 21		Never	Always							Never				Sometimes				Never				Never
E-A 23	Frequently			Sometimes					Sometimes				Sometimes					Never			Sometimes	
E-A 26		Never		Sometimes						Never				Never				Never				Never
E-A 27	Sometimes		Always						Sometimes				Never					Never				Never
E-A 29		Never	Always							Never				Never				Sometimes				Never
E-A 30	Sometimes		Frequently							Never				Sometimes				Never			Frequently	
E-A 32		Never		Frequently						Never				Never				Never				Never
E-A 33		Never	Always							Never				Never				Never				Never
E-A 34		Never	Always							Never				Never				Never				Never
E-A 35	Sometimes		Frequently							Never				Never				Sometimes				Sometimes
E-A 36		Never	Always				Always							Never				Never	Always			
E-A 37	Sometimes		Always						Sometimes				Sometimes					Never				Sometimes
E-A 38	Sometimes		Frequently						Sometimes				Never					Never				Never
E-A 41		Never		Frequently						Never				Never				Never				Never
E-A 43		Never	Always							Never				Never				Sometimes				Sometimes
E-A 44	Sometimes			Sometimes					Sometimes				Sometimes				Sometimes				Sometimes	
E-A 46		Never	Always							Never				Never				Never				Never
E-A 48	Sometimes		Frequently							Never			Always					Never				Never
E-A 52		Never	Always							Never			Sometimes					Never				Never
E-A 53	Sometimes		Frequently				Always							Never				Never				Sometimes
E-A 54	Frequently			Sometimes						Never			Frequently						Not applicable			Not applica
E-A 55	Always				Sometimes			Always						Never				Never				Never
E-A 56	Frequently			Frequently					Sometimes			Frequently						Never				Sometimes
E-A 59	Always				Sometimes					Never			Always					Never				Not applica
E-A 60	Sometimes		Frequently							Never			Sometimes					Never				Sometimes
E-A 61	Sometimes		Frequently				Always							Never				Never	Always			
E-A 65	Sometimes			Sometimes					Sometimes			Sometimes						Never				Never
E-A 66	Sometimes			Sometimes					Sometimes			Sometimes					Sometimes	Always				
E-A 67	Frequently			Sometimes					Sometimes			Frequently						Never			Frequently	
E-A 68	Sometimes			Sometimes						Never			Sometimes					Never				Never
E-A 73	Sometimes			Sometimes					Sometimes			Sometimes						Never				Sometimes
E-A 75	Sometimes			Sometimes					Sometimes			Sometimes						Never			Frequently	
E-A 77	Sometimes		Frequently							Never				Never				Sometimes				Sometimes
E-A 78	Sometimes			Sometimes					Sometimes			Frequently						Never				Sometimes
E-A 82	Sometimes		Frequently							Never			Frequently					Never				Sometimes
E-A 83	Sometimes			Sometimes					Sometimes					Not applicable			Sometimes				Sometimes	
E-A 84	Sometimes			Sometimes					Sometimes			Sometimes			Sometimes			Never				Sometimes
E-A 86	Sometimes			Sometimes						Never			Sometimes					Never				Sometimes
E-A 88	Sometimes		Frequently							Never				Never				Never				Not applica
E-A 91	Sometimes			Sometimes			Always							Never				Never				Never
E-A 92	Sometimes		Frequently						Sometimes					Never				Never				Never
E-A 93		Never		Sometimes						Never				Never				Never				Never
E-A 96		Never	Always			Sometimes				Never			Not applicable			Not applicable			Not applicable			Not applica
E-A 97		Never		Sometimes						Never				Never				Never				Not applica

													11							12				Which of environmental methods are you willing to change?		
													Before taking this survey, how many environmentally friendly car washing methods were you aware of? Select all that apply.							How willing are you to change your car washing methods to be more environmentally friendly?						
	Drain/hose water and soap into the street			Contain soap spills immediately or call spill control hotline in an event of a soap spill				Wash vehicle engine, undercarriage, mounted equipment																		
S-A 14				Nunca				No applicable			Nunca									0	Definitiva!					
E-A 4			Sometimes					Never			Sometimes			Use a commercial car	Wash vehicle on grass, dirt, or gravel to prevent car was					2		Mostly willing			Cost	
E-A 8	Always							Never		Always							Call spill co	Avoid was			2				Not at all willing	
E-A 14	ble		Never					Not applicable			Never			Use a commercial car	Wash vehicle on grass, dirt, or gravel to prevent car was					2		Mostly willing				
E-A 1			Never					Never			Never			Use a com	Wash vehi	Wash vehi	Use water	Use biodegradable or	Avoid was	6					Not at all willing	
E-A 2			Never					Never			Sometimes			Use a com	Wash vehicle less often			Use biodegradable or	Avoid was	4		Mostly willing				
E-A 3	ble		Not applicable					Not applicable			Not applicable			Use a com	Wash vehicle less often					2	All in!					
E-A 6	Always							Never			Never			Use a com	Wash vehi	Wash vehi	Use water	Use biodegradable or	Avoid was	6					Not at all willing	
E-A 7	ble		Not applicable					Not applicable			Not applicable			Use a com	Wash vehi	Wash vehicle on grass, dirt, or gravel to prevent car was				3		Mostly willing				
E-A 10			Not applicable					Not applicable			Not applicable			Use a commercial car wash						1					Not applicable	
E-A 16		Sometimes						Never			Sometimes			Use a commercial car	Wash vehicle on grass, dirt, or gravel to prevent car was					2					Not at all willing	Cost
E-A 18			Never					Never			Sometimes			Use a com	Wash vehicle less often					2	All in!					
E-A 21			Never					Never			Never			Use a commercial car wash						1	All in!					
E-A 23		Sometimes						Never			Sometimes			Use a commercial car wash				Use biodegradable or environme		2	All in!				Cost	
E-A 26			Never					Never			Never			Use a com	Wash vehicle less often			Use biodegradable or environme		3	All in!				Cost	
E-A 27			Never					Never			Never			Use a commercial car wash						1		Somewhat willing			Cost	
E-A 29			Never					Never			Frequently			Use a commercial car wash						1		Somewhat willing				
E-A 30			Never					Never			Sometimes			Use a commercial car	Wash vehicle on grass, dirt, or gravel to prevent car was					2	All in!					
E-A 32			Never					Never			Never			Use a commercial car wash						1		Mostly willing				
E-A 33			Never					Never			Never			Use a commercial car wash						1	All in!				Cost	
E-A 34			Never					Never			Never			Use a commercial car wash						1		Mostly willing				
E-A 35			Never				Sometimes			Sometimes			Use a commercial car wash				Use biodegradable or environme		2			Somewhat willing		Cost		
E-A 36			Never				Never			Never			Use a com	Wash vehicle less often					2	All in!						
E-A 37	Frequently						Never			Sometimes							Use biodegradable or environme		1		Mostly willing					
E-A 38			Never				Never			Never			Use a com	Wash vehicle less often			Use biodegradable or environme		3		Mostly willing					
E-A 41			Never		Always						Never			Use a commercial car wash						1	All in!					
E-A 43			Never				Never			Never			Use a commercial car wash						1		Somewhat willing			Cost		
E-A 44		Sometimes					Never			Sometimes				Wash vehicle less often						1		Somewhat willing				
E-A 46			Never				Never			Never			Use a commercial car wash						1	All in!						
E-A 48			Never				Never			Never			Use a commercial car wash						1		Somewhat willing					
E-A 52		Sometimes					Never			Sometimes			Use a commercial car wash						1		Mostly willing					
E-A 53		Sometimes					Never			Sometimes			Use a commercial car wash				Use biodegradable or environme		2	All in!						
E-A 54	ble	Frequently					Not applicable			Not applicable			Use a com	Wash vehi	Wash vehi	Use water	Use biodeg	Call spill co	Avoid was	7		Mostly willing				
E-A 55		Frequently				Frequently		Always									Use waterless car washing products		1	All in!						
E-A 56			Sometimes				Never			Never			Use a com	Wash vehicle less often						2		Mostly willing				
E-A 59	ble		Never				Never			Never							Use waterless car washing products		1	All in!						
E-A 60			Not applicable				Never			Sometimes			Use a com	Wash vehicle less often						2		Somewhat willing				
E-A 61			Never				Never			Sometimes				Wash vehi	Wash vehicle on grass	Use biodeg	Call spill co	Avoid was		5		Mostly willing				
E-A 65		Sometimes					Never			Frequently			Use a commercial car wash				Use waterless car washing products		2			Somewhat willing		Cost		
E-A 66			Not applicable			Sometimes			Never			Use a commercial car wash							1	All in!						
E-A 67			Never				Never			Sometimes							Use biodegradable or environme		1		Mostly willing					
E-A 68			Never				Never			Never			Use a commercial car wash						1	All in!				Cost		
E-A 73		Sometimes					Never			Sometimes			Use a com	Wash vehicle less often			Use biodegradable or environme		3		Mostly willing					
E-A 75		Sometimes					Not applicable			Never			Use a com	Wash vehicle less often			Use biodegradable or environme		3		Mostly willing					
E-A 77			Never				Never			Sometimes			Use a commercial car wash		Use water		Use biodegradable or environme		3		Mostly willing					
E-A 78			Never				Never																			

these categories are barriers that prevent you from practicing  
mentally friendly car wash techniques? Select all that apply.

S-A 14				
E-A 4	Lack of Knowledge	Time/Convenience		
E-A 8		Time/Convenience		
E-A 14				None
E-A 1				None
E-A 2	Lack of Knowledge	Time/Convenience	Lack of access to materials	
E-A 3	Lack of Knowledge			
E-A 6			Other	
E-A 7	Lack of Knowledge	Lack of access to materials	Quality of product	
E-A 10				None
E-A 16				
E-A 18	Lack of Knowledge			
E-A 21	Lack of Knowledge			
E-A 23	Lack of Knowledge	Time/Convenience		
E-A 26	Lack of Knowledge	Lack of access to materials		
E-A 27				
E-A 29		Time/Convenience	Quality of product	
E-A 30				None
E-A 32		Time/Convenience		
E-A 33				
E-A 34		Time/Convenience		
E-A 35				
E-A 36	Lack of Knowledge	Lack of access to materials		
E-A 37		Time/Convenience		
E-A 38	Lack of Knowledge			
E-A 41				None
E-A 43				
E-A 44			Quality of product	
E-A 46		Lack of access to materials		
E-A 48				None
E-A 52	Lack of Knowledge			
E-A 53			Quality of product	
E-A 54				None
E-A 55				
E-A 56	Lack of Knowledge			
E-A 59				
E-A 60		Time/Convenience		
E-A 61	Lack of Knowledge	Time/Convenience		
E-A 65				
E-A 66	Lack of Knowledge			
E-A 67			Quality of product	
E-A 68				
E-A 73	Lack of Knowledge	Time/Convenience		
E-A 75		Time/Convenience		
E-A 77				None
E-A 78		Time/Convenience		
E-A 82		Time/Convenience		
E-A 83				
E-A 84		Time/Convenience		
E-A 86				None
E-A 88	Lack of Knowledge			
E-A 91	Lack of Knowledge			
E-A 92	Lack of Knowledge	Time/Convenience		
E-A 93	Lack of Knowledge			
E-A 96	Lack of Knowledge			
E-A 97				

				1			2		3
				Where do you live?			What is the primary language spoken in your household?		Do you drive a personal vehicle?
E-A 98	N/A	Pre		City of Yakima			English		Yes
E-A 99	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 100	N/A	Pre		City of Yakima			English		Yes
E-A 101	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 102	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 104	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 106	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 111	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 112	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 115	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 116	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 117	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 118	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 120	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 122	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 123	N/A	Pre		City of Yakima			English		Yes
E-A 124	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 125	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 126	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 127	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 128	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 129	N/A	Pre		City of Yakima			English		Yes
E-A 131	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 133	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 134	N/A	Pre		City of Yakima			English		Yes
E-A 138	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 139	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 140	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 142	N/A	Pre		City of Yakima			English		Yes
E-A 147	N/A	Pre		City of Yakima			English		Yes
E-A 148	N/A	Pre		City of Yakima			English		Yes
E-A 149	N/A	Pre		City of Yakima				Spanish	Yes
E-A 150	N/A	Pre		City of Yakima				Spanish	Yes
E-A 151	N/A	Pre		Outside of City of Yakima limits, but within Yakima County				Spanish	Yes
E-A 152	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 155	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 156	N/A	Pre		City of Yakima				Spanish	Yes
E-A 158	N/A	Pre		City of Yakima			English		Yes
E-A 159	N/A	Pre		City of Yakima			English		Yes
E-A 160	N/A	Pre		City of Yakima			English		Yes
E-A 161	N/A	Pre		City of Yakima			English		Yes
E-A 163	N/A	Pre		City of Yakima			English		Yes
E-A 165	N/A	Pre		City of Yakima			English		Yes
E-A 166	N/A	Pre		City of Yakima			English		Yes
E-A 167	N/A	Pre		City of Yakima			English		Yes
E-A 168	N/A	Pre		City of Yakima			English		Yes
E-A 169	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 170	N/A	Pre		City of Yakima			English		Yes
E-A 171	N/A	Pre		City of Yakima			English		Yes
E-A 173	N/A	Pre		City of Yakima			English		Yes
E-A 174	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 175	N/A	Pre		Outside of City of Yakima limits, but within Yakima County			English		Yes
E-A 176	N/A	Pre		City of Yakima			English		Yes
E-A 177	N/A	Pre		City of Yakima			English		Yes
E-A 179	N/A	Pre		City of Yakima			English		Yes
E-A 180	N/A	Pre		City of Yakima			English		Yes

	4					5			6					7			8			9		
	Have you seen information on car washing best management practices from the City of Yakima, and if so, how recently?					If you saw information on car washing best management practices from the City of Yakima, where did you see it?			Which of the following best describes how often you wash your vehicle?					How often do you wash your vehicle at home?			Where do you think is the best environment to wash your vehicle?		Score Per Respondent	Did you know that car wash wastewater can pollute our streams, lakes, and rivers?		
E-A 98	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1			Somewhat aware		0.25
E-A 99	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1			Not aware		-1
E-A 100	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1	Fully aware				1
E-A 101	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1	Fully aware				1
E-A 102	I have not seen any information					Not applicable/I have	Once a month						Sometimes	Commercial car wash			1			Somewhat aware		0.25
E-A 104	I have not seen any information					Not applicable/I have	Once a month						Sometimes	Commercial car wash		Not sure	0			Somewhat aware		0.25
E-A 106	I have not seen any information					Not applicable/I have	More than once a month						Sometimes	Commercial car wash			1	Fully aware				1
E-A 111	I have not seen any information					Not applicable/I have	Once a month						Sometimes	Commercial car wash			1	Fully aware				1
E-A 112	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year						Never	Commercial car wash			1			Not aware		-1
E-A 115	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1			Somewhat aware		0.25
E-A 116	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1			Somewhat aware		0.25
E-A 117	I have not seen any information					Not applicable/I have	Once a month						Sometimes	Commercial car wash			1			Mostly aware		0.5
E-A 118	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year						Never	Commercial car wash			1	Fully aware				1
E-A 120	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1	Fully aware				1
E-A 122	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1	Fully aware				1
E-A 123	I have not seen any information					Not applicable/I have	More than once a month						Sometimes	Commercial car wash			1			Not aware		-1
E-A 124	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1			Somewhat aware		0.25
E-A 125	I have not seen any information					Not applicable/I have	Once a month						Sometimes	At home			-1	Fully aware				1
E-A 126	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1	Fully aware				1
E-A 127	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1			Mostly aware		0.5
E-A 128	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1			Not aware		-1
E-A 129	I have not seen any information					Not applicable/I have	Once a month						Sometimes	Commercial car wash			1			Mostly aware		0.5
E-A 131	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1	Fully aware				1
E-A 133	I have not seen any information					Not applicable/I have	More than once a month						Sometimes	Commercial car wash			1	Fully aware				1
E-A 134	I have not seen any information					Not applicable/I have	More than once a month						Sometimes	At home			-1			Not aware		-1
E-A 138	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year						Sometimes	At home			-1	Fully aware				1
E-A 139	I have not seen any information					Not applicable/I have	Once a month						Frequently			-1			Mostly aware		0.5	
E-A 140	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1	Fully aware				1
E-A 142	I have not seen any information					Not applicable/I have	More than once a month						Sometimes			0			Somewhat aware		0.25	
E-A 147	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year						Sometimes			0			Not aware		-1	
E-A 148	I have not seen any information					Not applicable/I have	More than once a month						Sometimes	Commercial car wash			1			Somewhat aware		0.25
E-A 149	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1			Not aware		-1
E-A 150	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1	Fully aware				1
E-A 151	I have not seen any information					Not applicable/I have	Once a month						Frequently			-1			Mostly aware		0.5	
E-A 152	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1	Fully aware				1
E-A 155	I have not seen any information					Not applicable/I have	More than once a month						Never			-1			Somewhat aware		0.25	
E-A 156	I have not seen any information					Not applicable/I have	More than once a month						Always			-1	Fully aware				1	
E-A 158	I have not seen any information					Not applicable/I have	Once a month						Never			0			Mostly aware		0.5	
E-A 159	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year						Never			1			Mostly aware		0.5	
E-A 160	I have not seen any information					Not applicable/I have	Once a month						Frequently			0			Somewhat aware		0.25	
E-A 161	I have not seen any information					Not applicable/I have	More than once a month						Never			-1			Somewhat aware		0.25	
E-A 163	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year						Sometimes	Commercial car wash			1	Fully aware				1
E-A 165	I have not seen any information					Not applicable/I have	More than once a month						Sometimes			0			Somewhat aware		0.25	
E-A 166	I have not seen any information					Not applicable/I have	Once a month						Sometimes			0			Somewhat aware		0.25	
E-A 167	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year						Sometimes			0			Somewhat aware		0.25	
E-A 168	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year						Never	Commercial car wash			1	Fully aware				1
E-A 169	I have not seen any information					Not applicable/I have	More than once a month						Sometimes			-1			Mostly aware		0.5	
E-A 170	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year						Never	Commercial car wash			1			Mostly aware		0.5
E-A 171	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year						Never	Commercial car wash			1	Fully aware				1
E-A 173	I have not seen any information					Not applicable/I have	Once a month						Sometimes			-1			Mostly aware		0.5	
E-A 174	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1			Mostly aware		0.5
E-A 175	I have not seen any information																					

How frequently have you used these methods? Select all that apply.

Wash car at home				Use a commercial carwash				Wash car on Pavement				Wash car on grass or gravel				Use waterless car washing products				Use biodegradable or environmentally friendly soap			
E-A 98			Never		Always						Never				Never				Never			Not applicable	
E-A 99			Never			Frequently						Not applicable				Not applicable			Never			Not applicable	
E-A 100	Always			Always						Sometimes				Sometimes				Never			Sometimes		
E-A 101			Never	Always						Never				Never				Never			Not applicable		
E-A 102		Sometimes			Frequently					Sometimes				Sometimes				Never			Sometimes		
E-A 104	Sometimes			Frequently					Frequently				Sometimes				Never				Never		
E-A 106	Sometimes			Frequently						Never	Always							Never			Sometimes		
E-A 111	Sometimes			Frequently						Never				Sometimes				Never	Always				
E-A 112		Never	Always							Never				Never				Never			Never		
E-A 115		Never	Always							Never				Never				Never			Never		
E-A 116		Never	Always							Never				Never				Not applicable			Not applicable		
E-A 117	Sometimes			Frequently						Sometimes				Never				Never			Never		
E-A 118		Never	Always							Never				Never				Never	Always				
E-A 120		Never	Always				Always							Never				Never			Never		
E-A 122	Sometimes			Frequently						Sometimes				Sometimes				Sometimes			Frequently		
E-A 123	Sometimes			Frequently						Sometimes			Frequently					Never			Never		
E-A 124	Sometimes			Frequently						Never			Sometimes					Never			Never		
E-A 125	Sometimes			Sometimes					Frequently				Sometimes				Never			Frequently			
E-A 126		Never	Always							Never				Never				Never			Never		
E-A 127		Never	Always							Never				Not applicable				Never			Sometimes		
E-A 128		Never		Frequently						Never				Never				Never			Never		
E-A 129	Sometimes			Frequently						Sometimes				Never				Sometimes			Sometimes		
E-A 131	Sometimes			Frequently					Frequently				Sometimes				Never				Not applicable		
E-A 133	Sometimes			Frequently						Never				Never				Sometimes	Always				
E-A 134	Sometimes			Sometimes					Always				Sometimes				Sometimes			Sometimes			
E-A 138	Sometimes			Sometimes						Never			Sometimes				Never	Always					
E-A 139	Frequently			Frequently						Never	Always						Frequently			Always			
E-A 140		Never	Always							Never			Sometimes				Never	Always					
E-A 142	Sometimes			Frequently					Always					Never				Never			Sometimes		
E-A 147	Sometimes			Sometimes						Sometimes				Never				Never			Sometimes		
E-A 148	Sometimes			Frequently						Sometimes			Sometimes				Never				Never		
E-A 149		Never	Always							Not applicable				Not applicable				Not applicable			Not applicable		
E-A 150		Never	Always				Always						Never				Never			Frequently			
E-A 151	Frequently			Sometimes						Not applicable			Sometimes				Never				Not applicable		
E-A 152		Never	Always							Never				Never				Never			Never		
E-A 155		Never	Always							Never				Never				Never			Never		
E-A 156	Always			Never					Always				Sometimes				Never				Never		
E-A 158		Never	Always						Always				Never				Never				Not applicable		
E-A 159		Never			Sometimes					Sometimes				Never				Never			Sometimes		
E-A 160	Frequently			Sometimes					Frequently				Never				Never			Sometimes			
E-A 161		Never	Always							Never				Never				Never			Never		
E-A 163	Sometimes			Sometimes						Sometimes				Sometimes				Never			Frequently		
E-A 165	Sometimes			Frequently						Never			Sometimes				Never				Never		
E-A 166	Sometimes			Sometimes						Sometimes			Sometimes				Never				Not applicable		
E-A 167	Sometimes			Sometimes						Sometimes				Never				Never			Never		
E-A 168		Never	Always						Always				Never				Never				Never		
E-A 169	Sometimes			Frequently						Never			Sometimes				Never			Frequently			
E-A 170		Never	Always							Not applicable				Not applicable				Never			Not applicable		
E-A 171		Never	Always							Not applicable			Never					Not applicable			Not applicable		
E-A 173	Sometimes			Frequently						Sometimes			Sometimes			Frequently					Sometimes		
E-A 174		Never	Always							Not applicable			Not applicable								Not applicable		
E-A 175	Sometimes			Frequently						Never	Always						Never	Always					
E-A 176		Never	Always							Never				Never				Not applicable			Not applicable		
E-A 177		Never	Always				Always						Never				Never				Not applicable		
E-A 179	Sometimes			Frequently						Sometimes				Never				Never			Never		
E-A 180	Sometimes			Frequently					Always				Never				Never			Sometimes			

													11						12				Which of environmental factors are you most concerned about?				
													Before taking this survey, how many environmentally friendly car washing methods were you aware of? Select all that apply.						Score Per Respondent		How willing are you to change your car washing methods to be more environmentally friendly?						
	Drain/hose water and soap into the street			Contain soap spills immediately or call spill control hotline in an event of a soap spill			Wash vehicle engine, undercarriage, mounted equipment			Before taking this survey, how many environmentally friendly car washing methods were you aware of? Select all that apply.						Score Per Respondent		How willing are you to change your car washing methods to be more environmentally friendly?									
E-A 98	ble			Not applicable			Not applicable		Frequently				Use a commercial car wash						1					Not applicable			
E-A 99	ble			Not applicable			Not applica	Always					Use biodegradable or environme						1		Mostly willing				Cost		
E-A 100		Sometimes				Sometimes			Sometimes				Use a commercial car wash						1	All in!					Cost		
E-A 101	ble			Not applicable			Not applicable						Use a commercial car	Wash vehicle on grass	Use biodegradable or environme				3	All in!							
E-A 102		Sometimes					Not applicable		Sometimes				Use a com	Wash vehi	Wash vehicle on grass, dirt, or gravel to prevent car was				3	All in!							
E-A 104		Frequently				Never			Never				Use a com	Wash vehi	Wash vehicle on grass, dirt, or gravel to prev	Avoid was			4			Somewhat willing					
E-A 106			Never			Never		Frequently					Use a com	Wash vehi	Wash vehicle on grass	Use water	Use biodeg	Call spill co	Avoid was	7	All in!						
E-A 111			Never			Never			Sometimes				Use a commercial car wash						1	All in!							
E-A 112			Never			Never			Never				Use a com	Wash vehicle less often					2	All in!					Cost		
E-A 115			Never			Not applicable			Never				Use a com	Wash vehicle less ofte	Use waterless car washing products				3	All in!							
E-A 116	ble			Not applicable			Not applicable		Sometimes				Use a com	Wash vehicle less often					2		Mostly willing				<th data-kind="ghost"></th>		
E-A 117		Sometimes				Never			Sometimes				Use a commercial car wash						1		Mostly willing				Cost		
E-A 118			Never			Not applicable			Never				Use a com	Wash vehi	Wash vehicle on grass	Use biodegradable or	Avoid was		5	All in!					<th data-kind="ghost"></th>		
E-A 120			Never			Never		Frequently					Use a commercial car wash						1					Not applic	Cost		
E-A 122			Never			Never			Sometimes				Use a com	Wash vehi	Wash vehi	Use water	Use biodeg	Call spill co	Avoid was	7					Not at all willing		
E-A 123			Never			Never			Never										1		Somewhat willing						
E-A 124			Never			Never			Sometimes						Wash vehicle less often					1		Somewhat willing			Cost		
E-A 125			Never			Never			Never						Wash vehicle on grass, dirt, or gravel to prev	Avoid was				2		Mostly willing					
E-A 126			Never			Not applicable			Never				Use a commercial car	Wash vehicle on grass, dirt, or gravel to prevent car was					2	All in!					<th data-kind="ghost"></th>		
E-A 127			Not applicable			Not applica	Always						Use a com	Wash vehi	Wash vehi	Use water	Use biodegradable or			5	All in!				Cost		
E-A 128			Never			Never			Never				Wash vehi	Wash vehicle on grass, dirt, or gravel to prevent car was					2		Somewhat willing				Cost		
E-A 129			Never			Never			Sometimes				Use a commercial car wash		Use water	Use biodegradable or environme			3	All in!					<th data-kind="ghost"></th>		
E-A 131	ble			Not applicable			Not applica	Always					Use a com	Wash vehicle less often					2		Mostly willing				<th data-kind="ghost"></th>		
E-A 133			Never			Not applicable		Frequently					Use a commercial car	Wash vehicle on grass	Use biodegradable or environme				3	All in!					<th data-kind="ghost"></th>		
E-A 134		Sometimes				Never			Sometimes				Use a commercial car	Wash vehi	Use waterless car washing products				3		Mostly willing				Cost		
E-A 138			Never			Never			Sometimes				Use a com	Wash vehi	Wash vehicle on grass	Use biodegradable or	Avoid was		5			Somewhat willing			Cost		
E-A 139			Never			Not applicable			Never				Use a com	Wash vehi	Wash vehi	Use water	Use biodegradable or	Avoid was	6		Mostly willing						
E-A 140			Never		Always								Use a commercial car	Wash vehicle on grass	Use biodegradable or	Avoid was			4	All in!					<th data-kind="ghost"></th>		
E-A 142			Never		Always			Always					Use a commercial car wash						1		Somewhat willing				Cost		
E-A 147		Sometimes				Not applicable		Sometimes						Wash vehicle less often		Use biodegradable or environme				2	All in!					<th data-kind="ghost"></th>	
E-A 148		Sometimes			Always								Use a commercial car wash						1		Mostly willing				Cost		
E-A 149	ble			Not applicable			Not applicable						Not applicable		Wash vehicle less often					1		Somewhat willing				Cost	
E-A 150		Never		Always									Never	Use a com	Wash vehicle less ofte	Use water	Use biodeg	Call spill co	Avoid was	6	All in!					Cost	
E-A 151	ble		Never			Never							Never						1	All in!					Cost		
E-A 152			Never			Never							Never	Use a commercial car wash						1		Mostly willing					
E-A 155			Not applicable			Not applicable		Sometimes											0								
E-A 156	Always					Never		Always											0								
E-A 158	ble		Never			Never		Always						Use a com	Wash vehicle less often		Use biodegradable or environme			3	All in!					Cost	
E-A 159			Not applicable			Not applica							Not applicable	Use a com	Wash vehicle less often		Use biodegradable or environme		3	All in!					<th data-kind="ghost"></th>		
E-A 160		Sometimes				Never			Sometimes					Wash vehicle less often						1	All in!						
E-A 161			Never			Never			Never				Use a commercial car wash						1			Somewhat willing			<th data-kind="ghost"></th>		
E-A 163		Sometimes				Not applicable			Sometimes				Use a com	Wash vehi	Wash vehicle on grass	Use biodegradable or environme			4	All in!					<th data-kind="ghost"></th>		
E-A 165			Never		Always				Sometimes				Use a com	Wash vehi	Wash vehicle on grass, dirt, or gravel to prevent car was				3			Somewhat willing			Cost		
E																											

these categories are barriers that prevent you from practicing  
mentally friendly car wash techniques? Select all that apply.

E-A 98					None
E-A 99	Lack of Knowledge				
E-A 100		Lack of acc	Quality of product		
E-A 101					None
E-A 102			Lack of access to materials		
E-A 104	Lack of Kn	Time/Convenience			
E-A 106					None
E-A 111					None
E-A 112	Lack of Knowledge				
E-A 115					None
E-A 116					None
E-A 117					
E-A 118					None
E-A 120		Time/Convenience			
E-A 122				Other	
E-A 123	Lack of Kn	Time/Conv	Lack of acc	Quality of product	
E-A 124	Lack of Knowledge			Quality of product	
E-A 125					None
E-A 126					None
E-A 127			Quality of product		
E-A 128		Time/Convenience			
E-A 129			Quality of product		
E-A 131	Lack of Kn	Time/Conv	Lack of access to materials		
E-A 133				Other	
E-A 134		Time/Convenience			
E-A 138		Time/Convenience			
E-A 139					None
E-A 140					None
E-A 142		Lack of acc	Quality of product		
E-A 147					None
E-A 148					
E-A 149		Time/Convenience			
E-A 150	Lack of Knowledge				
E-A 151	Lack of Knowledge		Lack of access to materials		
E-A 152					None
E-A 155					
E-A 156					
E-A 158	Lack of Knowledge		Lack of access to mate	Other	
E-A 159	Lack of Knowledge				
E-A 160					None
E-A 161		Time/Convenience			
E-A 163	Lack of Knowledge				
E-A 165		Time/Conv	Lack of access to materials		
E-A 166		Time/Conv	Lack of access to materials		
E-A 167	Lack of Kn	Time/Conv	Lack of access to materials		
E-A 168		Time/Convenience	Quality of product		
E-A 169		Time/Conv	Lack of acc	Quality of product	
E-A 170		Time/Convenience	Quality of product		
E-A 171	Lack of Knowledge		Lack of acc	Quality of product	
E-A 173			Quality of	Other	
E-A 174			Lack of access to materials		
E-A 175		Time/Convenience	Quality of product		
E-A 176					None
E-A 177	Lack of Kn	Time/Convenience			
E-A 179	Lack of Kn	Time/Conv	Lack of access to materials		
E-A 180				Other	

						1	Where do you live?	What is the primary language spoken in your household?	2		3	
									Do you drive a personal vehicle?			
E-A 181	N/A	Pre					Outside of City of Yakima limits, but within Yakima County		English		Yes	
E-A 182	N/A	Pre				City of Yakima			English		Yes	
E-A 183	N/A	Pre					Outside of City of Yakima limits, but within Yakima County		English		Yes	
E-A 184	N/A	Pre				City of Yakima			English		Yes	
E-A 185	N/A	Pre				City of Yakima			English		Yes	
E-A 186	N/A	Pre				City of Yakima			English		Yes	
E-A 187	N/A	Pre				City of Yakima			English		Yes	
E-A 188	N/A	Pre				City of Yakima			English		Yes	
E-A 189	N/A	Pre				City of Yakima			English		Yes	
E-A 190	N/A	Pre				City of Yakima			English		Yes	
E-A 193	N/A	Pre				City of Yakima			English		Yes	
E-A 194	N/A	Pre				City of Yakima			English		Yes	
E-A 195	N/A	Pre				City of Yakima			English		Yes	
E-A 197	N/A	Pre				City of Yakima			English		Yes	
E-A 199	N/A	Pre				City of Yakima			English		Yes	
E-A 200	N/A	Pre					Outside of City of Yakima limits, but within Yakima County		Spanish		Yes	
E-A 201	N/A	Pre				City of Yakima			Spanish		Yes	
E-A 202	N/A	Pre				City of Yakima			English		Yes	
E-A 203	N/A	Pre				City of Yakima			English		Yes	
E-A 204	N/A	Pre				City of Yakima			English		Yes	
E-A 205	N/A	Pre				City of Yakima			English		Yes	
E-A 206	N/A	Pre				City of Yakima			English		Yes	
E-A 207	N/A	Pre				City of Yakima			English		Yes	
E-A 209	N/A	Pre				City of Yakima			English		Yes	
E-A 210	N/A	Pre				City of Yakima			English		Yes	
E-A 212	N/A	Pre					Outside of City of Yakima limits, but within Yakima County		English		Yes	
E-A 213	N/A	Pre					Outside of City of Yakima limits, but within Yakima County		English		Yes	
E-A 214	N/A	Pre					Outside of City of Yakima limits, but within Yakima County		English		Yes	
E-A 215	N/A	Pre				City of Yakima			English		Yes	
E-A 220	N/A	Pre				City of Yakima			English		Yes	
E-A 221	N/A	Pre					Outside of City of Yakima limits, but within Yakima County		English		Yes	
E-A 222	N/A	Pre				City of Yakima			English		Yes	
E-A 223	N/A	Pre				City of Yakima			English		Yes	
E-A 224	N/A	Pre				City of Yakima			English		Yes	
E-A 226	N/A	Pre				City of Yakima			English		Yes	
E-A 227	N/A	Pre				City of Yakima			English		Yes	
E-A 228	N/A	Pre					Outside of City of Yakima limits, but within Yakima County		English		Yes	
E-A 229	N/A	Pre				City of Yakima			English		Yes	
E-A 230	N/A	Pre				City of Yakima			English		Yes	
E-A 231	N/A	Pre				City of Yakima			English		Yes	
E-A 232	N/A	Pre				City of Yakima			English		Yes	
E-A 233	N/A	Pre				City of Yakima			English		Yes	
E-A 235	N/A	Pre				City of Yakima			English		Yes	
E-A 236	N/A	Pre				City of Yakima			English		Yes	
E-A 237	N/A	Pre				City of Yakima			English		Yes	
E-A 238	N/A	Pre				City of Yakima			English		Yes	
E-A 239	N/A	Pre				City of Yakima			Spanish		Yes	
E-A 240	N/A	Pre				City of Yakima			English		Yes	
E-A 241	N/A	Pre				City of Yakima			English		Yes	
E-A 242	N/A	Pre					Outside of City of Yakima limits, but within Yakima County		English		Yes	
E-A 243	N/A	Pre				City of Yakima			English		Yes	
E-A 244	N/A	Pre				City of Yakima			English		Yes	
E-A 245	N/A	Pre					Outside of City of Yakima limits, but within Yakima County		English		Yes	
E-A 246	N/A	Pre				City of Yakima			English		Yes	
E-A 249	N/A	Pre				City of Yakima			English		Yes	
E-A 252	N/A	Pre					Outside of City of Yakima limits, but within Yakima County		English		Yes	

	4					5			6					7			8			9				
	Have you seen information on car washing best management practices from the City of Yakima, and if so, how recently?					If you saw information on car washing best management practices from the City of Yakima, where did you see it?			Which of the following best describes how often you wash your vehicle?					How often do you wash your vehicle at home?			Where do you think is the best environment to wash your vehicle?			Score Per Respondent	Did you know that car wash wastewater can pollute our streams, lakes, and rivers?			Score Per Respondent
E-A 181	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Never	Commercial car wash			1	Mostly aware			0.5			
E-A 182	I have not seen any information					Not applicable/I have	Once a month						Never			Not sure	0		Somewhat aware		0.25			
E-A 183	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1	Fully aware			1			
E-A 184	I have not seen any information					Not applicable/I have	Once a month						Sometimes	Commercial car wash			1		Somewhat aware		0.25			
E-A 185	I have not seen any information					Not applicable/I have	Once a month						Sometimes	Commercial car wash			1		Somewhat aware		0.25			
E-A 186	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Sometimes	Commercial car wash			1	Mostly aware			0.5			
E-A 187	I have not seen any information					Not applicable/I have	Once a month						Sometimes	Commercial car wash			1	Mostly aware			0.5			
E-A 188	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Never	Commercial car wash			1		Somewhat aware		0.25			
E-A 189	I have not seen any information					Not applicable/I have not seen at	2-3 times a year			Always				At home			-1	Fully aware			1			
E-A 190	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1	Fully aware			1			
E-A 193	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Sometimes	Commercial car wash			1	Mostly aware			0.5			
E-A 194	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Sometimes	Commercial car wash			1		Somewhat aware		0.25			
E-A 195	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1		Somewhat aware		0.25			
E-A 197	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Never	Commercial car wash			1				-1			
E-A 199	I have not seen any information					Not applicable/I have	More than once a month						Never			Not sure	0	Mostly aware			0.5			
E-A 200	I have not seen any information					Not applicable/I have	More than once a month			Always				At home			-1				-1			
E-A 201	I have not seen any information					Not applicable/I have not seen any information	Once a year						Never			Not sure	0				-1			
E-A 202	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1	Fully aware			1			
E-A 203	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Sometimes	Commercial car wash			1	Fully aware			1			
E-A 204	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1	Fully aware			1			
E-A 205	I have not seen any information					Not applicable/I have not seen any information	Never						Never			Not sure	0	Mostly aware			0.5			
E-A 206	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1		Somewhat aware		0.25			
E-A 207	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1				-1			
E-A 209	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Never	Commercial car wash			1	Fully aware			1			
E-A 210	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1	Fully aware			1			
E-A 212	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1				-1			
E-A 213	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1	Fully aware			1			
E-A 214	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Frequently			Commercial car wash		1	Fully aware		1			
E-A 215	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Never	Commercial car wash			1	Fully aware			1			
E-A 220	I have not seen any information					Not applicable/I have	Once a month						Frequently			At home	-1	Fully aware			1			
E-A 221	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Never	Commercial car wash			1				-1			
E-A 222	I have not seen any information					Not applicable/I have	More than once a month						Never	Commercial car wash			1	Mostly aware			0.5			
E-A 223	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Sometimes	Commercial car wash			1				-1			
E-A 224	I have not seen any information					Not applicable/I have	Once a month						Never			Not sure	0		Somewhat aware		0.25			
E-A 226	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Sometimes			Not sure	0	Mostly aware			0.5			
E-A 227	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Never	Commercial car wash			1	Fully aware			1			
E-A 228	I have not seen any information					Not applicable/I have not seen any information	Once a year						Never	Commercial car wash			1	Fully aware			1			
E-A 229	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1	Fully aware			1			
E-A 230	I have not seen any information					Not applicable/I have	Once a month						Sometimes			Not sure	0		Somewhat aware		0.25			
E-A 231	I have not seen any information					Not applicable/I have	Once a month						Sometimes			Not sure	0		Somewhat aware		0.25			
E-A 232	I have not seen any information					Not applicable/I have	Once a month						Sometimes			Not sure	0	Fully aware			1			
E-A 233	I have not seen any information					Not applicable/I have	Once a month						Sometimes			Commercial car wash	1	Fully aware			1			
E-A 235	I have not seen any information					Not applicable/I have	Once a month						Sometimes			Not sure	0		Somewhat aware		0.25			
E-A 236	I have not seen any information					Not applicable/I have	Once a month						Sometimes			Not sure	0	Mostly aware			0.5			
E-A 237	I have not seen any information					Not applicable/I have not seen at	2-3 times a year			Always			Never	Commercial car wash			1	Mostly aware			0.5			
E-A 238	I have not seen any information					Not applicable/I have	More than once a month						Sometimes			At home	-1	Fully aware			1			
E-A 239	I have not seen any information					Not applicable/I have	Once a month						Sometimes			Not sure	0				-1			
E-A 240	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1		Somewhat aware		0.25			
E-A 241	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Never	Commercial car wash			1				-1			
E-A 242	I have not seen any information					Not applicable/I have	Once a month						Sometimes			Not sure	0	Fully aware			1			
E-A 243	I have not seen any information					Not applicable/I have not seen at	2-3 times a year						Never	Commercial car wash			1	Fully aware			1			
E-A 244	I have not seen any information					Not applicable/I have	Once a month						Never	Commercial car wash			1				-1</			

How frequently have you used these methods? Select all that apply.

Wash car at home				Use a commercial carwash				Wash car on Pavement				Wash car on grass or gravel				Use waterless car washing products				Use biodegradable or environmentally friendly soap			
E-A 181		Sometimes			Frequently				Frequently					Sometimes				Never			Frequently		
E-A 182		Sometimes			Frequently				Sometimes					Never				Never				Never	
E-A 183		Never			Sometimes				Never					Never				Never				Never	
E-A 184		Sometimes			Frequently				Sometimes					Sometimes				Never			Sometimes		
E-A 185		Sometimes			Frequently			Always					Never				Never		Always				
E-A 186		Sometimes			Frequently				Sometimes					Sometimes				Never				Never	
E-A 187		Sometimes			Frequently				Frequently					Never				Never				Never	
E-A 188		Never		Always				Always					Never				Never				Not applic		
E-A 189	Always				Not applicable				Never		Always						Never		Always				
E-A 190		Never		Always						Not applicable					Not applicable			Never				Not applic	
E-A 193		Sometimes			Sometimes			Always					Never				Never			Sometimes			
E-A 194		Sometimes			Sometimes			Always					Never				Sometimes			Sometimes			
E-A 195		Never		Always						Never				Never				Never				Never	
E-A 197		Never			Sometimes				Never					Never				Never				Never	
E-A 199		Never		Always					Never					Never				Never				Not applic	
E-A 200	Always				Sometimes				Never			Frequently					Never				Never		
E-A 201		Never			Never				Never		Always						Never				Never		
E-A 202		Never		Always					Never					Never				Never		Always			
E-A 203		Sometimes			Frequently				Never					Sometimes				Never				Not applic	
E-A 204		Never		Always					Never					Never				Never			Sometimes		
E-A 205		Never			Never				Never					Never				Never				Never	
E-A 206		Sometimes			Frequently				Never					Sometimes				Sometimes			Frequently		
E-A 207		Not applic	Always							Not applicable					Not applicable				Not applicable			Not applic	
E-A 209		Never		Always						Not applicable					Not applicable				Not applic	Always			
E-A 210		Never		Always					Never					Never				Never				Not applic	
E-A 212		Never		Always						Not applicable					Not applicable				Not applicable			Not applic	
E-A 213		Never		Always					Never					Never				Never				Not applic	
E-A 214	Frequently				Sometimes				Never		Always							Never		Always			
E-A 215		Sometimes			Frequently					Sometimes					Never				Not applicable			Sometimes	
E-A 220	Frequently				Sometimes					Sometimes			Frequently					Sometimes				Sometimes	
E-A 221		Never			Sometimes					Never					Never				Never			Not applic	
E-A 222		Never		Always				Always						Never				Never				Not applic	
E-A 223		Sometimes			Frequently					Sometimes					Sometimes						Frequently		
E-A 224		Never		Always						Not applicable					Never				Never			Not applic	
E-A 226		Sometimes			Frequently					Sometimes					Never				Never			Sometimes	
E-A 227		Never			Sometimes						Not applicable					Never			Sometimes			Never	
E-A 228		Not applic	Always							Never					Never				Never			Not applic	
E-A 229		Never		Always						Never					Never				Never			Not applic	
E-A 230		Sometimes			Sometimes					Sometimes					Sometimes				Never			Never	
E-A 231		Sometimes			Frequently				Frequently					Never				Never		Always			
E-A 232		Sometimes			Sometimes					Sometimes					Never				Never			Frequently	
E-A 233		Sometimes			Frequently					Sometimes					Never				Never			Sometimes	
E-A 235		Sometimes			Sometimes			Always						Never				Never		Always			
E-A 236	Always				Never			Always						Never				Never				Sometimes	
E-A 237		Sometimes			Frequently			Always						Never				Never				Sometimes	
E-A 238		Sometimes			Frequently			Always						Never				Never				Sometimes	
E-A 239		Sometimes			Frequently				Frequently					Never				Never				Never	
E-A 240		Sometimes		Always						Sometimes					Never				Never			Never	
E-A 241		Never			Sometimes			Always						Never				Never				Not applic	
E-A 242		Sometimes			Sometimes				Frequently					Sometimes				Never				Sometimes	
E-A 243		Never		Always				Always						Not applicable				Never		Always			
E-A 244		Never			Sometimes					Sometimes					Never				Sometimes			Never	
E-A 245		Sometimes			Frequently					Sometimes					Sometimes						Not applicable		
E-A 246		Sometimes			Frequently					Sometimes					Never				Never			Sometimes	
E-A 249		Sometimes			Sometimes				Frequently					Never				Never				Sometimes	
E-A 252	Frequently				Sometimes						Never		Always					Never				Sometimes	

													11					Which of environmental factors are most important to you?
													Before taking this survey, how many environmentally friendly car washing methods were you aware of? Select all that apply.					
	Drain/hose water and soap into the street			Contain soap spills immediately or call spill control hotline in an event of a soap spill		Wash vehicle engine, undercarriage, mounted equipment			Before taking this survey, how many environmentally friendly car washing methods were you aware of? Select all that apply.					How willing are you to change your car washing methods to be more environmentally friendly?				
E-A 181			Never				Not applicable		Sometimes		Use a commercial car	Wash vehicle on grass	Use biodegradable or environment		3	Mostly willing		
E-A 182		Sometimes				Never		Sometimes		Use a commercial car wash					1		Somewhat willing	
E-A 183		Never				Not applicable		Sometimes		Use a commercial car	Wash vehicle on grass, dirt, or gravel to prevent car was	Use biodegradable or environment		3	All in!			Cost
E-A 184		Sometimes			Never			Never		Use a commercial car	Wash vehicle less often	Use biodegradable or environment		4	Mostly willing			
E-A 185		Sometimes			Never			Never		Use a commercial car	Wash vehicle less often	Use biodegradable or environment		4	All in!			Cost
E-A 186	Frequently				Never			Sometimes		Use a commercial car	Wash vehicle on grass	Use biodegradable or environment	Call spill control hotlin	3	All in!			Cost
E-A 187	Frequently				Never		Frequently		Use a commercial car	Wash vehicle wash				1	Mostly willing			Cost
E-A 188	able	Never			Not applicable			Sometimes		Use a commercial car	Wash vehicle less often				2	Mostly willing		
E-A 189	Never				Not applicable			Never		Use a commercial car	Wash vehicle on grass	Use biodegradable or environment		2				Not applicable
E-A 190	able	Not applicable			Never			Sometimes		Use a commercial car	Wash vehicle on grass, dirt, or gravel to prevent car was	Use biodegradable or environment		3	All in!			
E-A 193	Never		Sometimes					Never		Use a commercial car	Wash vehicle less often	Use biodegradable or environment		3	All in!			
E-A 194	Always			Never				Sometimes		Use a commercial car	Wash vehicle less often	Use biodegradable or environment		5	All in!			Cost
E-A 195	Never		Never					Never		Use a commercial car	Wash vehicle less often		Avoid wast	2	All in!			
E-A 197	Never		Never					Never		Use a commercial car	Wash vehicle less often			2		Somewhat willing		Cost
E-A 199	able	Not applicable			Not applicable			Never		Use a commercial car	Wash vehicle less often	Use biodegradable or environment		2	Mostly willing			
E-A 200	Always				Not applicable			Sometimes		Use a commercial car	Wash vehicle less often	Use biodegradable or environment		2	Mostly willing			Cost
E-A 201	Never		Never		Never			Never		Use a commercial car	Wash vehicle less often	Use waterless car washing produ	Avoid wast	3	Mostly willing			Cost
E-A 202	Never		Not applic	Always						Use a commercial car	Wash vehicle less often			1	All in!			
E-A 203	able	Never		Not applicable				Sometimes		Use a commercial car	Wash vehicle on grass	Use biodegradable or environment		4	All in!			
E-A 204	Never			Not applicable				Sometimes		Use a commercial car	Wash vehicle less often			1	Mostly willing			Cost
E-A 205	Never			Never				Never		Use a commercial car	Wash vehicle less often			2				Not applicable
E-A 206	Never		Never		Never			Never		Use a commercial car	Wash vehicle on grass, dirt, or gravel to prevent car was			2	Mostly willing			
E-A 207	able	Not applicable			Not applicable			Not applicable		Use a commercial car	Wash vehicle less often			1	All in!			
E-A 209	Never	Not applicable			Not applicable			Not applicable		Use a commercial car	Wash vehicle on grass	Use biodegradable or environment		5	All in!			
E-A 210	able	Not applicable			Not applicable			Sometimes		Use a commercial car	Wash vehicle on grass	Use biodegradable or environment		4	Mostly willing			
E-A 212	able	Not applicable			Not applicable			Not applicable		Use a commercial car	Wash vehicle less often			1				Not applicable
E-A 213	able	Not applicable			Always			Not applicable		Use a commercial car	Wash vehicle less often			1	All in!			
E-A 214	Never		Never		Never			Sometimes		Use a commercial car	Wash vehicle on grass	Use biodegradable or environment		5	All in!			
E-A 215	Sometimes		Never		Never			Never		Use a commercial car	Wash vehicle on grass	Use biodegradable or environment		2		Somewhat willing		
E-A 220	Frequently			Never			Sometimes		Use a commercial car	Wash vehicle on grass	Use biodegradable or environment		3	Mostly willing			Cost	
E-A 221	able	Not applicable			Not applicable			Not applicable		Use a commercial car	Wash vehicle on grass	Use biodegradable or environment		1	Mostly willing			
E-A 222	able	Never		Never	Always			Sometimes		Use a commercial car	Wash vehicle less often	Use biodegradable or environment		4		Somewhat willing		
E-A 223	Never		Always					Sometimes		Use a commercial car	Wash vehicle less often	Use biodegradable or environment		5	All in!			Cost
E-A 224	able	Never		Not applicable				Not applicable		Use a commercial car	Wash vehicle less often		Avoid wast	3		Somewhat willing		
E-A 226	Frequently			Never			Sometimes		Use a commercial car	Wash vehicle on grass, dirt, or gravel to prevent car was			3	Mostly willing			Cost	
E-A 227	Never		Never		Never			Never		Use a commercial car	Wash vehicle less often	Use waterless car washing products		3	All in!			Cost
E-A 228	able	Not applicable			Not applicable			Never		Use a commercial car	Wash vehicle less often	Use biodegradable or environment		3				Not applicable
E-A 229	able	Never		Not applicable			Not applicable	Never	Use a commercial car	Wash vehicle less often	Use biodegradable or environment		3	Mostly willing				
E-A 230	Sometimes		Never		Never			Sometimes		Use a commercial car	Wash vehicle on grass, dirt, or gravel to prevent car was			3		Not at all willing		Cost
E-A 231	Never		Not applicable		Never			Never		Use a commercial car	Wash vehicle on grass	Use biodegradable or environment		4		Somewhat willing		Cost
E-A 232	Never		Never		Never			Sometimes		Use a commercial car	Wash vehicle on grass	Use biodegradable or environment		2	All in!			Cost
E-A 233	Sometimes		Never		Never			Never		Use a commercial car	Wash vehicle less often			2	All in!			
E-A 235	Sometimes		Not applicable		Sometimes							Use biodegradable or environment		1	Mostly willing			Cost
E-A 236	Always		Never		Sometimes			Sometimes		Use a commercial car	Wash vehicle on grass, dirt, or gravel to prevent car was			1	All in!			Cost
E-A 237	Sometimes		Never		Sometimes			Sometimes		Use a commercial car	Wash vehicle less often	Use biodegradable or environment		4	Mostly willing			Cost
E-A 238	Frequently		Never		Never			Sometimes		Use a commercial car	Wash vehicle less often	Use biodegradable or environment		3		Somewhat willing		Cost
E-A 239	Sometimes		Never		Never			Sometimes		Use a commercial car	Wash vehicle less often	Use biodegradable or environment		1		Somewhat willing		
E-A 240	Sometimes		Never		Never			Never		Use a commercial car	Wash vehicle less often			2	All in!			
E-A 241	able	Never		Not applicable			Sometimes		Use a commercial car	Wash vehicle less often			2	All in!				
E-A 242	Never		Always		Never					Use a commercial car	Wash vehicle less often			1		Not at all willing		
E-A 243	Never		Always		Never			Never		Use a commercial car	Wash vehicle less often	Use water	Call spill control	7	All in!			Cost
E-A 244	Frequently	Sometimes	Never	Always	Never			Sometimes		Use a commercial car	Wash vehicle less often	Use water	Use biodegradable or environment	4		Not at all willing		Cost
E-A 245	Sometimes		Never		Never			Sometimes		Use a commercial car	Wash vehicle less often			1	All in!			
E-A 246	Sometimes		Never															

these categories are barriers that prevent you from practicing  
mentally friendly car wash techniques? Select all that apply.

E-A 181					None
E-A 182	Lack of Knowledge	Lack of access to materials			
E-A 183		Time/Convenience			
E-A 184		Time/Convenience			
E-A 185	Lack of Knowledge				
E-A 186	Lack of Knowledge	Lack of acc	Quality of product		
E-A 187			Lack of access to materials		
E-A 188					None
E-A 189					None
E-A 190					None
E-A 193					None
E-A 194	Lack of Kn	Time/Convenience			
E-A 195	Lack of Knowledge				
E-A 197	Lack of Kn	Time/Convenience	Quality of product		
E-A 199			Quality of product		
E-A 200					
E-A 201		Time/Convenience			
E-A 202					None
E-A 203		Time/Convenience			
E-A 204					
E-A 205					None
E-A 206	Lack of Kn	Time/Convenience			
E-A 207	Lack of Knowledge				
E-A 209					None
E-A 210		Time/Convenience			
E-A 212		Time/Convenience			
E-A 213					None
E-A 214					None
E-A 215	Lack of Knowledge				
E-A 220		Lack of access to mate	Other		
E-A 221					None
E-A 222		Time/Convenience		Other	
E-A 223	Lack of Kn	Time/Conv	Lack of access to materials		
E-A 224	Lack of Knowledge				
E-A 226	Lack of Knowledge				
E-A 227	Lack of Kn	Time/Conv	Lack of access to materials		
E-A 228					None
E-A 229	Lack of Kn	Time/Convenience			
E-A 230		Time/Conv	Lack of acc	Quality of	Other
E-A 231		Time/Convenience		Quality of product	
E-A 232		Time/Convenience			
E-A 233		Time/Convenience			
E-A 235			Quality of	Other	
E-A 236	Lack of Knowledge				
E-A 237		Time/Convenience			
E-A 238		Time/Convenience	Quality of product		
E-A 239	Lack of Knowledge	Lack of acc	Quality of product		
E-A 240					None
E-A 241	Lack of Knowledge				
E-A 242					None
E-A 243					
E-A 244	Lack of Kn	Time/Conv	Lack of acc	Quality of product	
E-A 245					None
E-A 246				Other	
E-A 249	Lack of Knowledge				
E-A 252		Time/Convenience			

						1	Where do you live?		2	What is the primary language spoken in your household?		3
E-A 254	N/A	Pre				City of Yakima			English			Yes
E-A 255	N/A	Pre				City of Yakima			English			Yes
E-A 256	N/A	Pre				City of Yakima			English			Yes
E-A 257	N/A	Pre				City of Yakima			English			Yes
E-A 258	N/A	Pre				City of Yakima			English			Yes
E-A 259	N/A	Pre				City of Yakima			English			Yes
E-A 260	N/A	Pre				City of Yakima			English			Yes
E-A 261	N/A	Pre				City of Yakima			English			Yes
E-A 262	N/A	Pre				City of Yakima			English			Yes
E-A 263	N/A	Pre				City of Yakima			English			Yes
E-A 264	N/A	Pre				City of Yakima			English			Yes
E-A 265	N/A	Pre				City of Yakima			English			Yes
E-A 266	N/A	Pre				City of Yakima			English			Yes
E-A 268	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 269	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 272	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 273	N/A	Pre			City of Yakima			English				Yes
E-A 274	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			yes
E-A 276	N/A	Pre			City of Yakima			English				Yes
E-A 277	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 278	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 279	N/A	Pre			City of Yakima			English				Yes
E-A 280	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 281	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 282	N/A	Pre			City of Yakima				Spanish			Yes
E-A 286	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 289	N/A	Pre	XRU	Unanswered Q11		Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 290	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 291	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 292	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 294	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 300	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 302	N/A	Pre	XRU	Answered 10(6) as "?", marked as unanswered		Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 303	N/A	Pre			City of Yakima				English			Yes
E-A 305	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 307	N/A	Pre			City of Yakima				English			Yes
E-A 308	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 309	N/A	Pre			City of Yakima				English			Yes
E-A 311	N/A	Pre			City of Yakima				English			Yes
E-A 319	N/A	Pre			City of Yakima				English			Yes
E-A 320	N/A	Pre			City of Yakima				English			Yes
E-A 321	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 323	N/A	Pre			City of Yakima				English			Yes
E-A 324	N/A	Pre			City of Yakima				English			Yes
E-A 328	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 329	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 330	N/A	Pre	XRI	Respondent selected multiple answers, responses reasonable		Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 331	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 333	N/A	Pre			City of Yakima				English			Yes
E-A 334	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 335	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 336	N/A	Pre			City of Yakima				English			Yes
E-A 337	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 339	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes
E-A 340	N/A	Pre			City of Yakima				English			Yes
E-A 342	N/A	Pre				Outside of City of Yakima limits, but within Yakima County			English			Yes

	4					5			6			7			8		9				
	Have you seen information on car washing best management practices from the City of Yakima, and if so, how recently?					If you saw information on car washing best management practices from the City of Yakima, where did you see it?			Which of the following best describes how often you wash your vehicle?			How often do you wash your vehicle at home?			Where do you think is the best environment to wash your vehicle?		Score Per Respondent	Did you know that car wash wastewater can pollute our streams, lakes, and rivers?			Score Per Respondent
E-A 254	I have not seen any information					Not applicable/I have	Once a month					Sometimes		Commercial car wash		1	Fully aware				1
E-A 255	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Never		Commercial car wash		1			Not aware	-1	
E-A 256	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Never		Commercial car wash		1			Somewhat aware	0.25	
E-A 257	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Sometimes		Commercial car wash		1			Somewhat aware	0.25	
E-A 258	I have not seen any information					Not applicable/I have	Once a month					Never		Commercial car wash		1			Somewhat aware	0.25	
E-A 259	I have not seen any information					Not applica	More than once a month					Never		Commercial car wash		1			Not aware	-1	
E-A 260	I have not seen any information					Not applicable/I have	Once a month					Never		Commercial car wash		1			Somewhat aware	0.25	
E-A 261	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Frequently		Commercial car wash		1	Fully aware			1	
E-A 262	I have not seen any information					Not applica	More than once a month					Never		Commercial car wash		1			Somewhat aware	0.25	
E-A 263	I have not seen any information					Not applicable/I have	Once a month					Never		Commercial car wash		1			Mostly aware	0.5	
E-A 264	I have not seen any information					Not applica	More than once a month					Sometimes			Not sure	0	Fully aware			1	
E-A 265	I have not seen any information					Not applicable/I have	Once a month					Sometimes		Commercial car wash		1			Somewhat aware	0.25	
E-A 266	I have not seen any information					Not applica	More than once a month					Sometimes		Commercial car wash		1			Not aware	-1	
E-A 268	I have not seen any information					Not applica	More than once a month					Sometimes		Commercial car wash		1			Somewhat aware	0.25	
E-A 269	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Sometimes		At home		-1			Somewhat aware	0.25	
E-A 272	I have not seen any information					Not applicable/I have	Once a month					Frequently			Not sure	0			Somewhat aware	0.25	
E-A 273	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Sometimes		Commercial car wash		1	Fully aware			1	
E-A 274	I have not seen any information					Not applicable/I have	Once a month					Sometimes		At home		-1			Not aware	-1	
E-A 276	I have not seen any information					Not applicable/I have	Once a month					Sometimes		At home		-1			Not aware	-1	
E-A 277	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Never		Commercial car wash		1			Somewhat aware	0.25	
E-A 278	I have not seen any information					Not applicable/I have	Once a month					Never		Commercial car wash		1			Somewhat aware	0.25	
E-A 279	I have not seen any information					Not applica	More than once a month					Never		Commercial car wash		1	Fully aware			1	
E-A 280	I have not seen any information					Not applicable/I have	Once a month					Never			Not sure	0			Mostly aware	0.5	
E-A 281	I have not seen any information					Not applica	More than once a month					Sometimes		Commercial car wash		1			Not aware	-1	
E-A 282	I have not seen any information					Not applica	More than once a month					Frequently		At home		-1	Fully aware			1	
E-A 286	I have not seen any information					Not applicable/I have	Once a month					Frequently		Commercial car wash		1			Not aware	-1	
E-A 289	I have not seen any information					Not applica	More than once a month					Never		At home		-1			Mostly aware	0.5	
E-A 290	I have not seen any information					Not applica	More than once a month					Sometimes		At home		-1			Mostly aware	0.5	
E-A 291	I have not seen any information					Not applica	More than once a month					Sometimes		Commercial car wash		1			Somewhat aware	0.25	
E-A 292	I have not seen any information					Not applica	More than once a month					Frequently		At home		-1			Not aware	-1	
E-A 294	I have not seen any information					Not applicable/I have	Once a month					Sometimes		At home		-1			Mostly aware	0.5	
E-A 300	I have not seen any information					Not applica	More than once a month					Sometimes		Commercial car wash		1	Fully aware			1	
E-A 302	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Sometimes		Commercial car wash		1			Somewhat aware	0.25	
E-A 303	I have not seen any information					Not applicable/I have	Once a month					Never			Not sure	0			Not aware	-1	
E-A 305	I have not seen any information					Not applicable/I have	Once a month					Frequently		At home		-1			Somewhat aware	0.25	
E-A 307	I have not seen any information					Not applicable/I have	Once a month					Never		Commercial car wash		1	Fully aware			1	
E-A 308	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Never		Commercial car wash		1			Mostly aware	0.5	
E-A 309	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Never			Not sure	0			Somewhat aware	0.25	
E-A 311	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Always			Not sure	0			Not aware	-1	
E-A 319	I have not seen any information					Not applicable/I have not seen any informat	Once a year					Never		Commercial car wash		1			Mostly aware	0.5	
E-A 320	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Sometimes		Commercial car wash		1			Not aware	-1	
E-A 321	I have not seen any information					Not applica	More than once a month					Never		Commercial car wash		1	Fully aware			1	
E-A 323	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Never		Commercial car wash		1			Not aware	-1	
E-A 324	I have not seen any information					Not applicable/I have	Once a month					Never		Commercial car wash		1			Not aware	-1	
E-A 328	I have not seen any information					Not applica	More than once a month					Never		At home		-1	Fully aware			1	
E-A 329	I have not seen any information					Not applica	More than once a month					Never			Not sure	0			Somewhat aware	0.25	
E-A 330	I have not seen any information					Not applica	More than once a month					Sometimes		Commercial car wash		1			Somewhat aware	0.25	
E-A 331	I have not seen any information					Not applicable/I have	Once a month					Never		Commercial car wash		1			Somewhat aware	0.25	
E-A 333	I have not seen any information					Not applicable/I have	Once a month					Never		Commercial car wash		1			Somewhat aware	0.25	
E-A 334	I have not seen any information					Not applicable/I have not seen ar	2-3 times a year					Never		Commercial car wash		1	Fully aware			1	
E-A 335	I have not seen any information					Not applicable/I have	Once a month					Never			Not sure	0			Not aware	-1	
E-A 336	I have not seen any information					More than once a month					Sometimes		Commercial car wash		1			Not aware	-1		
E-A 337	I have not seen any information					Not applicable/I have	Once a month					Never		Commercial car wash		1			Somewhat aware	0.25	
E-A 339	I have not seen any information					Not applica	More than once a month					Never			Not sure	0			Not aware	-	

How frequently have you used these methods? Select all that apply.

	Wash car at home			Use a commercial carwash			Wash car on Pavement			Wash car on grass or gravel			Use waterless car washing products			Use biodegradable or environmentally friendly soap			
E-A 254		Sometimes			Frequently				Never		Always					Never			
E-A 255		Sometimes				Sometimes				Not applicable			Not applicable		Never			Never	
E-A 256		Never	Always						Never			Never			Never			Not applicable	
E-A 257		Sometimes			Frequently				Sometimes			Never			Never			Sometimes	
E-A 258		Sometimes				Sometimes			Sometimes			Never			Sometimes			Never	
E-A 259		Never	Always						Not applicable			Not applicable			Never			Not applicable	
E-A 260		Never	Always						Never			Never			Never			Never	
E-A 261	Frequently				Sometimes			Frequently			Sometimes			Never		Always			
E-A 262		Never	Always						Not applicable			Not applicable						Not applicable	
E-A 263		Never	Always						Never			Never			Never			Not applicable	
E-A 264		Sometimes			Frequently			Frequently				Never			Never			Sometimes	
E-A 265		Sometimes			Frequently			Always				Never			Never			Sometimes	
E-A 266		Never	Always						Not applicable			Not applicable						Not applicable	
E-A 268		Sometimes			Frequently				Sometimes			Sometimes			Never			Sometimes	
E-A 269	Always					Never				Never		Always			Never			Never	
E-A 272	Frequently				Frequently				Sometimes			Always			Sometimes			Sometimes	
E-A 273		Sometimes				Sometimes			Sometimes			Sometimes			Never			Sometimes	
E-A 274		Sometimes				Sometimes			Sometimes			Sometimes			Never			Never	
E-A 276		Sometimes				Never				Not applicable		Frequently			Never		Always		
E-A 277		Never			Sometimes				Never			Never			Never			Never	
E-A 278		Never	Always						Never			Never			Never			Never	
E-A 279		Never	Always						Never			Never						Not applicable	
E-A 280		Never			Sometimes				Never			Never			Never			Never	
E-A 281		Sometimes			Frequently			Frequently				Never			Sometimes		Always		
E-A 282	Always					Never		Always				Never			Never			Never	
E-A 286	Frequently				Sometimes				Sometimes			Frequently			Frequently			Never	
E-A 289			Not applicable	Frequently					Sometimes			Sometimes			Never		Frequently		
E-A 290		Sometimes			Frequently					Never		Frequently			Never			Never	
E-A 291		Sometimes			Frequently				Sometimes			Never			Never			Never	
E-A 292	Always				Sometimes		Always					Never			Never			Frequently	
E-A 294	Frequently				Sometimes				Sometimes			Frequently			Never			Never	
E-A 300		Sometimes			Frequently				Sometimes			Never			Never			Never	
E-A 302		Sometimes				Sometimes				Never			Sometimes		Never				
E-A 303		Never	Always						Never			Never			Never			Never	
E-A 305	Frequently				Frequently			Frequently				Sometimes			Never			Frequently	
E-A 307		Never			Frequently				Never				Never		Never		Always		
E-A 308		Never			Frequently				Sometimes				Never		Never			Never	
E-A 309		Never				Sometimes				Never			Never		Never			Never	
E-A 311	Always				Sometimes		Always					Never			Never			Never	
E-A 319		Never			Sometimes				Never			Never			Never			Never	
E-A 320		Sometimes				Sometimes			Sometimes			Never			Never			Never	
E-A 321		Never	Always				Always					Never			Never		Always		
E-A 323		Never				Never				Never			Never		Never			Never	
E-A 324		Never	Always						Never			Frequently			Never			Sometimes	
E-A 328		Never			Frequently				Never			Never			Never			Never	
E-A 329			Not applicable	Frequently					Not applicable			Not applicable						Not applicable	
E-A 330		Never	Always						Never					Never			Never		
E-A 331		Never			Frequently				Not applicable			Not applicable						Not applicable	
E-A 333		Never	Always						Never			Never			Never			Never	
E-A 334		Never	Always						Never			Never			Never			Never	
E-A 335		Never			Frequently				Never			Never			Never			Never	
E-A 336		Sometimes	Always						Sometimes			Never						Sometimes	
E-A 337		Never	Always						Never			Never			Never			Never	
E-A 339		Sometimes	Always						Sometimes			Sometimes			Never			Never	
E-A 340		Never	Always						Never			Never			Never			Never	
E-A 342		Never	Always						Not applicable			Not applicable						Not applicable	

													11						12			Which of environmental factors are you most concerned about?
													Before taking this survey, how many environmentally friendly car washing methods were you aware of? Select all that apply.						Score Per Respondent		How willing are you to change your car washing methods to be more environmentally friendly?	
	Drain/hose water and soap into the street			Contain soap spills immediately or call spill control hotline in an event of a soap spill			Wash vehicle engine, undercarriage, mounted equipment			Before taking this survey, how many environmentally friendly car washing methods were you aware of? Select all that apply.						Score Per Respondent		How willing are you to change your car washing methods to be more environmentally friendly?				
E-A 254			Sometimes			Never			Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash				3			Somewhat willing		
E-A 255			Not applicable			Never			Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash				1			Mostly willing		
E-A 256			Never			Not applicable			Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash				2	All in!				
E-A 257			Sometimes			Not applicable			Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash	Use waterless car washing products			3			Mostly willing		
E-A 258			Never			Never			Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash	Use biodegradable or environmental friendly car washing products			2			Mostly willing		
E-A 259			Never			Not applicable			Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash				1	All in!				
E-A 260			Never			Not applicable			Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash				2			Somewhat willing		Cost
E-A 261			Sometimes			Never			Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash	Use biodegradable or environmental friendly car washing products			4			Mostly willing		Cost
E-A 262			Not applicable			Not applicable			Not applicable		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash				2	All in!				
E-A 263			Never			Not applicable			Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash	Use biodegradable or environmental friendly car washing products			4	All in!				
E-A 264			Sometimes			Sometimes			Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash	Use biodegradable or environmental friendly car washing products			3			Somewhat willing		
E-A 265	Always					Never			Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash	Avoid wash			3			Mostly willing		
E-A 266	able		Not applicable			Not applicable			Not applicable		Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash				1			Mostly willing		
E-A 268			Never			Never		Always			Use a commercial car wash	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash				1	All in!				Cost
E-A 269			Never			Never			Never		Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash	Wash vehicle on grass, dirt, or gravel to prevent car wash				2					Not applicable
E-A 272	Frequently		Sometimes			Never			Sometimes		Wash vehicle less often	Wash vehicle less often	Wash vehicle less often				1			Somewhat willing		
E-A 273			Sometimes			Never			Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often	Use biodegradable or environmental friendly car washing products			3			Mostly willing		
E-A 274			Sometimes			Never			Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				2			Mostly willing		Cost
E-A 276			Never			Never			Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often	Use waterless car washing products			2			Mostly willing		Cost
E-A 277			Never			Never		Always			Use a commercial car wash	Wash vehicle less often	Wash vehicle less often	Use waterless car washing products			3			Mostly willing		
E-A 278			Never			Never			Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				2			Mostly willing		
E-A 279	able		Not applicable			Not applicable			Not applicable		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				1	All in!				
E-A 280			Never			Never			Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often	Avoid wash			2	All in!				Cost
E-A 281			Never		Frequently	Never			Frequently		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often	Use waterless car washing products			4	All in!				Cost
E-A 282	Always				Never	Always			Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				1	All in!				
E-A 286	Frequently				Never				Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				0	All in!				Cost
E-A 289			Not applicable		Sometimes				Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				0			Mostly willing		
E-A 290			Never			Never			Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				2			Mostly willing		
E-A 291			Never			Never			Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often	Use biodegradable or environmental friendly car washing products			2	All in!				
E-A 292	Always				Never				Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				1			Mostly willing		
E-A 294			Never			Never			Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				2	All in!				
E-A 300		Sometimes			Never				Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				0					
E-A 302		Never			Never				Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often	Wash vehicle on grass, dirt, or gravel to prevent car wash			4			Mostly willing		
E-A 303		Never			Never				Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often	Avoid wash			2	All in!				
E-A 305		Sometimes			Never				Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				1			Mostly willing		
E-A 307		Never			Never				Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				2	All in!				
E-A 308		Never			Never				Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				1	All in!				Cost
E-A 309		Never			Never				Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				2			Mostly willing		
E-A 311	Always				Never				Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				0			Mostly willing		
E-A 319		Never			Never				Sometimes		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				1	All in!				
E-A 320		Sometimes			Never				Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				0	All in!				
E-A 321		Never			Never				Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				1			Somewhat willing		Cost
E-A 323		Never			Never				Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often				1	All in!				
E-A 324	Frequently				Never				Never		Use a commercial car wash	Wash vehicle less often	Wash vehicle less often	Use biodegradable or environmental friendly car washing products			3</td					

these categories are barriers that prevent you from practicing  
mentally friendly car wash techniques? Select all that apply.

E-A 254	Lack of Knowledge				
E-A 255		Time/Convenience			
E-A 256		Time/Convenience			
E-A 257	Lack of Knowledge				
E-A 258	Lack of Knowledge				
E-A 259					None
E-A 260					
E-A 261					
E-A 262					None
E-A 263					None
E-A 264	Lack of Knowledge	Time/Convenience			
E-A 265					None
E-A 266	Lack of Knowledge				
E-A 268					
E-A 269					None
E-A 272	Lack of Knowledge				
E-A 273	Lack of Knowledge				
E-A 274					
E-A 276	Lack of Knowledge				
E-A 277	Lack of Knowledge				
E-A 278		Lack of access to materials			
E-A 279					None
E-A 280					
E-A 281					
E-A 282	Lack of Knowledge				
E-A 286					
<b>E-A 289</b>	<b>Lack of Knowledge</b>				
E-A 290		Lack of access to materials			
E-A 291					None
E-A 292					Other
E-A 294					None
E-A 300					
<b>E-A 302</b>	<b>Lack of Knowledge</b>				
E-A 303	Lack of Knowledge				Other
E-A 305		Time/Convenience			
E-A 307	Lack of Knowledge				
E-A 308		Time/Convenience			
E-A 309	Lack of Knowledge				
E-A 311	Lack of Knowledge	Time/Convenience	Lack of access to materials		
E-A 319	Lack of Knowledge	Time/Convenience			
E-A 320	Lack of Knowledge				
E-A 321					
E-A 323	Lack of Knowledge				
E-A 324					None
E-A 328					None
E-A 329		Time/Convenience			
<b>E-A 330</b>					<b>None</b>
E-A 331					
E-A 333		Time/Convenience			
E-A 334					None
E-A 335	Lack of Knowledge				
E-A 336	Lack of Knowledge				
E-A 337					
E-A 339	Lack of Knowledge				
E-A 340	Lack of Knowledge				
E-A 342					None

				1				2				3	
				Where do you live?				What is the primary language spoken in your household?				Do you drive a personal vehicle?	
E-A 343	N/A	Pre				Outside of City of Yakima limits, but within Yakima County		English				Yes	
E-A 345	N/A	Pre				Outside of City of Yakima limits, but within Yakima County		English				Yes	
S-A 9	N/A	Pre			La Ciudad de Yakima			Español				Sí	
S-A 10	N/A	Pre			La Ciudad de Yakima			Inglés				Sí	
S-A 12	N/A	Pre			La Ciudad de Yakima			Español				Sí	
S-A 16	N/A	Pre				Fuera de los límites de la Ciudad de Yakima, pero dentro del Condado de Yakima		Inglés				Sí	
E-A 348	N/A	Pre			City of Yakima			English				Yes	
E-A 349	N/A	Pre				Outside of City of Yakima limits, but within Yakima County		English				Yes	
E-A 352	N/A	Pre				Outside of City of Yakima limits, but within Yakima County		English				Yes	
E-A 354	N/A	Pre				Outside of City of Yakima limits, but within Yakima County		English				Yes	
E-A 355	N/A	Pre				Outside of City of Yakima limits, but within Yakima County		English				Yes	
E-A 356	N/A	Pre			City of Yakima			English				Yes	
E-A 357	N/A	Pre			City of Yakima			English				Yes	
E-A 358	N/A	Pre				Outside of City of Yakima limits, but within Yakima County		English				Yes	
E-A 360	N/A	Pre				Outside of City of Yakima limits, but within Yakima County		English				Yes	
E-A 361	N/A	Pre			City of Yakima			English				Yes	
E-A 362	N/A	Pre			City of Yakima			English				Yes	
289			52	52	159		111	19	267	15	7	286	3
			-		55%		38%	7%	92%	5%	2%	99%	1%
			-		151		109	0	247	13	0	260	0
			-		58%		42%	0%	95%	5%	0%	100%	0%
					6%		9%	-100%	3%	-4%	-100%	1%	-100%

	4					5			6					7				8				9				
	Have you seen information on car washing best management practices from the City of Yakima, and if so, how recently?					If you saw information on car washing best management practices from the City of Yakima, where did you see it?			Which of the following best describes how often you wash your vehicle?					How often do you wash your vehicle at home?				Where do you think is the best environment to wash your vehicle?			Score Per Respondent	Did you know that car wash wastewater can pollute our streams, lakes, and rivers?				
E-A 343	I have not seen any information								Not applicable/I have not seen any information	2-3 times a year				Never	Commercial car wash			1				Not aware		-1		
E-A 345	I have not seen any information								Not applicable/I have not seen any information	Once a month				Sometimes	Commercial car wash			1				Not aware		-1		
S-A 9	No he visto ninguna información								No aplicable/No he visto ninguna información	Una vez al mes				Nunca	Lavado de coche comercial			1				No concie		-1		
S-A 10	No he visto ninguna información								No aplicable/No he visto ninguna información	Una vez al mes				A veces	Lavado de coche comercial			1	Plenamente consciente					1		
S-A 12	No he visto ninguna información								No aplicable/No he visto ninguna información	Más de una vez al mes				A veces		No seguro		0				No concie		-1		
S-A 16	No he visto ninguna información								No aplicable/No he visto ninguna información	Más de una vez al mes				Nunca	Lavado de coche comercial			1				No concie		-1		
E-A 348	I have not seen any information								Not applicable/I have not seen any information	Once a year				Never	Commercial car wash			1	Fully aware						1	
E-A 349	I have not seen any information								Not applicable/I have not seen any information	Once a month				Never	Commercial car wash			1	Fully aware						1	
E-A 352	I have not seen any information								Not applicable/I have not seen any information	2-3 times a year				Sometimes	Commercial car wash			1				Not aware		-1		
E-A 354	I have not seen any information								Not applicable/I have not seen any information	2-3 times a year				Sometimes	Commercial car wash			1				Not aware		-1		
E-A 355	I have not seen any information								Not applicable/I have not seen any information	2-3 times a year				Sometimes	At home			-1	Fully aware					1		
E-A 356	I have not seen any information								Not applicable/I have not seen any information	Once a month				Never		Not sure		0				Not aware		-1		
E-A 357	I have not seen any information								Not applicable/I have not seen any information	More than once a month				Sometimes	Commercial car wash			1				Not aware		-1		
E-A 358	I have not seen any information								Not applicable/I have not seen any information	Once a month			Always			Not sure		0				Not aware		-1		
E-A 360	I have not seen any information								Not applicable/I have not seen any information	2-3 times a year				Never	Commercial car wash			1	Fully aware					1		
E-A 361	I have not seen any information								Not applicable/I have not seen any information	More than once a month				Never		Not sure		0				Somewhat aware		0.25		
E-A 362	I have not seen any information								Not applicable/I have not seen any information	More than once a month				Never	Commercial car wash			1				Not aware		-1		
289	287	0	0	0	2	1	0	0	283	89	113	73	6	6	14	27	104	142	188	41	58		80	50	72	82
	99%	0%	0%	0%	1%	0%	0%	0%	100%	31%	39%	25%	2%	2%	5%	9%	36%	49%	66%	14%	20%		28%	18%	25%	29%
	260	0	0	0	0	0	0	0	255	73	110	68	6	1	10	20	96	132	171	36	51		72	46	65	72
	100%	0%	0%	0%	0%	0%	0%	0%	100%	28%	43%	26%	2%	0%	4%	8%	37%	51%	66%	14%	20%		28%	18%	25%	28%
	1%	0%	0%	0%	-100%	-100%	0%	0%	0%	-9%	8%	4%	11%	-81%	-21%	-18%	3%	3%	1%	-2%	-2%		0%	2%	1%	-2%

How frequently have you used these methods? Select all that apply.

		Wash car at home			Use a commercial carwash			Wash car on Pavement			Wash car on grass or gravel			Use waterless car washing products			Use biodegradable or environmentally friendly soap													
E-A 343		Sometimes			Frequently			Sometimes			Frequently			Never			Never													
E-A 345		Sometimes			Sometimes			Sometimes			Sometimes			Frequently			Never													
S-A 9		Nunca		Siempre				Nunca			Nunca			Nunca		Siempre														
S-A 10		A veces		Siempre				No aplicable			No applicable			No applicable		No aplicable	Frecuentemente													
S-A 12		A veces		Frecuentemente				Nunca			Frecuentemente			No aplicable		No aplicable	Frecuentemente													
S-A 16		Nunca		Siempre			Siempre			Nunca			Nunca		Nunca		Nunca													
E-A 348		Never		Sometimes				Never			Never			Never		Never		Never												
E-A 349		Never		Always				Never			Never			Never		Never		Never												
E-A 352		Sometimes		Frequently				Never			Never			Never		Sometimes														
E-A 354		Sometimes		Sometimes				Sometimes			Sometimes			Never		Sometimes														
E-A 355		Sometimes		Sometimes				Never			Sometimes			Never		Frequently														
E-A 356		Never		Always				Never			Never			Never		Always														
E-A 357		Sometimes		Frequently			Always			Never			Never		Never		Never													
E-A 358	Always			Sometimes				Never		Always					Never				Never											
E-A 360		Never		Sometimes				Never			Sometimes			Never					Never											
E-A 361		Never		Always				Never			Never			Never		Always														
E-A 362		Sometimes		Frequently				Frequently								Always														
289	16	20	125	108	7	90	88	83	11	4	40	20	68	114	31	16	19	64	146	27	2	5	26	212	29	30	24	64	104	52
	6%	7%	45%	39%	3%	33%	32%	30%	4%	1%	15%	7%	25%	42%	11%	6%	7%	24%	54%	10%	1%	2%	9%	77%	11%	11%	9%	23%	38%	19%
	13	17	113	102	4	83	85	73	9	1	36	17	66	103	26	14	16	58	136	23	1	4	21	198	25	29	20	55	97	48
	5%	7%	45%	41%	2%	33%	34%	29%	4%	0%	15%	7%	27%	42%	10%	6%	6%	23%	55%	9%	0%	2%	8%	80%	10%	12%	8%	22%	39%	19%
	-10%	-6%	0%	5%	-37%	1%	6%	-3%	-10%	-73%	-1%	-6%	7%	-1%	-8%	-4%	-7%	0%	3%	-6%	-45%	-12%	-11%	3%	-5%	6%	-8%	-5%	3%	2%

													11							12					Which of environ										
	Drain/hose water and soap into the street				Contain soap spills immediately or call spill control hotline in an event of a soap spill				Wash vehicle engine, undercarriage, mounted equipment				Before taking this survey, how many environmentally friendly car washing methods were you aware of? Select all that apply.							Score Per Respondent	How willing are you to change your car washing methods to be more environmentally friendly?														
	Sometimes		Never		Sometimes		Never		Never		Never		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegrada		Evitar lava										
E-A 343			Sometimes					Never					Never		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegrada		Evitar lava		2	All in!					
E-A 345			Never					Never					Sometimes		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegrada		Evitar lava		2			Somewhat willing			
S-A 9			Nunca					Nunca					Nunca		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegrada		Evitar lava		3	Definitiva!					
S-A 10			Nunca					Nunca					Nunca		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegrada		Evitar lava		1	Definitiva!					
S-A 12			No applicable					A veces					A veces		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		3						
S-A 16			Nunca					Nunca					A veces		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		1			Más dispuesto			
E-A 348			Sometimes					Never					Never		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		2	All in!					
E-A 349			Never					Never					Never		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		2	All in!					
E-A 352			Sometimes					Never					Sometimes		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		1	All in!					Cost
E-A 354			Never					Never					Never		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		3			Mostly willing			Cost
E-A 355			Never					Never					Never		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		4			Mostly willing			
E-A 356	Always			Always									Never		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		1	All in!					
E-A 357			Never					Frequently					Sometimes		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		1			Somewhat willing			
E-A 358			Never					Never					Never		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		1	All in!					
E-A 360			Never					Never					Sometimes		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		3			Mostly willing			
E-A 361			Never					Never					Sometimes		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		1	All in!					
E-A 362			Never					Always					Never		Use a commercial car		Wash vehicle on grass, dirt, or gravel to prevent car was		Use a commercial car wash		Use waterless car washing products		Use un lavado de coches comercial		Usa jabón biodegradable o respet		Más dispuesto		2			Mostly willing			
289	13	17	54	146	45	15	7	8	170	75	18	15	98	117	27	210	125	84	38	92	14	54			128	88	38	11	11	88					
	5%	6%	20%	53%	16%	5%	3%	3%	62%	27%	7%	5%	36%	43%	10%	73%	43%	29%	13%	32%	5%	19%			46%	32%	14%	4%	4%	30%					
	11	15	51	133	40	13	5	8	154	70	16	13	94	104	23	197	112	72	32	81	10	44			114	80	37	11	9	83					
	4%	6%	20%	53%	16%	5%	2%	3%	62%	28%	6%	5%	38%	42%	9%	76%	43%	28%	12%	31%	4%	17%			45%	32%	15%	4%	4%	32%					
	-7%	-3%	4%	0%	-2%	-5%	-21%	10%	0%	3%	-2%	-5%	6%	-2%	-6%	4%	0%	-5%	-6%	-2%	-21%	-9%		-2%	0%	7%	10%	-10%	5%						

these categories are barriers that prevent you from practicing  
mentally friendly car wash techniques? Select all that apply.

E-A 343						None
E-A 345	Lack of Knowledge					
S-A 9	Falta de conocimiento					
S-A 10				Otro		
S-A 12	Falta de cq	Tiempo/Conveniencia				
S-A 16	Falta de conocimiento					
E-A 348	Lack of Knowledge					
E-A 349						None
E-A 352	Lack of Kn	Time/Convenience				
E-A 354						
E-A 355						None
E-A 356						None
E-A 357		Time/Convenience				
E-A 358	Lack of Knowledge					
E-A 360		Time/Convenience				
E-A 361						None
E-A 362						None
<b>289</b>	<b>97</b>	<b>82</b>	<b>36</b>	<b>27</b>	<b>15</b>	<b>65</b>
	34%	28%	12%	9%	5%	22%
	91	71	31	26	15	59
	35%	27%	12%	10%	6%	23%
	4%	-4%	-4%	7%	11%	1%

## FOLLOW-UP SURVEY DATA ANALYSIS

OCI Respondant Number	Based on Q4 response, what was the date E&O was viewed by respondent?	Pre or Post	FLAGGED	Flag reasoning	Where do you live?			What is the primary language spoken in your household?			Do you drive a personal vehicle?			I have not seen any information	
					1			2			3				
					Where do you live?			What is the primary language spoken in your household?			Do you drive a personal vehicle?				
OCI Respondant Number	Based on Q4 response, what was the date E&O was viewed by respondent?	Pre or Post	FLAGGED	Flag reasoning	City of Yakima	Yakima limits, but within Yakima County	Other	English	Spanish	Other (please specify)	Yes	No	Yes	No	I have not seen any information
E-A 22	9/8/2021	POST	XND	Does not drive personal vehicle	City of Yakima				Spanish				No		
E-A 325	9/17/2021	POST	XND, XRU	Does not drive personal vehicle, Q8- No Answer, Q10- 9/10 answered	Outside of City of Yakima limits			English					No		
S-A 5	N/A	POST	XNO, XRU	Q10,11,12,13- Skipped, Not residing in city limits			Otro	Inglés			Sí				No he visto ningun
E-A 299	8/10/2021	POST	XNI, XRU	Q10(5) unanswered	City of Yakima			English			Yes				
E-A 74	7/28/2021	POST	XNI	E&O material was unavailable	City of Yakima			English			Yes				
E-A 76	7/25/2021	POST	XNI	E&O material was unavailable			Other	English			Yes				
E-A 90	7/24/2021	POST	XNI	E&O material was unavailable	City of Yakima			English			Yes				
E-A 114	7/17/2021	POST	XNI, XRI	E&O material was unavailable, Inconsistent Q4-5		Outside of City of Yakima limits	English				Yes				
E-A 121	9/8/2021	POST	XNI	Inconsistent Q4-5, unanswered Q5	City of Yakima			English			Yes				
E-A 164	6/30/2021	POST	XNI	E&O material was unavailable	City of Yakima			English			Yes				
E-A 196	8/7/2021	POST	XNI	E&O material was unavailable	City of Yakima			English			Yes				
E-A 198	6/13/2021	POST	XNI	Inconsistent Q4-5		Outside of City of Yakima limits	English				Yes				
E-A 211	6/12/2021	POST	XNI	E&O material was unavailable		Outside of City of Yakima limits	English				Yes				
E-A 270	9/17/2021	POST	XNI	Inconsistent Q7 & Q10	City of Yakima			English			Yes				
E-A 153	9/2/2021	POST	XNI, XRI	Lives outside of City, would not receive brochure. Inconsistent Q4-5.	Outside of City of Yakima limits	English					Yes				
E-A 51	7/28/2021	POST	XNI	E&O material was unavailable	City of Yakima			English			Yes				
E-A 364	7/25/2021	POST	XNI, XRU	Doorknockers sent 9/13-9/24. Missing answers from Q11-13	City of Yakima			English			Yes				
E-A 367	7/25/2021	POST	XNI	E&O Material Unavailable, Conflicting Q4-5, Missing Q10	City of Yakima			English			Yes				
E-A 31	N/A	POST	XNI	Conflicting Answers for Q4-5 and Q7-10		Outside of City of Yakima limits	English				Yes				I have not seen an
E-A 58	N/A	POST	XNI	Conflicting Answers for Q4-5 and Q7-10		Outside of City of Yakima limits, but within Yakima County	Spanish				Yes				I have not seen an
S-A 2	N/A	POST	XNI, XRI	Conflicting Answers for Q4-5 and Q7-10	La Ciudad de Yakima			Inglés			Sí				No he visto ningun
S-A 4	N/A	POST	XNI	Conflicting Answers for Q4-7	La Ciudad de Yakima			Español			Sí				No he visto ningun
E-A 109	9/9/2021	POST	XNO	Outside of Yakima County			Other	English			Yes				
E-A 304	8/10/2021	POST	XNO	Outside of Yakima County			Other	English			Yes				
E-A 313	9/17/2021	POST	XNO	Outside of Yakima County			Other	English			Yes				
E-A 338	9/17/2021	POST	XNO	Outside of Yakima County			Other	Spanish			Yes				
E-A 351	N/A	POST	XNO, XNI	Conflicting answer btw Q4 and Q5			Other	Spanish			Yes				I have not seen an
E-A 353	N/A	POST	XNO, XNI	Conflicting answer btw Q4 and Q5, Missing answer to Q13			Other	English			Yes				I have not seen an
E-A 191	None	POST	XNO	Outside of Yakima County. Q5- No Answer, Q6- No Answer, Q7- No Answer, Q8- No Answer, Q9- No Answer	Other	English					Yes				
E-A 192	None	POST	XNO	Outside of Yakima County.Q5- No Answer, Q6- No Answer, Q7- No Answer, Q8- No Answer, Q9- No Answer	Other			Dzongkha			Yes				
E-A 219		POST	XNO	Outside of Yakima County. Q4-No Answer, Q5- No Answer, Q6- No Answer, Q7- No Answer, Q8- No Answer	Other	English					Yes				
E-A 312	7/25/2021	POST	XNO	Outside of Yakima County, Inconsistent Q4-5, Two answers for 10(2)			Other			Both	Yes				
E-A 70		POST	XNO	Outside of Yakima County. Q4- No Answer, Q3- No Answer, Q5- No Answer, Q6- No Answer, Q7- No Answer	Other	English									
E-A 136	N/A	POST	XRI,XRU	Inconsistent Q4-5. Q10- No Answer		Outside of City of Yakima limits	English				Yes				I have not seen an
E-A 103	N/A	POST	XRI	Inconsistent Q4-5		Outside of City of Yakima limits	English				Yes				I have not seen an
E-A 57	N/A	POST	XRI	Conflicting Answers for Q4-5		Outside of City of Yakima limits	English				Yes				I have not seen an
E-A 62	N/A	POST	XRI	Conflicting Answers for Q4-5		Outside of City of Yakima limits	English				Yes				I have not seen an
E-A 64	N/A	POST	XRI	Conflicting Answers for Q4-5		Outside of City of Yakima limits	English				Yes				I have not seen an
E-A 110	N/A	POST	XRI	Inconsistent Q4-5		Outside of City of Yakima limits	English				Yes				I have not seen an
E-A 288	N/A	POST	XRI	Inconsistent Q4-5		Outside of City of Yakima limits	English				Yes				I have not seen an
E-A 332	N/A	POST	XRI	Inconsistent Q4-5		Outside of City of Yakima limits	English				Yes				I have not seen an
E-A 24	N/A	POST	XRI	Conflicting Answers for Q4-5	City of Yakima			Spanish			Yes				I have not seen an
E-A 49	N/A	POST	XRI	Conflicting Answers for Q4-5	City of Yakima			English			Yes				I have not seen an
E-A 298	N/A	POST	XRI	Inconsistent Q4-5	City of Yakima			English			Yes				I have not seen an
E-A 314	N/A	POST	XRI	Two answers for 10(2) - OK, Inconsistent Q4-5	City of Yakima			English			Yes				I have not seen an
S-A 8	N/A	POST	XRI	Conflicting Answers for Q4-5	La Ciudad de Yakima			Español			Sí				No he visto ningun
E-A 79	N/A	POST	XRI	Inconsistent Q4-5	City of Yakima			English			Yes				I have not seen an
E-A 317	9/17/2021	POST	XRI	Inconsistent Q4-5		Outside of City of Yakima limits	English				Yes				

Have you seen information on car washing best management practices from the City of Yakima, and if so, how recently?

If you saw information on car washing best management practices from the City of Yakima, where did you see it?

Which of the following best describes

OCI Respondant Number	In the last week	2-3 weeks ago	One to two months ago	Over two months ago	City of Yakima website	City of Yakima social media (Facebook, Instagram, Twitter)	I received a brochure at my home	Not applicable/I have not seen any information	More than once a month	Once a month
									More than once a month	Once a month
E-A 22		2-3 weeks ago			City of Yakima website				More than once a month	
E-A 325	In the last week					City of Yakima social media (Facebook, Instagram, Twitter)			More than once a month	
S-A 5	na información					Redes sociales de la Ciudad de Yakima (Facebook, Instagram, Twitter)				Una vez al mes
E-A 299			One to two months ago				I received a brochure at my home			Once a month
E-A 74				Over two months ago			I received a brochure at my home			
E-A 76				Over two months ago				Not applicable/I have not seen any information	Once a month	
E-A 90				Over two months ago	City of Yakima website					
E-A 114				Over two months ago				Not applicable/I have not seen any information		
E-A 121	In the last week							Not applicable/I have not seen any information	Once a month	
E-A 164				Over two months ago	City of Yakima website					Once a month
E-A 196	In the last week						I received a brochure at my home		More than once a month	
E-A 198				Over two months ago				Not applicable/I have not seen any information		
E-A 211				Over two months ago	City of Yakima website					Once a month
E-A 270	In the last week						I received a brochure at my home		More than once a month	
E-A 153	In the last week						I received a brochure at my home			Once a month
E-A 51				Over two months ago			I received a brochure at my home			Once a month
E-A 364			One to two months ago				I received a brochure at my home			Once a month
E-A 367				Over two months ago				Not applicable/I have not seen any information	More than once a month	
E-A 31	na información				City of Yakima website					Once a month
E-A 58	na información					City of Yakima social media (Facebook, Instagram, Twitter)			More than once a month	
S-A 2	na información					Redes sociales de la Ciudad de Yakima (Facebook, Instagram, Twitter)			Más de una vez al mes	
S-A 4	na información				Sitio web de la Ciudad de Yakima				Más de una vez al mes	
E-A 109	In the last week					City of Yakima social media (Facebook, Instagram, Twitter)				Once a month
E-A 304			One to two months ago		City of Yakima website					Once a month
E-A 313	In the last week					City of Yakima social media (Facebook, Instagram, Twitter)				Once a month
E-A 338	In the last week					City of Yakima social media (Facebook, Instagram, Twitter)				Once a month
E-A 351	na información					City of Yakima social media (Facebook, Instagram, Twitter)			More than once a month	
E-A 353	na información				City of Yakima website				More than once a month	
E-A 191										
E-A 192										
E-A 219										
E-A 312				Over two months ago				Not applicable/I have not seen any information	More than once a month	
E-A 70										
E-A 136	na información					City of Yakima social media (Facebook, Instagram, Twitter)				Once a month
E-A 103	na información					City of Yakima social media (Facebook, Instagram, Twitter)				Once a month
E-A 57	na información					City of Yakima social media (Facebook, Instagram, Twitter)			More than once a month	
E-A 62	na información					City of Yakima social media (Facebook, Instagram, Twitter)			More than once a month	
E-A 64	na información					City of Yakima social media (Facebook, Instagram, Twitter)			More than once a month	
E-A 110	na información					City of Yakima social media (Facebook, Instagram, Twitter)				Once a month
E-A 288	na información				City of Yakima website				More than once a month	
E-A 332	na información					City of Yakima social media (Facebook, Instagram, Twitter)			More than once a month	
E-A 24	na información					City of Yakima social media (Facebook, Instagram, Twitter)				Once a month
E-A 49	na información				City of Yakima website					Once a month
E-A 298	na información					City of Yakima social media (Facebook, Instagram, Twitter)				
E-A 314	na información				City of Yakima website				More than once a month	
S-A 8	na información				Sitio web de la Ciudad de Yakima					
E-A 79	na información				City of Yakima website				More than once a month	
E-A 317	In the last week							Not applicable/I have not seen any information	More than once a month	

6	7				8				Score Per Respondent	9				Score Per Respondent	Wash car at home				Use			
	How often do you wash your vehicle at home?				Where do you think is the best environment to wash your vehicle?					Did you know that car wash wastewater can pollute our streams, lakes, and rivers?												
OCI Respondant Number	2-3 times a year	Once a year	Never	Always	Frequently	Sometimes	Never	Commercial car wash	At home	Not sure	Fully aware	Mostly aware	Somewhat aware	Not aware	Always	Frequently	Sometimes	Never	Not applicable	Always	Frequently	
E-A 22					Frequently			Commercial car wash			1			Not aware	-1		Frequently					
E-A 325							Never	Commercial car wash			1	Fully aware				1				Never		Always
S-A 5							Nunca	Lavado de coche comercial			1	Plenamente consciente				1						
E-A 299					Frequently					Not sure	0		Mostly aware		0.5		Frequently					
E-A 74	2-3 times a year					Sometimes				Not sure	0		Somewhat aware		0.25			Sometimes				
E-A 76				Always				Commercial car wash			1			Not aware	-1				Never		Always	
E-A 90	2-3 times a year						Never	Commercial car wash			1	Fully aware				1			Never		Always	
E-A 114			Never			Sometimes			Commercial car wash		1		Mostly aware		0.5			Sometimes				
E-A 121						Never		Commercial car wash			1	Fully aware				1			Never		Always	
E-A 164						Sometimes			Commercial car wash		1	Fully aware				1			Sometimes			Frequently
E-A 196							Never	Commercial car wash			1	Fully aware				1			Never		Always	
E-A 198	2-3 times a year						Never			Not sure	0	Fully aware				1			Never			
E-A 211							Never	Commercial car wash			1			Not aware	-1				Never		Always	
E-A 270			Always					At home			-1	Fully aware				1					Not applicable	
E-A 153						Sometimes		Commercial car wash			1	Fully aware				1			Sometimes			Frequently
E-A 51						Sometimes		At home			-1	Fully aware				1	Frequently					
E-A 364						Sometimes		At home			-1		Somewhat aware		0.25			Sometimes				
E-A 367						Sometimes			Not sure		0	Fully aware				1					Not applicable	
E-A 31			Always					Commercial car wash			1			Not aware	-1			Sometimes			Frequently	
E-A 58				Frequently				At home			-1		Somewhat aware		0.25	Always						Always
S-A 2			Siempre					Lavado de coche comercial			1	Mayormente consciente				0.5						No aplicable
S-A 4			Siempre					Lavado de coche comercial			1	Plenamente consciente				1			A veces			
E-A 109						Sometimes		Never	Commercial car wash		1	Fully aware				1			Never		Always	
E-A 304						Sometimes			Not sure		0			Not aware	-1			Sometimes				
E-A 313						Sometimes			Commercial car wash		1	Fully aware				1			Sometimes			Frequently
E-A 338							Never	Commercial car wash			1		Mostly aware		0.5					Never		Always
E-A 351			Frequently						Not sure		0			Not aware	-1		Frequently					Always
E-A 353			Always					At home			-1	Fully aware				1	Always					
E-A 191											0				0							
E-A 192											0				0							
E-A 219											0				0							
E-A 312						Never		Commercial car wash			1			Not aware	-1			Never		Always		
E-A 70											0				0							
E-A 136						Never		Commercial car wash			1			Not aware	-1							
E-A 103						Sometimes			Commercial car wash		1			Not aware	-1			Sometimes				Frequently
E-A 57						Sometimes			Commercial car wash		1			Not aware	-1			Sometimes				Frequently
E-A 62							Never	Commercial car wash			1		Somewhat aware		0.25					Never		Always
E-A 64							Never	Commercial car wash			1		Somewhat aware		0.25					Never		Frequently
E-A 110							Never	Commercial car wash			1		Somewhat aware		0.25					Never		Always
E-A 288			Frequently						Commercial car wash		1	Fully aware				1			Sometimes			Frequently
E-A 332						Sometimes			Never	Commercial car wash	1		Somewhat aware		0.25					Never		Always
E-A 24							Sometimes		At home		-1			Not aware	-1			Sometimes				
E-A 49								Never	Commercial car wash		1			Not aware	-1				Never		Always	
E-A 298	2-3 times a year					Sometimes			Commercial car wash		1		Somewhat aware		0.25			Sometimes				
E-A 314								Never	Commercial car wash		1	Fully aware				1				Never		
S-A 8	Dos a tres veces al año					A veces			Lavado de coche comercial		1		A veces consciente		0.25			A veces				
E-A 79			Frequently			Sometimes			Commercial car wash		1		Somewhat aware		0.25	Frequently						Frequently
E-A 317									Commercial car wash		1		Mostly aware		0.5			Sometimes				Frequently

Questions

10

How frequently have you used these methods? Select all that apply.																			
a commercial carwash				Wash car on Pavement				Wash car on grass or gravel				Use waterless car washing products				Use biodegradable or environmentally friendly soap			
OCI Respondant Number	Sometimes	Never	Not applicable	Always	Frequently	Sometimes	Never	Not applicable	Always	Frequently	Sometimes	Never	Not applicable	Always	Frequently	Sometimes	Never	Not applicable	
E-A 22	Sometimes					Never		Always						Sometimes				Frequently	
E-A 325						Never					Never			Sometimes			Always		
S-A 5						Never													
E-A 299	Sometimes					Never			Frequently								Frequently		
E-A 74	Sometimes			Always							Never			Never			Frequently		
E-A 76				Always							Never			Never				Never	
E-A 90						Never					Never			Never				Not applicable	
E-A 114	Sometimes					Never		Always						Never		Always			
E-A 121						Never					Never				Not applicable			Not applicable	
E-A 164						Sometimes				Sometimes				Never				Never	
E-A 196							Not applicable				Not applicable			Never				Not applicable	
E-A 198	Sometimes					Sometimes					Never			Never		Always			
E-A 211				Always							Never			Never				Never	
E-A 270			Not applicable					Not applicable							Not applicable			Not applicable	
E-A 153						Never		Always						Never				Never	
E-A 51	Sometimes			Always							Never			Never		Always			
E-A 364	Sometimes					Sometimes								Always				Always	
E-A 367			Not applicable					Not applicable						Not applicable				Not applicable	
E-A 31						Sometimes					Never				Never			Never	
E-A 58				Always							Never			Never		Always			
S-A 2		No applicable						No applicable						No applicable				No applicable	
S-A 4	A veces					A veces				A veces				A veces				A veces	
E-A 109						Never					Never			Sometimes		Always			
E-A 304	Sometimes					Sometimes					Never			Never				Sometimes	
E-A 313						Never				Sometimes				Sometimes				Frequently	
E-A 338						Never					Never			Never		Always			
E-A 351						Never		Always						Always				Never	
E-A 353	Never					Never		Always						Never		Always			
E-A 191																			
E-A 192																			
E-A 219																			
E-A 312	Never					Never				Never				Never				Never	
E-A 70																			
E-A 136																			
E-A 103						Sometimes				Sometimes					Never			Sometimes	
E-A 57							Never				Never			Never				Sometimes	
E-A 62			Always								Never			Never				Never	
E-A 64						Never					Never			Never				Sometimes	
E-A 110						Never					Never				Not applicable			Not applicable	
E-A 288							Not applicable				Never			Always					
E-A 332				Always							Never				Never			Never	
E-A 24	Never					Sometimes					Never			Never				Never	
E-A 49						Never					Never			Sometimes				Never	
E-A 298	Sometimes					Sometimes			Frequently					Frequently				Never	
E-A 314	Sometimes					Sometimes					Never			Always				Always	
S-A 8	A veces					Nunca				A veces					Nunca			Nunca	
E-A 79					Frequently				Frequently					Frequently			Frequently		
E-A 317					Sometimes				Frequently					Frequently			Always		

OCI Respondant Number	Drain/hose water and soap into the street										Contain soap spills immediately or call spill control hotline in an event of a soap spill					Wash vehicle engine, undercarriage, mounted equipment					Before taking this survey, how	
	Always	Frequentl y	Sometimes	Never	Not applicable	Always	Frequentl y	Sometimes	Never	Not applicable	Always	Frequently	Sometimes	Never	Not applicable	Use a commercial car wash	Wash vehicle less often					
E-A 22	Always							Sometimes				Frequently										Wash vehicle less often
E-A 325						Always							Sometimes				Use a commercial car wash					Wash vehicle less often
S-A 5																						
E-A 299				Never					Never				Sometimes									
E-A 74			Sometimes						Never		Always						Use a commercial car wash					Wash vehicle less often
E-A 76				Never		Always								Never		Use a commercial car wash						
E-A 90	e				Not applicable					Not applicable					Not applicable	Use a commercial car wash						Wash vehicle less often
E-A 114				Never						Not applicable			Sometimes			Use a commercial car wash						Wash vehicle less often
E-A 121	e			Never		Always					Always					Use a commercial car wash						Wash vehicle less often
E-A 164			Sometimes						Never					Never		Use a commercial car wash						Wash vehicle less often
E-A 196	e			Never						Not applicable				Never		Use a commercial car wash						Wash vehicle less often
E-A 198				Never					Never				Sometimes			Use a commercial car wash						
E-A 211				Never					Never					Never		Use a commercial car wash						
E-A 270	e				Not applicable					Not applicable					Not applicable							Wash vehicle less often
E-A 153				Never						Not applicable				Never		Use a commercial car wash						Wash vehicle less often
E-A 51				Never		Always					Always											
E-A 364			Sometimes			Always							Sometimes									
E-A 367	e				Not applicable					Not applicable					Not applicable							
E-A 31				Never					Never					Never		Use a commercial car wash						
E-A 58	Always					Always					Always											Wash vehicle less often
S-A 2					No applicable					No applicable					No applicable	Use un lavado de coches comercial						
S-A 4		A veces				A veces							A veces									
E-A 109				Never						Not applicable		Frequently				Use a commercial car wash						
E-A 304				Never					Never					Never								
E-A 313				Never			Sometimes						Sometimes			Use a commercial car wash						Wash vehicle less often
E-A 338				Never		Always							Sometimes			Use a commercial car wash						
E-A 351				Never				Never		Always						Use a commercial car wash						
E-A 353				Never		Always					Always											Wash vehicle less often
E-A 191																						
E-A 192																						
E-A 219																						
E-A 312				Never				Never						Never		Use a commercial car wash						
E-A 70																						
E-A 136																						
E-A 103	Always								Never		Always					Use a commercial car wash						
E-A 57		Sometimes						Sometimes					Sometimes									
E-A 62			Never					Never					Never			Use a commercial car wash						Wash vehicle less often
E-A 64		Sometimes						Never					Never			Use a commercial car wash						
E-A 110	e				Not applicable					Not applicable					Not applicable	Use a commercial car wash						
E-A 288	Always					Always				Always						Use a commercial car wash						
E-A 332				Never				Never					Sometimes			Use a commercial car wash						
E-A 24			Never					Never					Never			Use a commercial car wash						
E-A 49		Sometimes				Frequently							Never			Use a commercial car wash						
E-A 298			Never					Never					Never			Use a commercial car wash						
E-A 314			Never		Always					Always						Use a commercial car wash						
S-A 8			Nunca					Nunca					A veces			Use un lavado de coches comercial						
E-A 79		Frequently				Frequently			Never			Frequently		Sometimes		Use a commercial car wash						Wash vehicle less often
E-A 317			Never						Never				Sometimes			Use a commercial car wash						

11						Score Per Respondent	12					13		
OCI Respondant Number	many environmentally friendly car washing methods were you aware of? Select all that apply.					Score Per Respondent	How willing are you to change your car washing methods to be more environmentally friendly?					Which of these categories are barriers that prevent you from practicing en Select all that apply.		
	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street	Use waterless car washing products	Use biodegradable or environmentally friendly soap	Call spill control hotline in an event of a soap spill	Avoid washing the engine, undercarriage, mounted equipment, or tires		All in!	Mostly willing	Somewhat willing	Not at all willing	Not applicable	Cost	Lack of Knowledge	Time/Convenience
E-A 22						1	Mostly willing						Lack of Knowledge	Time/Convenience
E-A 325	Use waterless car washing products	Use biodegradable or environmentally friendly soap	Call spill control hotline in an event of a soap spill	Avoid washing the engine, undercarriage, mounted equipment, or tires		5 All in!								
S-A 5						0								
E-A 299	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street	Use waterless car washing products	Use biodegradable or environmentally friendly soap	Avoid washing the engine, undercarriage, mounted equipment, or tires		3		Somewhat willing					Lack of Knowledge	
E-A 74	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street					3	Mostly willing					Cost	Lack of Knowledge	
E-A 76						1 All in!						Cost		
E-A 90	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street					3 All in!								
E-A 114	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street	Use waterless car washing products	Use biodegradable or environmentally friendly soap			4	Mostly willing							Time/Convenience
E-A 121	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street		Use biodegradable or environmentally friendly soap			4 All in!							Lack of Knowledge	
E-A 164	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street	Use waterless car washing products	Use biodegradable or environmentally friendly soap	Call spill control hotline in an event of a soap spill	Avoid washing the engine, undercarriage, mounted equipment, or tires	7		Somewhat willing						
E-A 196		Use waterless car washing products	Use biodegradable or environmentally friendly soap			4		Somewhat willing				Cost		
E-A 198	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street		Use biodegradable or environmentally friendly soap			3		Somewhat willing						Time/Convenience
E-A 211						1 All in!						Cost		
E-A 270						1 All in!						Cost		
E-A 153	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street		Use biodegradable or environmentally friendly soap	Avoid washing the engine, undercarriage, mounted equipment, or tires		5 All in!								Time/Convenience
E-A 51						0								
E-A 364						0								
E-A 367			Use biodegradable or environmentally friendly soap			1	Mostly willing					Cost		
E-A 31						1 All in!								Time/Convenience
E-A 58						1		Somewhat willing				Cost		
S-A 2						1 Definitiva!						El costo		
S-A 4	Usa productos de lavado de autos sin agua					1 Definitiva!								Tiempo/Conveniencia
E-A 109	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street					2	Mostly willing							
E-A 304		Use waterless car washing products	Use biodegradable or environmentally friendly soap			2	Mostly willing						Lack of Knowledge	Time/Convenience
E-A 313	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street	Use waterless car washing products		Avoid washing the engine, undercarriage, mounted equipment, or tires		5	Mostly willing							
E-A 338			Use biodegradable or environmentally friendly soap	Call spill control hotline in an event of a soap spill	Avoid washing the engine, undercarriage, mounted equipment, or tires	4 All in!						Cost		Time/Convenience
E-A 351			Use biodegradable or environmentally friendly soap			2 All in!								Time/Convenience
E-A 353						1 All in!								
E-A 191						0								
E-A 192						0								
E-A 219						0								
E-A 312		Use waterless car washing products				2 All in!								
E-A 70						0								
E-A 136						0								
E-A 103						1	Mostly willing					Cost		
E-A 57			Use biodegradable or environmentally friendly soap			1 All in!								Time/Convenience
E-A 62						2	Mostly willing							Time/Convenience
E-A 64						1		Somewhat willing				Cost		
E-A 110						1 All in!								
E-A 288						1 All in!								
E-A 332						1 All in!							Lack of Knowledge	
E-A 24	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street					1 All in!								
E-A 49		Use waterless car washing products	Use biodegradable or environmentally friendly soap			3 All in!								Time/Convenience
E-A 298				Avoid washing the engine, undercarriage, mounted equipment, or tires		2 All in!								
E-A 314						1 All in!						Cost	Lack of Knowledge	
S-A 8						1 Definitiva!								Falta de conocimiento
E-A 79						1	Mostly willing							
E-A 317	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street	Use waterless car washing products	Use biodegradable or environmentally friendly soap	Call spill control hotline in an event of a soap spill	Avoid washing the engine, undercarriage, mounted equipment, or tires	6 All in!						Cost		

vironmentally friendly car wash techniques?

OCI Respondant Number	Lack of access to materials	Quality of product	Other	None
E-A 22				
E-A 325				None
S-A 5				
E-A 299				
E-A 74	Lack of access to materials			
E-A 76				
E-A 90				None
E-A 114				
E-A 121				
E-A 164	Lack of access to materials			
E-A 196		Quality of product		
E-A 198				
E-A 211				
E-A 270				
E-A 153				
E-A 51				
E-A 364				
E-A 367				
E-A 31				
E-A 58				
S-A 2				
S-A 4				
E-A 109				None
E-A 304				
E-A 313				None
E-A 338				
E-A 351				
E-A 353				
E-A 191				
E-A 192				
E-A 219				
E-A 312				None
E-A 70				
E-A 136				
E-A 103				
E-A 57				
E-A 62				
E-A 64				
E-A 110				None
E-A 288		Quality of product		
E-A 332				
E-A 24				None
E-A 49				None
E-A 298				
E-A 314				
S-A 8				
E-A 79	Lack of access to materials			
E-A 317				



4					5					6		
Have you seen information on car washing best management practices from the City of Yakima, and if so, how recently?					If you saw information on car washing best management practices from the City of Yakima, where did you see it?					Which of the following best describes the information?		
E-A 346	In the last week									Not applicable/I don't know	More than once a month	
E-A 295	2 weeks ago										More than once a month	
E-A 107	2 weeks ago										Once a month	
E-A 143	2 weeks ago											
E-A 9												
E-A 13												
E-A 72	In the last week										Once a month	
E-A 95												
E-A 132	In the last week										Once a month	
E-A 135												
E-A 137												
E-A 234												
E-A 248												
S-A 6	En la última semana									Redes sociales de la Ciudad de Yakima (Facebook, Instagram, Twitter)	Más de una vez al mes	
E-A 365	2-3 weeks ago									City of Yakima social media (Facebook, Instagram, Twitter)		
E-A 366	2-3 weeks ago									City of Yakima social media (Facebook, Instagram, Twitter)	Once a month	
E-A 81	2 weeks ago									City of Yakima social media (Facebook, Instagram, Twitter)	More than once a month	
E-A 5	2-3 weeks ago									City of Yakima social media (Facebook, Instagram, Twitter)	More than once a month	
E-A 12		One to two months ago								City of Yakima website	Once a month	
E-A 19	In the last week									City of Yakima website	Once a month	
E-A 20	In the last week									City of Yakima social media (Facebook, Instagram, Twitter)	Once a month	
E-A 25		One to two months ago								City of Yakima social media (Facebook, Instagram, Twitter)		
E-A 39	In the last week									City of Yakima social media (Facebook, Instagram, Twitter)	More than once a month	
E-A 42	In the last week									City of Yakima social media (Facebook, Instagram, Twitter)		
E-A 47	2-3 weeks ago									City of Yakima website	Once a month	
E-A 50	In the last week									City of Yakima social media (Facebook, Instagram, Twitter)	More than once a month	
E-A 63	In the last week									City of Yakima website	Once a month	
E-A 85	2-3 weeks ago									City of Yakima website	Once a month	
E-A 94	2-3 weeks ago									City of Yakima social media (Facebook, Instagram, Twitter)	Once a month	
E-A 108	In the last week									City of Yakima social media (Facebook, Instagram, Twitter)	More than once a month	
E-A 113	In the last week									City of Yakima social media (Facebook, Instagram, Twitter)	More than once a month	
E-A 130	2-3 weeks ago									City of Yakima social media (Facebook, Instagram, Twitter)	More than once a month	
E-A 141	In the last week									City of Yakima social media (Facebook, Instagram, Twitter)		
E-A 225	In the last week									City of Yakima social media (Facebook, Instagram, Twitter)	More than once a month	
E-A 251		Over two months ago								City of Yakima website		
E-A 267	2-3 weeks ago										I received a brochure at my home	
E-A 287	2-3 weeks ago										I received a brochure at my home	
E-A 293	2-3 weeks ago									City of Yakima website		
E-A 315	2-3 weeks ago									City of Yakima website		More than once a month
E-A 318	In the last week									City of Yakima website		
E-A 341	2-3 weeks ago									City of Yakima website		More than once a month
S-A 1	Hace dos a tres semanas									Sitio web de la Ciudad de Yakima		Más de una vez al mes
S-A 3	En la última semana										Redes sociales de la Ciudad de Yakima (Facebook, Instagram, Twitter)	
S-A 7	Hace dos a tres semanas										Recibí un folleto en mi casa	
S-A 15	Hace dos a tres semanas										Redes sociales de la Ciudad de Yakima (Facebook, Instagram, Twitter)	
E-A 347	In the last week										I received a brochure at my home	
E-A 359	In the last week										City of Yakima social media (Facebook, Instagram, Twitter)	
<b>95</b>	<b>27</b>	<b>16</b>	<b>5</b>	<b>11</b>	<b>24</b>	<b>41</b>	<b>11</b>	<b>8</b>	<b>33</b>	<b>33</b>		
	<b>32%</b>	<b>19%</b>	<b>6%</b>	<b>13%</b>	<b>29%</b>	<b>49%</b>	<b>13%</b>	<b>10%</b>	<b>39%</b>	<b>39%</b>		
	<b>19</b>	<b>15</b>	<b>2</b>	<b>1</b>	<b>16</b>	<b>33</b>	<b>4</b>	<b>2</b>	<b>22</b>	<b>19</b>		

6	es how often you wash your vehicle?	7			8			Score Per Respondent	9			Score Per Respondent	Wash car at home						Use			
					How often do you wash your vehicle at home?				Where do you think is the best environment to wash your vehicle?				Did you know that car wash wastewater can pollute our streams, lakes, and rivers?									
E-A 346					Never	Commercial car wash		1		Mostly aware		0.5				Never		Always				
E-A 295			Always		At home			-1			Not aware	-1		Frequently						Frequently		
E-A 107				Never	Commercial car wash			1		Somewhat aware		0.25										
E-A 143	2-3 times a year			Sometimes		Not sure		0		Somewhat aware		0.25		Sometimes								
E-A 9								0				0										
E-A 13				Sometimes	At home			0		Somewhat aware		0										
E-A 72				Sometimes				-1		Somewhat aware		0.25		Sometimes								
E-A 95								0				0										
E-A 132		Always				Not sure		0	Fully aware			1	Always									
E-A 135								0				0										
E-A 137								0				0										
E-A 234								0				0										
E-A 248								0				0										
S-A 6				Nunca	Lavado de coche comercial			1		A veces consciente		0.25		Frecuentemente								
E-A 365	2-3 times a year			Sometimes	At home			-1				0		Sometimes								
E-A 366				Sometimes	At home			-1		Somewhat aware		0.25		Frequently								
E-A 81				Never	Commercial car wash			1		Mostly aware		0.5				Never		Frequently				
E-A 5			Sometimes		Commercial car wash			1	Fully aware			1		Sometimes		Always						
E-A 12				Never	Commercial car wash			1			Not aware	-1		Never		Frequently						
E-A 19				Never	Commercial car wash			1	Fully aware			1		Never		Always						
E-A 20				Never	Commercial car wash			1	Fully aware			1		Never		Always						
E-A 25	2-3 times a year			Sometimes	Commercial car wash			1	Fully aware			1		Sometimes								
E-A 39				Never	Commercial car wash			1			Not aware	-1		Never		Always						
E-A 42	2-3 times a year			Sometimes	Commercial car wash			1		Mostly aware		0.5		Sometimes								
E-A 47				Never	Commercial car wash			1		Mostly aware		0.5			Never							
E-A 50				Never	Commercial car wash			1			Not aware	-1		Never		Always						
E-A 63			Sometimes		Commercial car wash			1	Fully aware			1		Sometimes		Frequently						
E-A 85		Always			At home			-1		Mostly aware		0.5	Always									
E-A 94			Sometimes		At home			-1		Mostly aware		0.5	Frequently									
E-A 108		Always			At home			-1		Mostly aware		0.5	Always									
E-A 113		Always			At home			-1	Fully aware			1	Always									
E-A 130			Sometimes		At home			-1		Somewhat aware		0.25		Sometimes		Frequently						
E-A 141	2-3 times a year		Frequently		Commercial car wash			1	Fully aware			1	Frequently									
E-A 225				Never	Commercial car wash			1		Mostly aware		0.5		Sometimes		Frequently						
E-A 251	2-3 times a year			Never	Commercial car wash			1	Fully aware			1		Never		Always						
E-A 267				Never	Commercial car wash			1		Mostly aware		0.5		Never		Always						
E-A 287	2-3 times a year		Frequently		Commercial car wash			1		Mostly aware		0.5	Frequently									
E-A 293	2-3 times a year			Never	Commercial car wash			1			Not aware	-1		Never		Always						
E-A 315			Sometimes		Commercial car wash			1	Fully aware			1		Sometimes		Frequently						
E-A 318	2-3 times a year			Sometimes		Not sure		0		Mostly aware		0.5		Sometimes								
E-A 341		Always			At home			-1		Somewhat aware		0.25	Always									
S-A 1				A veces	Lavado de coche comercial			1			No consciente	-1		A veces		Siempre						
S-A 3				Frecuentemente		En casa		-1		A veces consciente		0.25		A veces						Frecuentemente		
S-A 7	Dos a tres veces al año			A veces	Lavado de coche comercial			1		A veces consciente		0.25		A veces						Frecuentemente		
S-A 15	Dos a tres veces al año			Nunca	Lavado de coche comercial			1			No consciente	-1		Nunca								
E-A 347		Once a year			Never	Commercial car wash			1	Fully aware			1		Never							
E-A 359			Frequently			At home		-1		Somewhat aware		0.25	Frequently									
<b>95</b>	<b>16</b>	<b>1</b>	<b>1</b>	<b>12</b>	<b>10</b>	<b>29</b>	<b>33</b>	<b>57</b>	<b>18</b>	<b>9</b>	<b>28</b>	<b>16</b>	<b>20</b>	<b>19</b>	<b>7</b>	<b>12</b>	<b>30</b>	<b>29</b>	<b>3</b>	<b>25</b>	<b>19</b>	
	<b>19%</b>	<b>1%</b>	<b>1%</b>	<b>14%</b>	<b>12%</b>	<b>35%</b>	<b>39%</b>	<b>68%</b>	<b>21%</b>	<b>11%</b>	<b>34%</b>	<b>19%</b>	<b>24%</b>	<b>23%</b>	<b>9%</b>	<b>15%</b>	<b>37%</b>	<b>36%</b>	<b>4%</b>	<b>31%</b>	<b>23%</b>	
	<b>13</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>6</b>	<b>20</b>	<b>23</b>	<b>39</b>	<b>13</b>	<b>3</b>	<b>13</b>	<b>12</b>	<b>17</b>	<b>12</b>	<b>0</b>	<b>5</b>	<b>8</b>	<b>21</b>	<b>19</b>	<b>0</b>	<b>14</b>	<b>15</b>

How frequently have you used these methods? Select all that apply.

a commercial carwash			Wash car on Pavement						Wash car on grass or gravel						Use waterless car washing products						Use biodegradable or environmentally friendly soap							
E-A 346							Never					Never			Frequently					Always								
E-A 295						Sometimes					Sometimes				Sometimes											Never		
E-A 107																												
E-A 143	Sometimes			Always								Never						Never								Never		
E-A 9																												
E-A 13								Sometimes																				
E-A 72																			Not applicable							Never		
E-A 95																												
E-A 132	Sometimes			Always								Never						Never								Frequently		
E-A 135																												
E-A 137																												
E-A 234																												
E-A 248																												
S-A 6	A veces											Frecuentemente						Siempre								Nunca		
E-A 365	Sometimes					Sometimes						Never						Sometimes								Never		
E-A 366	Sometimes							Always										Frequently								Frequently		
E-A 81						Sometimes						Sometimes						Frequently								Never		
E-A 5				Always								Never														Never		
E-A 12					Sometimes							Never														Never		
E-A 19				Always													Not applicable			Sometimes						Sometimes		
E-A 20								Not applicable									Not applicable									Not applicable		
E-A 25	Sometimes							Never				Sometimes								Never						Always		
E-A 39				Always								Never								Never						Never		
E-A 42	Sometimes					Sometimes						Sometimes								Sometimes						Sometimes		
E-A 47	Sometimes							Never				Never								Never						Never		
E-A 50								Never				Never								Never						Never		
E-A 63								Never				Sometimes								Never						Sometimes		
E-A 85	Sometimes							Never				Always								Never						Never		
E-A 94		Never				Sometimes											Never			Frequently						Frequently		
E-A 108	Never			Always								Frequently								Never						Never		
E-A 113	Sometimes					Sometimes						Frequently								Never						Frequently		
E-A 130								Never				Sometimes								Never						Never		
E-A 141	Sometimes					Frequently														Never						Always		
E-A 225						Sometimes														Never						Frequently		
E-A 251								Never												Never						Never		
E-A 267				Always								Sometimes								Sometimes						Always		
E-A 287	Sometimes			Always								Never								Never						Sometimes		
E-A 293								Never				Never								Never						Never		
E-A 315						Sometimes						Never														Never		
E-A 318	Sometimes					Sometimes						Sometimes								Never						Sometimes		
E-A 341		Never				Sometimes						Sometimes								Never						Sometimes		
S-A 1				Siempre								Nunca								A veces							No aplicable	
S-A 3						A veces						Frecuentemente								Nunca						A veces		
S-A 7						A veces						Nunca								Nunca						Nunca		
S-A 15				A veces								Nunca								Nunca						Nunca		
E-A 347	Sometimes							Never											Never							Always		
E-A 359	Sometimes					Frequently														Never						Frequently		
<b>95</b>	<b>28</b>	<b>6</b>	<b>3</b>	<b>16</b>	<b>3</b>	<b>25</b>	<b>29</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>14</b>	<b>44</b>	<b>6</b>	<b>6</b>	<b>8</b>	<b>12</b>	<b>47</b>	<b>7</b>	<b>17</b>	<b>11</b>	<b>12</b>	<b>32</b>	<b>9</b>					
	35%	7%	4%	20%	4%	32%	37%	8%	9%	10%	18%	56%	8%	8%	10%	15%	59%	9%	21%	14%	15%	40%	11%					
	19	4	0	11	3	19	16	2	2	7	11	30	2	4	8	7	31	3	8	7	10	25	3					

Drain/hose water and soap into the street					Contain soap spills immediately or call spill control hotline in an event of a soap spill					Wash vehicle engine, undercarriage, mounted equipment					Before taking this survey, how		
E-A 346			Never					Never			Frequently				Use a commercial car wash		
E-A 295			Never					Never			Never						
E-A 107																	
E-A 143	Always							Never			Never					Wash vehicle less often	
E-A 9																	
E-A 13																	
E-A 72		Sometimes				Sometimes					Never					Wash vehicle less often	
E-A 95																	
E-A 132		Sometimes									Never					Wash vehicle less often	
E-A 135																	
E-A 137																	
E-A 234																	
E-A 248																	
S-A 6			Nunca			Frecuentemente				Frecuentemente							
E-A 365			Never					Never									
E-A 366			Never	Always							Never						
E-A 81	Always							Not applicable		Sometimes							
E-A 5		Sometimes					Never			Sometimes				Use a commercial car wash			
E-A 12		Sometimes						Not applicable		Sometimes				Use a commercial car wash		Wash vehicle less often	
E-A 19			Never					Not applicable		Sometimes				Use a commercial car wash		Wash vehicle less often	
E-A 20	e		Not applicable					Not applicable				Not applicable		Use a commercial car wash		Wash vehicle less often	
E-A 25			Never			Sometimes				Sometimes				Use a commercial car wash		Wash vehicle less often	
E-A 39			Never				Never							Use a commercial car wash			
E-A 42		Sometimes				Sometimes				Sometimes				Use a commercial car wash			
E-A 47			Never				Never									Wash vehicle less often	
E-A 50			Never				Never							Use a commercial car wash			
E-A 63			Never				Never	Always						Use a commercial car wash			
E-A 85			Never				Never									Wash vehicle less often	
E-A 94		Sometimes					Never			Sometimes							
E-A 108		Frequently					Never		Frequently								
E-A 113			Sometimes				Never	Always									
E-A 130			Never				Never			Sometimes				Use a commercial car wash			
E-A 141		Sometimes				Sometimes				Sometimes				Use a commercial car wash		Wash vehicle less often	
E-A 225			Never					Not applicable	Frequently					Use a commercial car wash			
E-A 251			Never				Never							Use a commercial car wash		Wash vehicle less often	
E-A 267			Never				Never							Use a commercial car wash		Wash vehicle less often	
E-A 287			Never					Not applicable						Use a commercial car wash		Wash vehicle less often	
E-A 293			Never				Never							Use a commercial car wash			
E-A 315			Never	Always										Use a commercial car wash		Wash vehicle less often	
E-A 318		Sometimes				Sometimes			Sometimes					Use a commercial car wash		Wash vehicle less often	
E-A 341			Never	Always												Wash vehicle less often	
S-A 1			Nunca					No aplicable		A veces				Use un lavado de coches comercial			
S-A 3			Nunca				Nunca							Use un lavado de coches comercial			
S-A 7			Nunca				Nunca				Nunca			Use un lavado de coches comercial			
S-A 15			Nunca				Nunca				Nunca			Use un lavado de coches comercial		Vehículo de lavado con menos frecuencia	
E-A 347			Never	Always										Use a commercial car wash		Wash vehicle less often	
E-A 359		Frequently				Sometimes			Sometimes								
<b>95</b>	<b>6</b>	<b>3</b>	<b>16</b>	<b>49</b>	<b>6</b>	<b>14</b>	<b>3</b>	<b>10</b>	<b>37</b>	<b>16</b>	<b>11</b>	<b>7</b>	<b>24</b>	<b>32</b>	<b>7</b>	<b>54</b>	<b>33</b>
	<b>8%</b>	<b>4%</b>	<b>20%</b>	<b>61%</b>	<b>8%</b>	<b>18%</b>	<b>4%</b>	<b>13%</b>	<b>46%</b>	<b>20%</b>	<b>14%</b>	<b>9%</b>	<b>30%</b>	<b>40%</b>	<b>9%</b>	<b>57%</b>	<b>35%</b>
	<b>4</b>	<b>3</b>	<b>12</b>	<b>32</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>7</b>	<b>28</b>	<b>8</b>	<b>5</b>	<b>5</b>	<b>16</b>	<b>24</b>	<b>3</b>	<b>36</b>	<b>20</b>

11						Score Per Respondent	12					13		
many environmentally friendly car washing methods were you aware of? Select all that apply.							How willing are you to change your car washing methods to be more environmentally friendly?					Which of these categories are barriers that prevent you from practicing environmental friendly car washing? Select all that apply.		
E-A 346						1		Mostly willing						
E-A 295						0								
E-A 107						0								
E-A 143						1 All in!								Time/Convenience
E-A 9						0								
E-A 13						0								
E-A 72						1		Somewhat willing						Time/Convenience
E-A 95						0								
E-A 132			Use biodegradable or environmentally friendly soap			2		Somewhat willing			Cost			
E-A 135						0								
E-A 137						0								
E-A 234						0								
E-A 248						0								
S-A 6	Lavar el vehículo en el sacate/pasto, tierra o grava para evitar que las aguas residuales del coche entren en la calle					1		Más dispuesto						
E-A 365	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street					1			Not at all willing		Cost			
E-A 366			Avoid washing the engine			1		Somewhat willing					Lack of Knowledge	
E-A 81						0								
E-A 5	Use waterless car washing products	Use biodegradable or environmentally friendly soap				3 All in!						Lack of Knowledge		Time/Convenience
E-A 12						2		Mostly willing			Cost		Lack of Knowledge	
E-A 19	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street	Use waterless car washing products	Use biodegradable or environmentally friendly soap			5 All in!								
E-A 20		Use waterless car washing products	Use biodegradable or environmentally friendly soap			4 All in!								
E-A 25	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street	Use biodegradable or environmentally friendly soap	Avoid washing the engine			5 All in!					Cost			
E-A 39						1 All in!								
E-A 42						1		Somewhat willing						Time/Convenience
E-A 47						1 All in!					Cost			
E-A 50						1 All in!						Lack of Knowledge		Time/Convenience
E-A 63						1 All in!								
E-A 85						1		Mostly willing			Cost			
E-A 94	Use waterless car washing products					1		Somewhat willing						
E-A 108	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street					1			Not at all willing					
E-A 113			Avoid washing the engine			1			Not at all willing					Time/Convenience
E-A 130	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street					2		Somewhat willing						Time/Convenience
E-A 141		Use waterless car washing products	Use biodegradable or environmentally friendly soap			4 All in!					Cost			
E-A 225			Use biodegradable or environmental friendly soap	Call spill control hotline in an event of a soap		3 All in!					Cost			Time/Convenience
E-A 251	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street	Use biodegradable or environmentally friendly soap				4			Not applicable					
E-A 267						2 All in!								
E-A 287						2		Mostly willing						Time/Convenience
E-A 293						1		Somewhat willing				Lack of Knowledge		
E-A 315	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street	Use waterless car washing products				4 All in!								
E-A 318		Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street	Use biodegradable or environmentally friendly soap			4		Mostly willing				Lack of Knowledge		Time/Convenience
E-A 341						1 All in!					Cost			
S-A 1	Lavar el vehículo en el sacate/pasto, tierra o grava para evitar que las aguas residuales del coche entren en la calle	Evitar lavar el motor del vehículo				3 Definitiva!					El costo		Falta de conocimiento	Tiempo/Conveniencia
S-A 3		Usa productos de lavado de autos sin agua	llamar a la línea directa de control de derrame			3 Definitiva!							Falta de conocimiento	
S-A 7						1		Algo dispuesto						Tiempo/Conveniencia
S-A 15	Lavar el vehículo en el sacate/pasto, tierra o grava para evitar que las aguas residuales del coche entren en la calle	Usa jabón biodegradable o respetuoso	llamar a la línea directa de control de derrame	Evitar lavar el motor del vehículo		7		Más dispuesto			El costo			
E-A 347	Wash vehicle on grass, dirt, or gravel to prevent car wastewater from entering the street	Use waterless car washing products	Use biodegradable or environmental friendly soap	Call spill control hotline	Avoid washing the engine	7								
E-A 359			Use biodegradable or environmentally friendly soap			1		Somewhat willing				Lack of Knowledge		Time/Convenience
95	24	18	27	8	12	40	17	15	3	1	24	17	25	
	25%	19%	28%	8%	13%	53%	22%	20%	4%	1%	25%	18%	26%	
	14	11	15	5	7	0	26	10	10	3	1	15	12	16

Environmentally friendly car wash techniques?

E-A 346	Lack of access to materials					
E-A 295						
E-A 107						
E-A 143						
E-A 9						
E-A 13						
E-A 72						
E-A 95						
E-A 132	Lack of access to materials	Quality of product				
E-A 135						
E-A 137						
E-A 234						
E-A 248						
S-A 6	Falta de acceso a los materiales	Calidad de producto				
E-A 365						
E-A 366						
E-A 81						
E-A 5	Quality of product					
E-A 12						
E-A 19			None			
E-A 20			None			
E-A 25	Quality of product					
E-A 39		Other				
E-A 42						
E-A 47						
E-A 50						
E-A 63		None				
E-A 85						
E-A 94	Lack of access to materials					
E-A 108		Other				
E-A 113						
E-A 130						
E-A 141	Quality of product					
E-A 225	Lack of access to materials					
E-A 251		None				
E-A 267		None				
E-A 287						
E-A 293						
E-A 315		None				
E-A 318		None				
E-A 341						
S-A 1	Falta de acceso a los materiales	Calidad de producto				
S-A 3	Falta de acceso a los materiales	Calidad de producto				
S-A 7						
S-A 15						
E-A 347		None				
E-A 359						
<b>95</b>	<b>10</b>	<b>8</b>	<b>2</b>	<b>16</b>		
	<b>11%</b>	<b>8%</b>	<b>2%</b>	<b>17%</b>		
	<b>8</b>	<b>7</b>	<b>2</b>	<b>11</b>		



4	5	6
Have you seen information on car washing best management practices from the City of Yakima, and if so, how recently?	If you saw information on car washing best management practices from the City of Yakima, where did you see it?	Which of the following best describes your car washing business?
35%	29%	40%
27%	60%	4%
4%	7%	35%
2%	2%	4%
-39%	23%	40%
-86%	-44%	2%
7%	-62%	-12%
43%	2%	
-39%		

6	7	8	9	10																
How often do you wash your vehicle?	How often do you wash your vehicle at home?	Where do you think is the best environment to wash your vehicle?	Score Per Respondent	Did you know that car wash wastewater can pollute our streams, lakes, and rivers?	Score Per Respondent	Wash car at home	Use													
24%	2%	0%	11%	11%	36%	42%	71%	24%	5%	24%	22%	31%	22%	9%	15%	40%	36%	0%	27%	29%
24%	53%	-100%	-24%	-8%	5%	6%	4%	10%	-49%	-29%	15%	31%	-3%	9%	2%	7%	0%	-100%	-13%	23%

How frequently have you used these methods? Select all that apply.

a commercial carwash				Wash car on Pavement					Wash car on grass or gravel					Use waterless car washing products					Use biodegradable or environmentally friendly soap				
	37%	8%	0%	22%	6%	37%	31%	4%	4%	13%	21%	58%	4%	8%	15%	13%	58%	6%	15%	13%	19%	47%	6%
	6%	4%	-100%	6%	55%	18%	-15%	-48%	-57%	33%	19%	4%	-49%	1%	51%	-12%	0%	-35%	-28%	-3%	27%	19%	-49%

															Before taking this survey, how		
Drain/hose water and soap into the street					Contain soap spills immediately or call spill control hotline in an event of a soap spill					Wash vehicle engine, undercarriage, mounted equipment							
8%	6%	23%	60%	4%	12%	6%	13%	54%	15%	9%	9%	30%	45%	6%	58%	32%	
1%	51%	13%	-1%	-50%	-34%	54%	8%	16%	-23%	-31%	9%	2%	15%	-35%	2%	-7%	

11						Score Per Respondent	12					13				
many environmentally friendly car washing methods were you aware of? Select all that apply.							How willing are you to change your car washing methods to be more environmentally friendly?					Which of these categories are barriers that prevent you from practicing en Select all that apply.				
	<b>23%</b> -11%	<b>18%</b> -6%	<b>24%</b> -15%	<b>8%</b> -4%	<b>11%</b> -11%		<b>52%</b> -1%	<b>20%</b> -11%	<b>20%</b> 1%	<b>6%</b> 52%	<b>2%</b> 52%	<b>24%</b> -4%	<b>19%</b> 8%	<b>26%</b> -2%		

Environmentally friendly car wash techniques?				
	<b>13%</b> 23%	<b>11%</b> 34%	<b>3%</b> 53%	<b>18%</b> 5%

# BASELINE SURVEY DATA ANALYSIS

	Wash car at home	Use a commercial carwash	Wash car on Pavement	Wash car on grass or gravel	Use waterless car washing products	Use biodegradable or environmentally friendly soap	Drain/hose water and soap into the street	Contain soap spills immediately or call spill control hotline in an event of a soap spill	Wash vehicle engine, undercarriage, mounted equipment	Use commercial carwash	Average of all positive BMPs	Average for all negative BMPs
	Score = 0									Scale (0,1)		
E-A 105	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 146	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 283	0.25	0.5	1	0	0.25	0	0	0	0.25	0.50	0.06	0.42
E-A 296	0	0.25	0	1	0	0.25	0	0	0.25	0.25	0.31	0.08
E-A 297	0.25	0.25	0	0.25	0	0.25	0	0	0	0.25	0.13	0.00
E-A 327	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 11	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 80	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 89	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 216	0.5	0.25	0	0	0	0	0	0	0	0.25	0.00	0.00
E-A 172	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 162	0.5	0	0	0.5	0	0.5	0	0	0.5	0.00	0.25	0.17
E-A 217	0.25	0.5	1	0	0	0	0.25	0	0	0.50	0.00	0.42
E-A 218	0	1	1	0	0	0	0	0	0	1.00	0.00	0.33
E-A 247	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 306	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 322	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 326	0.25	0.25	0.25	0.25	0	0	0.5	0	1	0.25	0.06	0.58
E-A 17	0	0.25	0.25	0.25	0	0	0	0	0	0.25	0.06	0.08
S-A 14	1	0	1	0	0	0	0	0	0	0.00	0.00	0.33
E-A 4	0.25	0.5	0.5	0.25	0	0.25	0.25	0	0.25	0.50	0.13	0.33
E-A 8	0.25	0.5	0.25	0	0	0	1	0	1	0.50	0.00	0.75
E-A 14	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 1	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 2	0.25	0.5	0.25	0	0	0.5	0	0	0.25	0.50	0.13	0.17
E-A 3	0	0.25	0	0	0	0	0	0	0	0.25	0.00	0.00
E-A 6	0.25	0.5	0	0	0	1	1	0	0	0.50	0.25	0.33
E-A 7	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 10	0	1	0	0	1	1	0	0	0	1.00	0.50	0.00
E-A 16	0.25	0.5	0.5	0	0	0	0.25	0	0.25	0.50	0.00	0.33
E-A 18	0.25	0.5	0.25	0	0	0	0	0	0.25	0.50	0.00	0.17
E-A 21	0	1	0	0.25	0	0	0	0	0	1.00	0.06	0.00
E-A 23	0.5	0.25	0.25	0.25	0	0.25	0.25	0	0.25	0.25	0.13	0.25
E-A 26	0	0.25	0	0	0	0	0	0	0	0.25	0.00	0.00
E-A 27	0.25	1	0.25	0	0	0	0	0	0	1.00	0.00	0.08
E-A 29	0	1	0	0	0.25	0	0	0	0.5	1.00	0.06	0.17
E-A 30	0.25	0.5	0	0.25	0	0.5	0	0	0.25	0.50	0.19	0.08
E-A 32	0	0.5	0	0	0	0	0	0	0	0.50	0.00	0.00
E-A 33	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 34	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 35	0.25	0.5	0	0	0.25	0.25	0	0.25	0.25	0.50	0.19	0.08
E-A 36	0	1	1	0	0	1	0	0	0	1.00	0.25	0.33
E-A 37	0.25	1	0.25	0.25	0	0.25	0.5	0	0.25	1.00	0.13	0.33
E-A 38	0.25	0.5	0.25	0	0	0	0	0	0	0.50	0.00	0.08
E-A 41	0	0.5	0	0	0	0	0	0	1	0.50	0.25	0.00
E-A 43	0	1	0	0	0.25	0.25	0	0	0	1.00	0.13	0.00
E-A 44	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0.25	0.25	0.19	0.25
E-A 46	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 48	0.25	0.5	0	1	0	0	0	0	0	0.50	0.25	0.00
E-A 52	0	1	0	0.25	0	0	0.25	0	0.25	1.00	0.06	0.17
E-A 53	0.25	0.5	1	0	0	0.25	0.25	0	0.25	0.50	0.06	0.50
E-A 54	0.5	0.25	0	0.5	0	0	0.5	0	0	0.25	0.13	0.17
E-A 55	1	0.25	1	0	0	0	0.5	0.5	0.5	0.25	0.13	0.83
E-A 56	0.5	0.5	0.25	0.5	0	0.25	0.25	0	0	0.50	0.19	0.17
E-A 59	1	0.25	0	1	0	0	0	0	0	0.25	0.25	0.00
E-A 60	0.25	0.5	0	0.25	0	0.25	0	0	0	0.50	0.13	0.08
E-A 61	0.25	0.5	1	0	0	1	0	0	0	0.50	0.25	0.42
E-A 65	0.25	0.25	0.25	0.25	0	0	0.25	0	0.5	0.25	0.06	0.33
E-A 66	0.25	0.25	0.25	0.25	0.25	1	0	0.25	0	0.25	0.44	0.08
E-A 67	0.5	0.25	0.25	0.5	0	0.5	0	0	0	0.25	0.25	0.17
E-A 68	0.25	0.25	0	0.25	0	0	0	0	0	0.25	0.06	0.00
E-A 73	0.25	0.25	0.25	0.25	0	0.25	0.25	0	0.25	0.25	0.13	0.25
E-A 75	0.25	0.25	0.25	0.25	0	0.5	0.25	0	0	0.25	0.19	0.17
E-A 77	0.25	0.5	0	0	0.25	0.25	0	0	0	0.50	0.13	0.08
E-A 78	0.25	0.25	0.25	0.5	0	0.25	0	0	0	0.25	0.19	0.17
E-A 82	0.25	0.5	0	0.5	0	0.25	0	0	0	0.50	0.19	0.08
E-A 83	0.25	0.25	0.25	0	0.25	0.25	0	0	0	0.25	0.13	0.08
E-A 84	0.25	0.25	0.25	0.25	0	0.25	0.25	0.5	0	0.25	0.25	0.17
E-A 86	0.25	0.25	0	0.25	0	0.25	0	1	0.25	0.25	0.38	0.08
E-A 88	0.25	0.5	0	0	0	0	0	1	0</			

	Wash car at home	Use a commercial carwash	Wash car on Pavement	Wash car on grass or gravel	Use waterless car washing products	Use biodegradable or environmentally friendly soap	Drain/hose water and soap into the street	Contain soap spills immediately or call spill control hotline in an event of a soap spill	Wash vehicle engine, undercarriage, mounted equipment	Use commercial carwash	Average of all positive BMPs	Average for all negative BMPs
E-A 142	0.25	0.5	1	0	0	0.25	0	1	1	0.50	0.31	0.67
E-A 147	0.25	0.25	0.25	0	0	0.25	0.25	0	0.25	0.25	0.06	0.25
E-A 148	0.25	0.5	0.25	0.25	0	0	0.25	1	0	0.50	0.31	0.17
E-A 149	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 150	0	1	1	0	0	0.5	0	1	0	1.00	0.38	0.33
E-A 151	0.5	0.25	0	0.25	0	0	0	0	0	0.25	0.06	0.00
E-A 152	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 155	0	1	0	0	0	0	0	0	0.25	1.00	0.00	0.08
E-A 156	1	0	1	0.25	0	0	1	0	1	0.00	0.06	1.00
E-A 158	0	1	1	0	0	0	0	0	0	1.00	0.00	0.67
E-A 159	0	0.25	0.25	0	0	0.25	0	0	0	0.25	0.06	0.08
E-A 160	0.5	0.25	0.5	0	0	0.25	0.25	0	0.25	0.25	0.06	0.33
E-A 161	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 163	0.25	0.25	0.25	0.25	0	0.5	0.25	0	0.25	0.25	0.19	0.25
E-A 165	0.25	0.5	0	0.25	0	0	0	1	0.25	0.50	0.31	0.08
E-A 166	0.25	0.25	0.25	0.25	0	0	0.25	0	0	0.25	0.06	0.17
E-A 167	0.25	0.25	0.25	0	0	0	0.25	0	0	0.25	0.00	0.17
E-A 168	0	1	1	0	0	0	0	0	0	1.00	0.00	0.33
E-A 169	0.25	0.5	0	0.25	0	0.5	0	1	0.25	0.50	0.44	0.08
E-A 170	0	1	0	0	0	0	0	0	0.25	1.00	0.00	0.08
E-A 171	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 173	0.25	0.5	0.25	0.25	0.5	0.25	0	0.5	0.5	0.50	0.38	0.25
E-A 174	0	1	0	0	0	0	0	0	0.5	1.00	0.00	0.17
E-A 175	0.25	0.5	0	1	0	1	0	0	0.5	0.50	0.50	0.17
E-A 176	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 177	0	1	1	0	0	0	0	0	0.25	1.00	0.00	0.42
E-A 179	0.25	0.5	0.25	0	0	0	0	0	0.25	0.50	0.00	0.17
E-A 180	0.25	0.5	1	0	0	0.25	0.25	0	0.25	0.50	0.06	0.50
E-A 181	0.25	0.5	0.5	0.25	0	0.5	0	0	0.25	0.50	0.19	0.25
E-A 182	0.25	0.5	0.25	0	0	0	0.25	0	0.25	0.50	0.00	0.25
E-A 183	0	0.25	0	0	0	0	0	0	0.25	0.25	0.00	0.08
E-A 184	0.25	0.5	0.25	0.25	0	0.25	0.25	0	0	0.50	0.13	0.17
E-A 185	0.25	0.5	1	0	0	1	0.25	0	0	0.50	0.25	0.42
E-A 186	0.25	0.5	0.25	0.25	0	0	0.5	0	0.25	0.50	0.06	0.33
E-A 187	0.25	0.5	0.5	0	0	0	0.5	0	0.5	0.50	0.00	0.50
E-A 188	0	1	1	0	0	0	0	0	0.25	1.00	0.00	0.42
E-A 189	1	0	0	1	0	1	0	0	0	0.00	0.50	0.00
E-A 190	0	1	0	0	0	0	0	0	0.25	1.00	0.00	0.08
E-A 193	0.25	0.25	1	0	0	0.25	0	0.25	0	0.25	0.13	0.33
E-A 194	0.25	0.25	1	0	0	0.25	0.25	1	0	0.25	0.13	0.75
E-A 195	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 197	0	0.25	0	0	0	0	0	0	0	0.25	0.00	0.00
E-A 199	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 200	1	0.25	0	0.5	0	0	0	1	0	0.25	0.13	0.42
E-A 201	0	0	0	1	0	0	0	0	0	0.00	0.25	0.00
E-A 202	0	1	0	0	0	0	1	0	0	1.00	0.25	0.33
E-A 203	0.25	0.5	0	0.25	0	0	0	0	0.25	0.50	0.06	0.08
E-A 204	0	1	0	0	0	0	0.25	0	0	1.00	0.06	0.08
E-A 205	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 206	0.25	0.5	0	0.25	0.25	0.25	0.5	0	0	0.50	0.25	0.00
E-A 207	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 209	0	1	0	0	0	0	1	0	0	1.00	0.25	0.00
E-A 210	0	1	0	0	0	0	0	0	0	1.00	0.00	0.08
E-A 212	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 213	0	1	0	0	0	0	0	0	1	1.00	0.00	0.33
E-A 214	0.5	0.25	0	1	0	1	0	0	0.25	0.25	0.50	0.08
E-A 215	0.25	0.5	0.25	0	0	0.25	0.25	0	0	0.50	0.06	0.17
E-A 220	0.5	0.25	0.25	0.5	0.25	0.25	0.5	0	0.25	0.25	0.25	0.33
E-A 221	0	0.25	0	0	0	0	0	0	0	0.25	0.00	0.00
E-A 222	0	1	1	0	0	0	0	0	0.25	1.00	0.00	0.42
E-A 223	0.25	0.5	0.25	0.25	0.25	0.5	0	1	0.25	0.50	0.50	0.17
E-A 224	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 226	0.25	0.5	0.25	0	0	0.25	0.5	0	0.25	0.50	0.06	0.33
E-A 227	0	0.25	0	0	0.25	0	0	0	0	0.25	0.06	0.00
E-A 228	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 229	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 230	0.25	0.25	0.25	0.25	0	0	0.25	0	0.25	0.25	0.06	0.25
E-A 231	0.25	0.5	0.5	0	0	1	0	0	0	0.50	0.25	0.17
E-A 232	0.25	0.25	0.25	0	0	0	0.5	0	0	0.25	0.13	0.17
E-A 233	0.25	0.5	0.25	0	0	0.25	0.25	0	0	0.50	0.06	0.17
E-A 235	0.25	0.25	1	0	0							

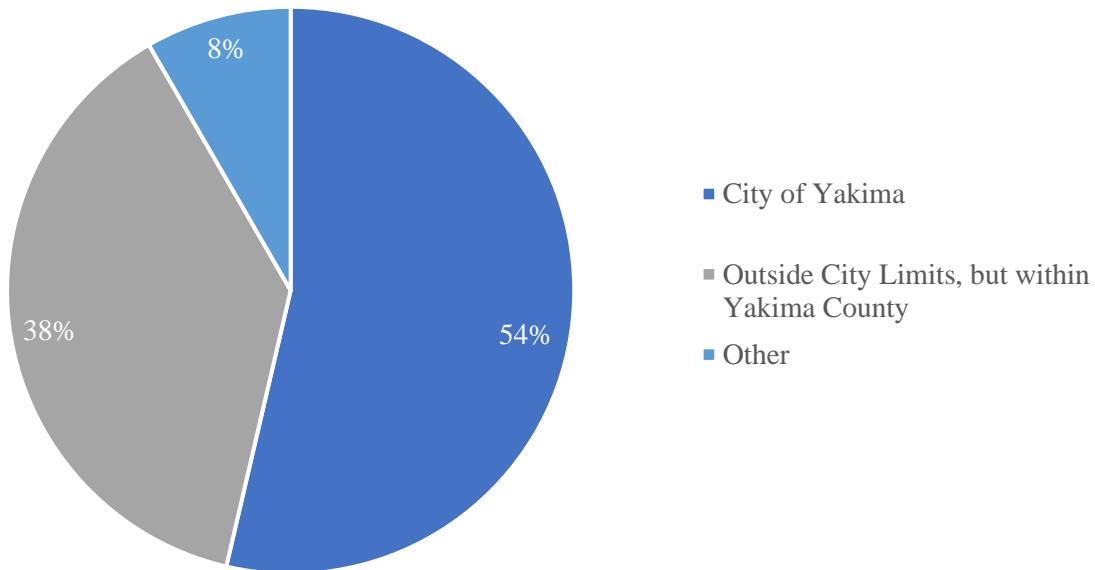
	Wash car at home	Use a commercial carwash	Wash car on Pavement	Wash car on grass or gravel	Use waterless car washing products	Use biodegradable or environmentally friendly soap	Drain/hose water and soap into the street	Contain soap spills immediately or call spill control hotline in an event of a soap spill	Wash vehicle engine, undercarriage, mounted equipment	Use commercial carwash	Average of all positive BMPs	Average for all negative BMPs
E-A 278	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 279	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 280	0	0.25	0	0	0	0	0	0	0	0.25	0.00	0.00
E-A 281	0.25	0.5	0.5	0	0.25	1	0	0.5	0.5	0.50	0.44	0.33
E-A 282	1	0	1	0	0	0	1	0	1	0.00	0.00	1.00
E-A 286	0.5	0.25	0.25	0.5	0.5	0	0.5	0	0.25	0.25	0.33	
E-A 289	0	0.5	0.25	0.25	0	0.5	0	0.25	0.25	0.50	0.25	0.17
E-A 290	0.25	0.5	0	0.5	0	0	0	0	0.25	0.50	0.13	0.08
E-A 291	0.25	0.5	0.25	0	0	0	0	0	0.25	0.50	0.00	0.17
E-A 292	1	0.25	1	0	0	0.5	1	0	0	0.25	0.13	0.67
E-A 294	0.5	0.25	0.25	0.5	0	0	0	0	0.25	0.25	0.13	0.17
E-A 300	0.25	0.5	0.25	0	0	0	0.25	0	0	0.50	0.00	0.17
E-A 302	0.25	0.25	0	0.25	0	0	0	0	0.25	0.25	0.06	0.08
E-A 303	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 305	0.5	0.5	0.5	0.25	0	0.5	0.25	0	0.25	0.50	0.19	0.33
E-A 307	0	0.5	0	0	0	1	0	0	0	0.50	0.25	0.00
E-A 308	0	0.5	0.25	0	0	0	0	0	0	0.50	0.00	0.08
E-A 309	0	0.25	0	0	0	0	0	0	0.25	0.25	0.00	0.08
E-A 311	1	0.25	1	0	0	0	0	1	0	0.25	0.00	0.75
E-A 319	0	0.25	0	0	0	0	0	0	0.25	0.25	0.00	0.08
E-A 320	0.25	0.25	0.25	0	0	0	0.25	0	0	0.25	0.00	0.17
E-A 321	0	1	1	0	0	1	0	0	0	1.00	0.25	0.33
E-A 323	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 324	0	1	0	0.5	0	0.25	0.5	0	0	1.00	0.19	0.17
E-A 328	0	0.5	0	0	0	0	0	0	0	0.50	0.00	0.00
E-A 329	0	0.5	0	0	0	0	0	0	0	0.50	0.00	0.00
E-A 330	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 331	0	0.5	0	0	0	0	0.25	0	0	0.50	0.00	0.08
E-A 333	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 334	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 335	0	0.5	0	0	0	0	0	0	0	0.50	0.00	0.00
E-A 336	0.25	1	0.25	0	0	0.25	0.25	0	0	1.00	0.06	0.17
E-A 337	0	1	0	0	0	0	0	0	1	1.00	0.00	0.33
E-A 339	0.25	1	0.25	0.25	0	0	0	0	0.25	1.00	0.06	0.17
E-A 340	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 342	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 343	0.25	0.5	0.25	0.5	0	0	0.25	0	0	0.50	0.13	0.17
E-A 345	0.25	0.25	0.25	0.25	0.5	0	0	0	0.25	0.25	0.19	0.17
S-A 9	0	1	0	0	0	1	0	0	0	1.00	0.25	0.00
S-A 10	0.25	1	0	0	0	0.5	0	0	0	1.00	0.13	0.00
S-A 12	0.25	0.5	0	0.5	0	0.5	0	0.25	0.25	0.50	0.31	0.08
S-A 16	0	1	1	0	0	0	0	0	0	1.00	0.00	0.42
E-A 348	0	0.25	0	0	0	0	0.25	0	0	0.25	0.00	0.08
E-A 349	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 352	0.25	0.5	0	0	0	0.25	0.25	0	0.25	0.50	0.06	0.17
E-A 354	0.25	0.25	0.25	0.25	0	0.25	0	0	0	0.25	0.13	0.08
E-A 355	0.25	0.25	0	0.25	0	0.5	0	0	0	0.25	0.19	0.00
E-A 356	0	1	0	0	0	1	1	1	0	1.00	0.50	0.33
E-A 357	0.25	0.5	1	0	0	0	0	0.5	0.25	0.50	0.13	0.42
E-A 358	1	0.25	0	1	0	0	0	0	0	0.25	0.25	0.00
E-A 360	0	0.25	0	0.25	0	0	0	0	0	0.25	0.25	0.06
E-A 361	0	1	0	0	0	0	1	0	0	1.00	0.25	0.08
E-A 362	0.25	0.5	0.5	0	0	0	1	0	1	0.50	0.50	0.17

## FOLLOW-UP SURVEY DATA ANALYSIS

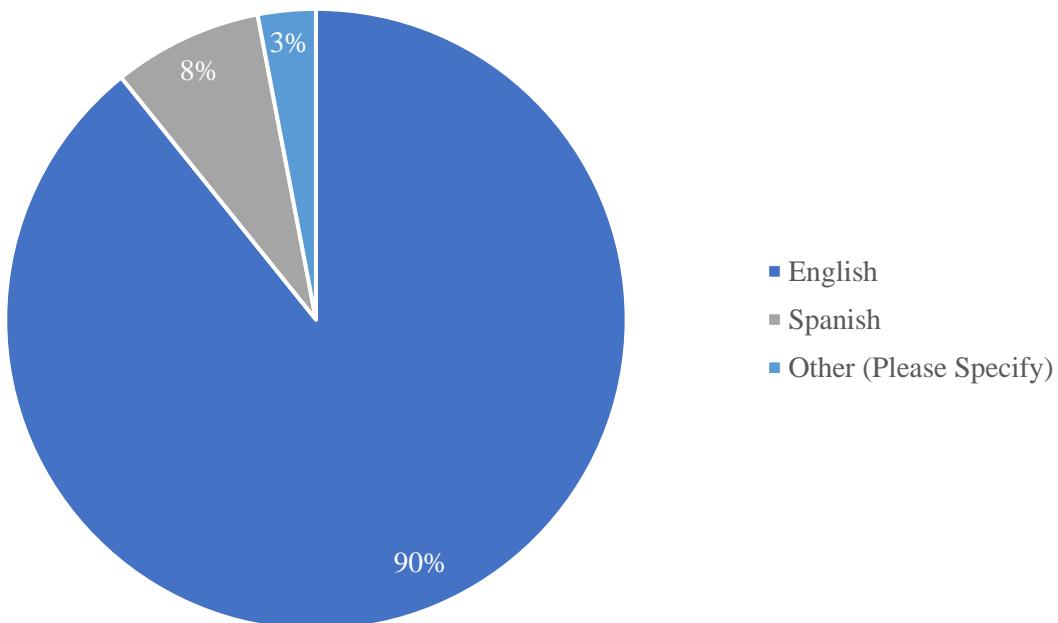
	Wash car at home	Use a commercial carwash	Wash car on Pavement	Wash car on grass or gravel	Use waterless car washing products	Use biodegradable or environmentally friendly soap	Drain/hose water and soap into the street	Contain soap spills immediately or call spill control hotline in an event of a soap spill	Wash vehicle engine, undercarriage, mounted equipment	Use commercial carwash	Average of all positive BMPs	Average for all negative BMPs
Score = 0												
E-A 136	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 103	0.25	0.5	0.25	0.25	0	0.25	1	0	1	0.50	0.13	0.75
E-A 57	0.25	0.5	0	0	0	0.25	0.25	0.25	0.25	0.50	0.13	0.17
E-A 62	0	1	1	0	0	0	0	0	0	1.00	0.00	0.33
E-A 64	0	0.5	0	0	0	0.25	0.25	0	0	0.50	0.06	0.08
E-A 110	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 288	0.25	0.5	0	0	1	1	1	1	1	0.50	0.75	0.67
E-A 332	0	1	1	0	0	0	0	0	0.25	1.00	0.00	0.42
E-A 24	0.25	0	0.25	0	0	0	0	0	0	0.00	0.00	0.08
E-A 49	0	1	0	0	0.25	0	0.25	0.5	0	1.00	0.19	0.08
E-A 298	0.25	0.25	0.25	0.5	0.5	0	0	0	0	0.25	0.25	0.08
E-A 314	0	0.25	0.25	0	1	1	0	1	1	0.25	0.75	0.42
S-A 8	0.25	0.25	0	0.25	0	0	0	0	0.25	0.25	0.06	0.08
E-A 79	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.50	0.50	0.50
E-A 317	0.25	0.5	0.25	0.5	0.5	1	0	0	0.25	0.50	0.50	0.17
E-A 346	0	1	0	0	0.5	1	0	0	0.5	1.00	0.38	0.17
E-A 295	0.5	0.5	0.25	0.25	0.25	0	0	0	0	0.50	0.13	0.08
E-A 107	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 143	0.25	0.25	1	0	0	0	0	1	0	0.25	0.00	0.67
E-A 9	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 13	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 72	0.25	0	0.25	0	0	0	0.25	0.25	0	0.00	0.06	0.17
E-A 95	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 132	1	0.25	1	0	0	0	0.5	0.25	0	0.25	0.13	0.42
E-A 135	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 137	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 234	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
E-A 248	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
S-A 6	0.5	0.25	0	0.5	1	0	0	0.5	0.5	0.25	0.50	0.17
E-A 365	0.25	0.25	0.25	0	0.25	0	0	0	0	0.25	0.06	0.08
E-A 366	0.5	0.25	0	1	0.5	0.5	0	1	0	0.25	0.75	0.00
E-A 81	0	0.5	0.25	0.25	0.5	0	1	0	0.25	0.50	0.19	0.50
E-A 5	0.25	1	1	0	0	0	0.25	0	0.25	1.00	0.00	0.50
E-A 12	0	0.5	0.25	0	0	0	0.25	0	0.25	0.50	0.00	0.25
E-A 19	0	1	1	0	0.25	0.25	0	0	0.25	1.00	0.13	0.42
E-A 20	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 25	0.25	0.25	0	0.25	0	1	0	0.25	0.25	0.25	0.38	0.08
E-A 39	0	1	1	0	0	0	0	0	0	1.00	0.00	0.33
E-A 42	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
E-A 47	0	0.25	0	0	0	0	0	0	0	0.25	0.00	0.00
E-A 50	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 63	0.25	0.5	0	0.25	0	0.25	0	0	0	0.50	0.13	0.33
E-A 85	1	0.25	0	1	0	0	0	0	0	0.25	0.25	0.00
E-A 94	0.5	0	0.25	0	0.5	0.5	0.25	0	0.25	0.00	0.25	0.25
E-A 108	1	0	1	0.5	0	0	0.5	0	0.5	0.00	0.13	0.67
E-A 113	1	0.25	0.25	0.5	0	0.5	0.25	0	1	0.25	0.25	0.50
E-A 130	0.25	0.5	0	0.25	0	0	0	0	0.25	0.50	0.06	0.08
E-A 141	0.5	0.25	0.5	0	0	1	0.25	0.25	0.25	0.25	0.31	0.33
E-A 225	0.25	0.5	0.25	0	0	0.5	0	0	0.5	0.50	0.13	0.25
E-A 251	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 267	0	1	1	0.25	0.25	1	0	0	0	1.00	0.38	0.33
E-A 287	0.5	0.25	1	0	0	0.25	0	0	0	0.25	0.06	0.33
E-A 293	0	1	0	0	0	0	0	0	0	1.00	0.00	0.00
E-A 315	0.25	0.5	0.25	0	1	0	0	0	1	0.50	0.50	0.08
E-A 318	0.25	0.25	0.25	0.25	0	0.25	0.25	0.25	0.25	0.25	0.19	0.25
E-A 341	1	0	0.25	0.25	0.25	0	0.25	0	1	0.00	0.38	0.08
S-A 1	0.25	1	1	0	0.25	0	0	0	0	1.00	0.06	0.42
S-A 3	0.25	0.5	0.25	0.5	0	0.25	0	0	0	0.50	0.19	0.08
S-A 7	0.25	0.5	0.25	0	0	0	0	0	0	0.50	0.00	0.08
S-A 15	0	0.25	0	0	0	0	0	0	0	0.25	0.00	0.00
E-A 347	0	0.25	0	0	0.5	1	0	0	1	0.25	0.63	0.00
E-A 359	0.5	0.25	0.5	0	0	0.5	0.5	0.5	0.25	0.25	0.19	0.42

## DATA GRAPHS

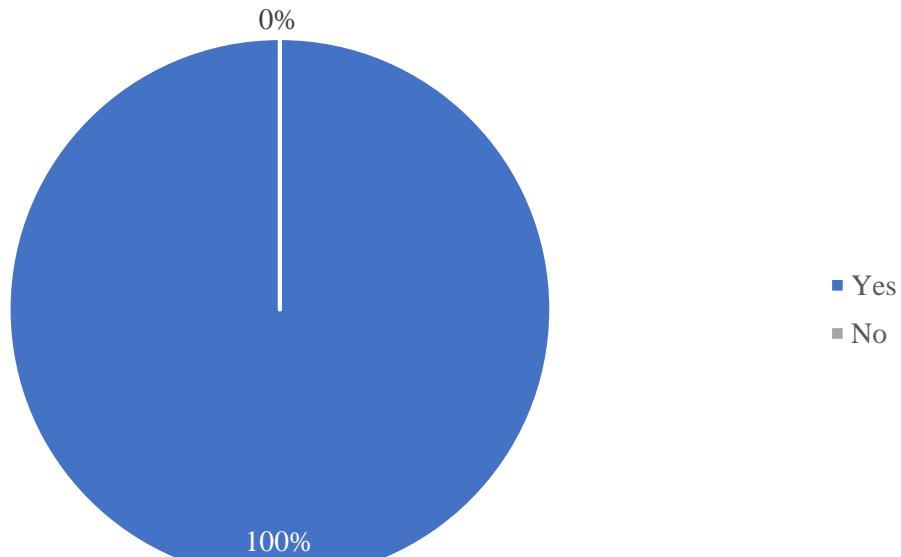
1. Where Do You Live? (Includes All Responses)



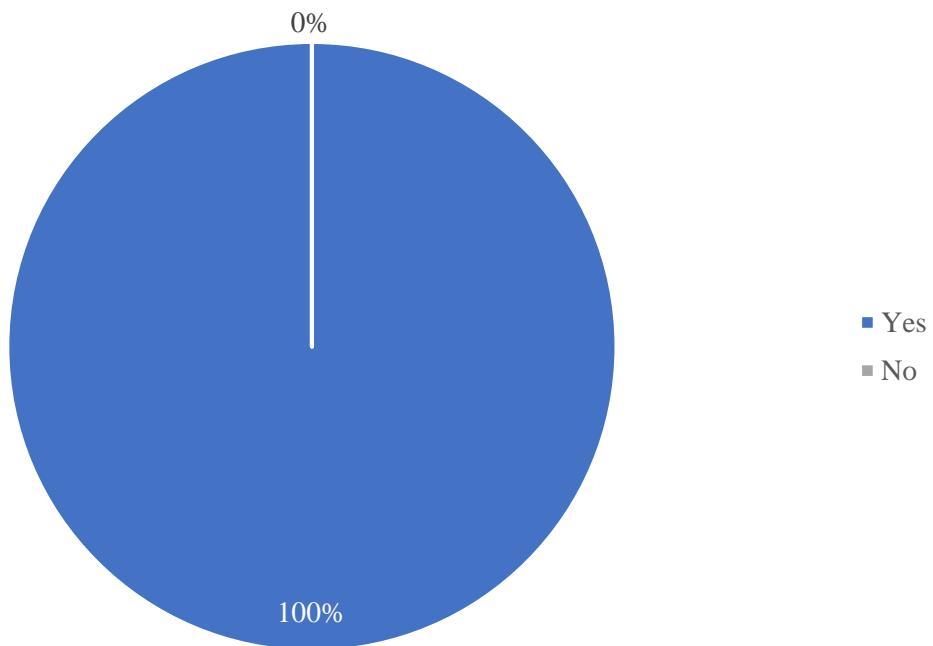
2. What is the Primary Language Spoken in Your Household?



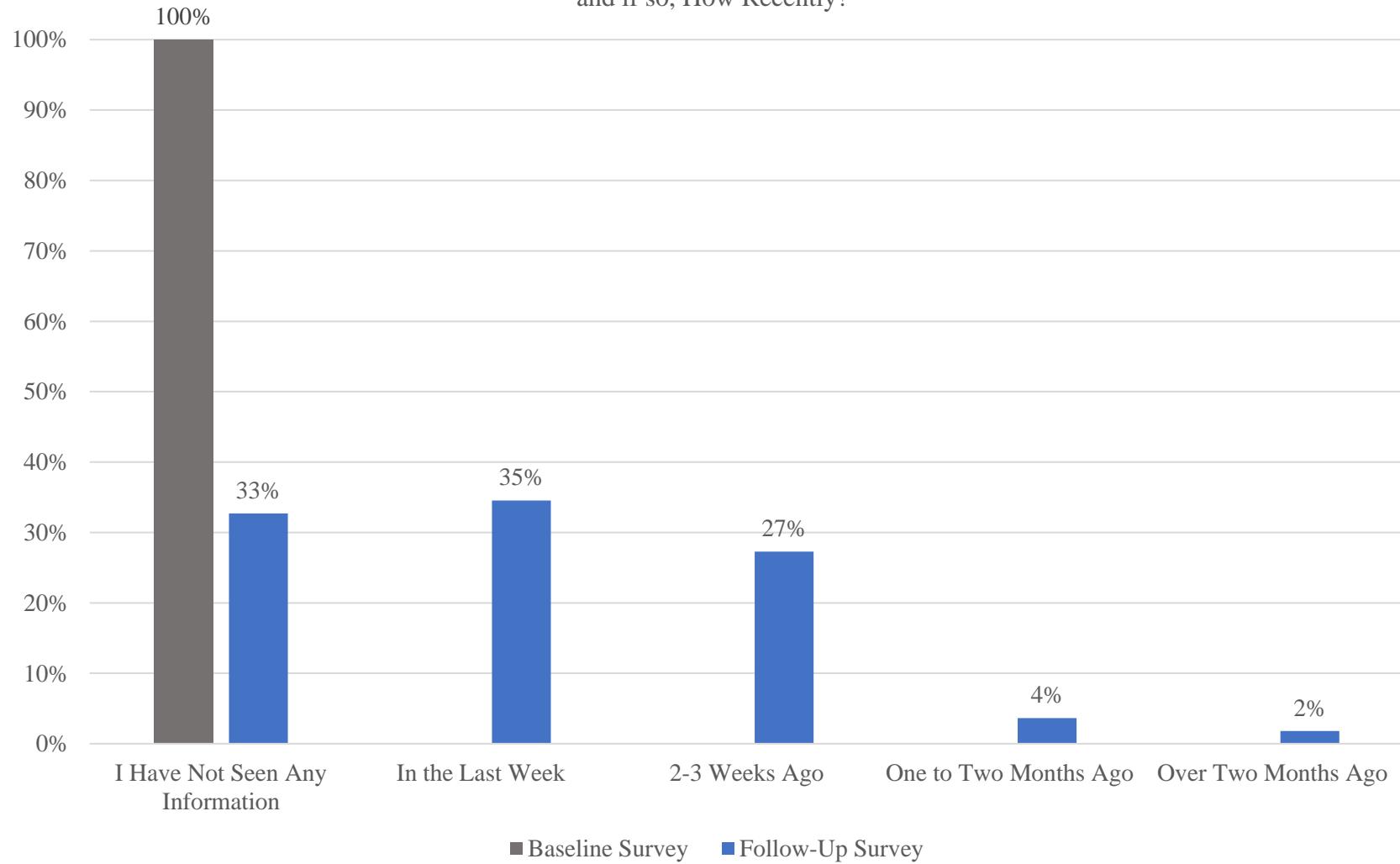
3. Pre-E&O Survey Data: Do You Drive a Personal Vehicle?



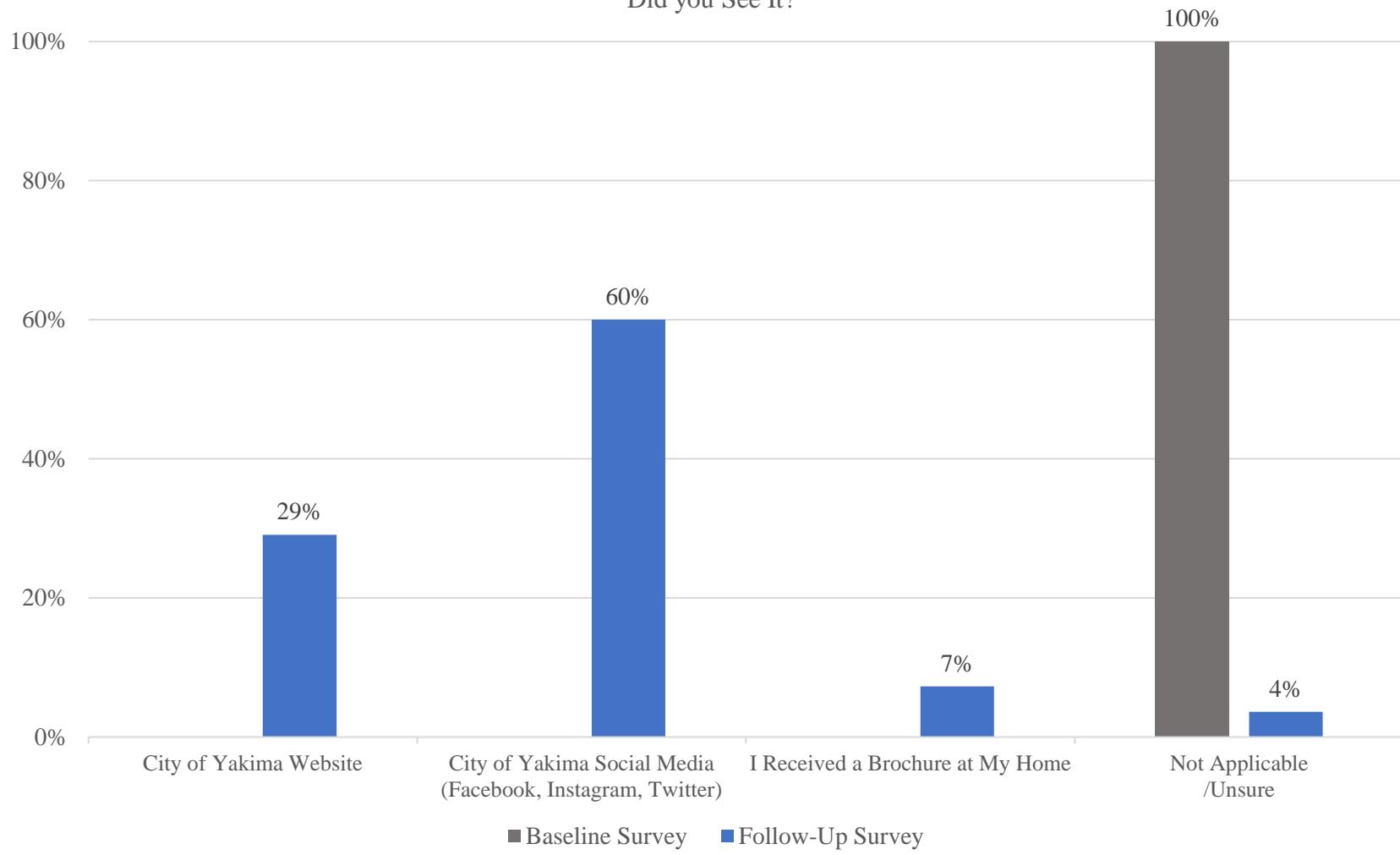
3. Post-E&O Survey Data: Do You Drive a Personal Vehicle?



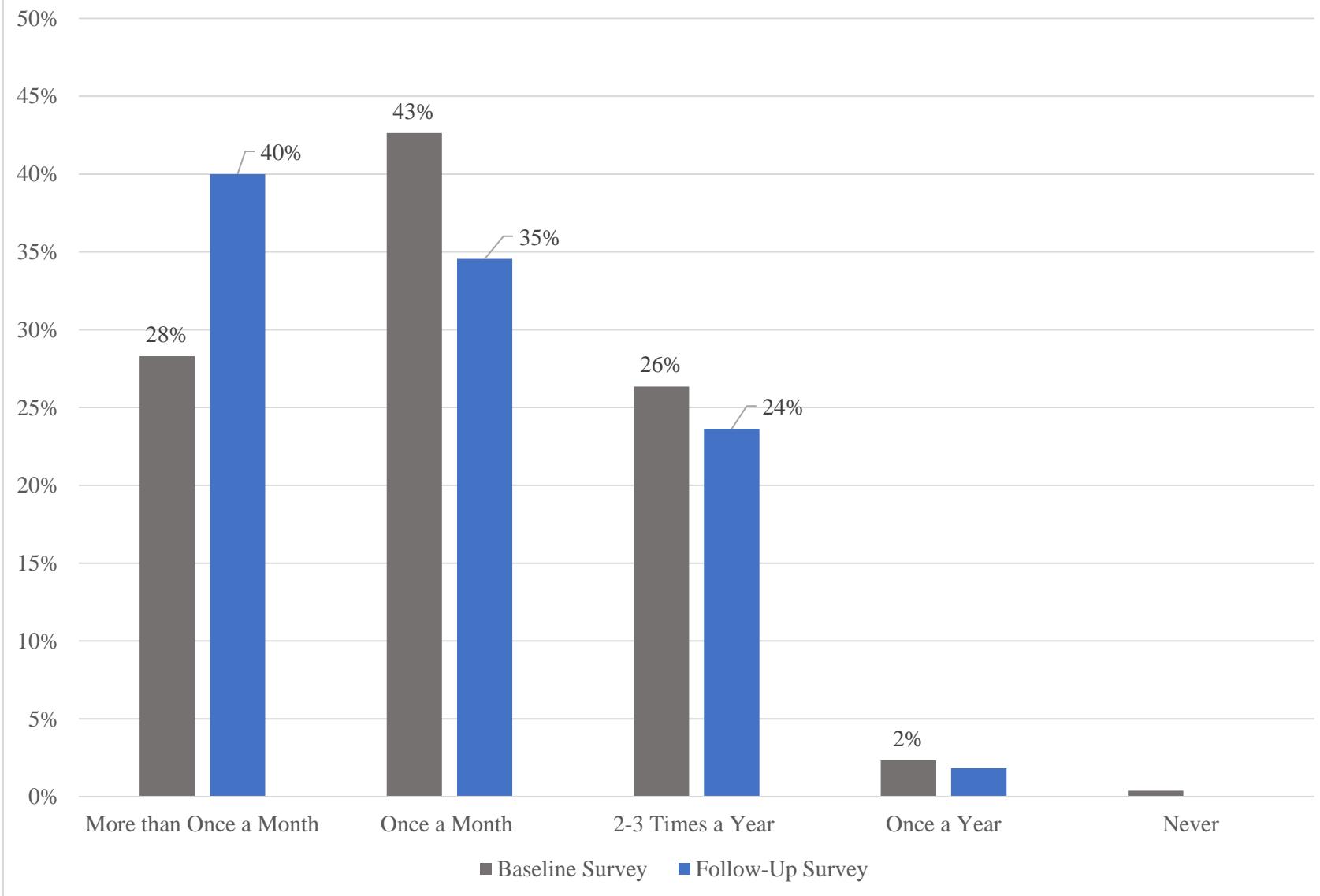
4. Have You Seen Information on Car Washing Best Management Practices from the City of Yakima,  
and if so, How Recently?



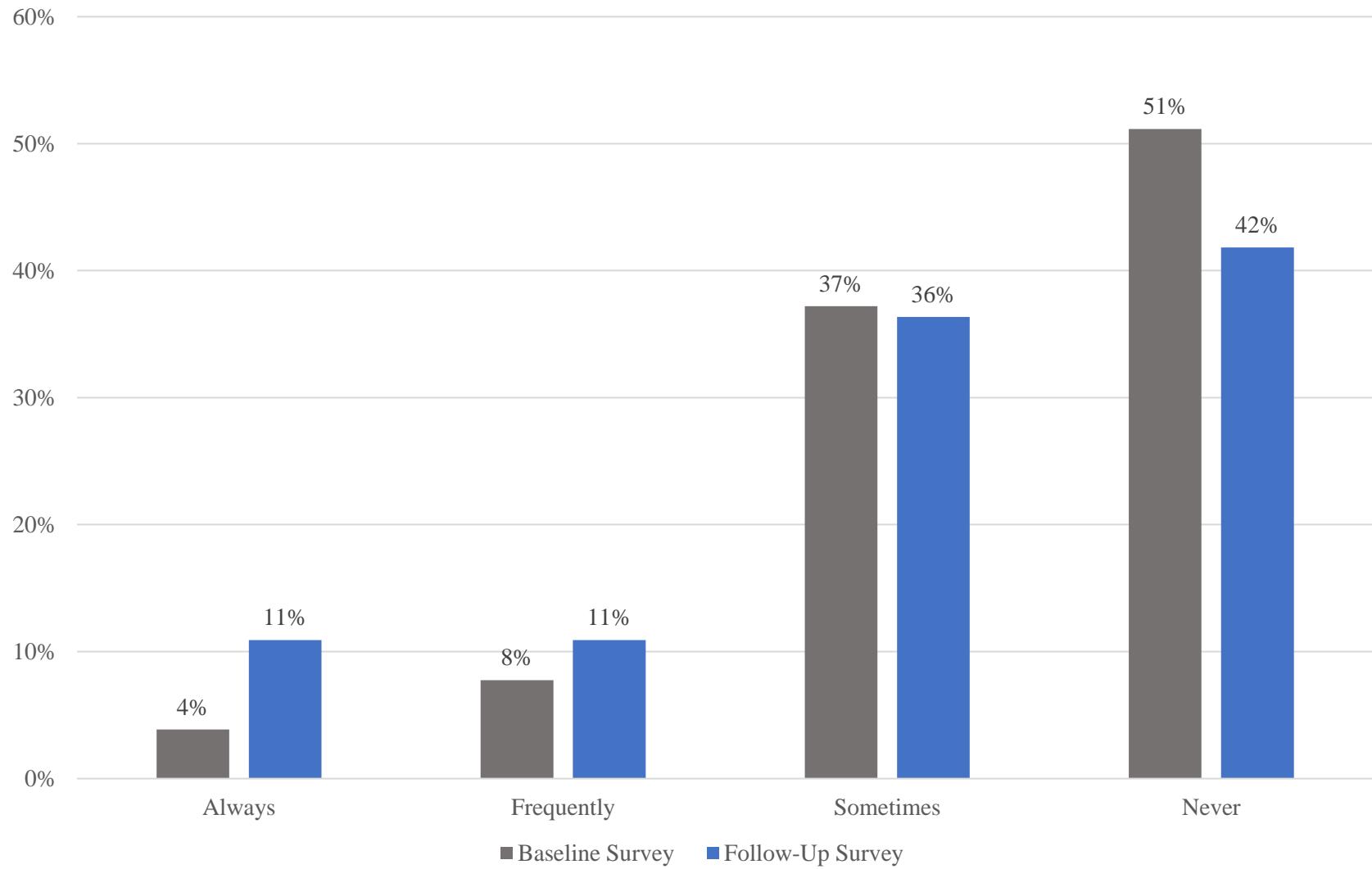
5. If You Saw Information on Car Washing Best Management Practices from the City of Yakima, Where Did you See It?



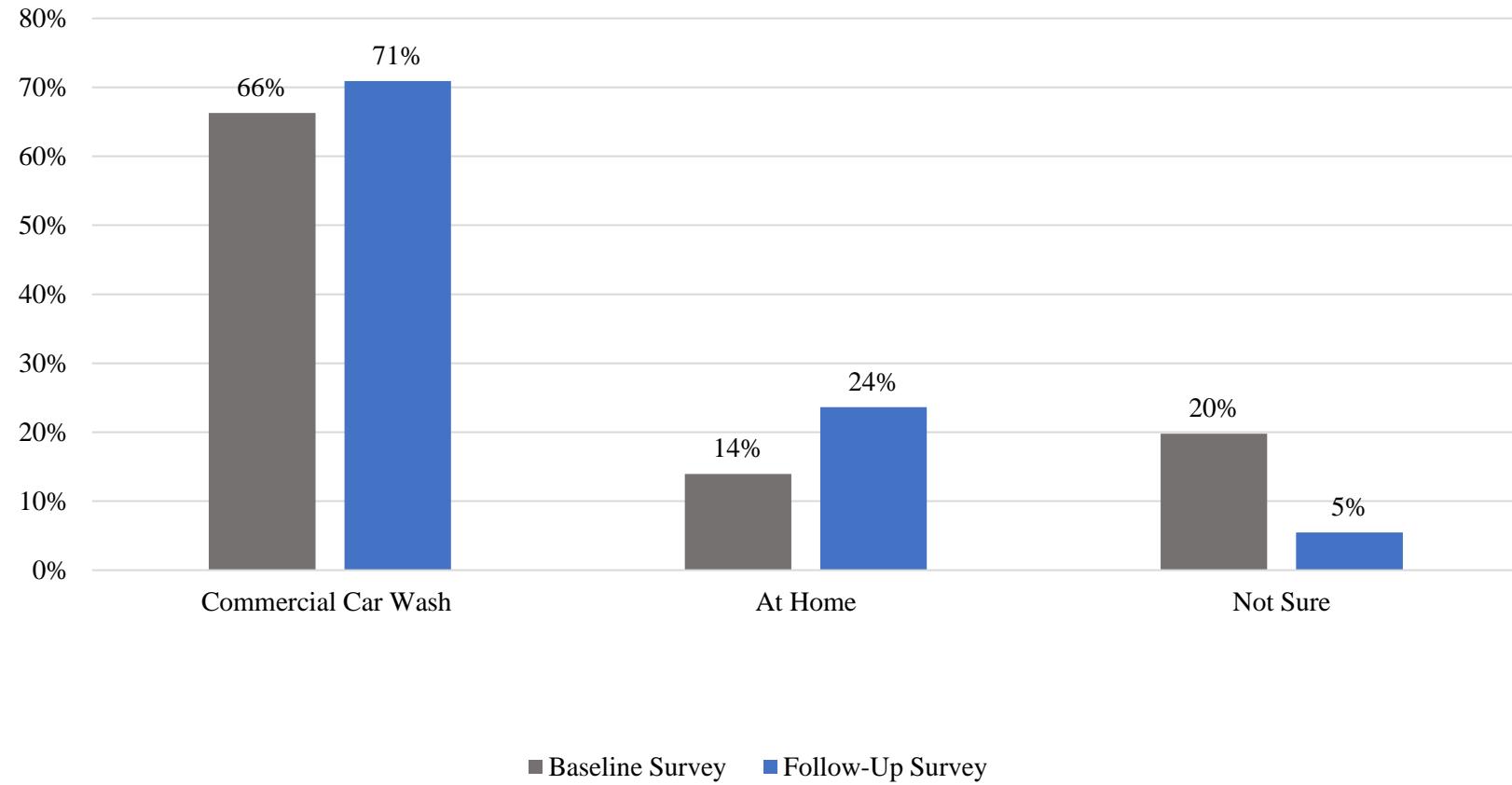
6. Which of the Following Best Describes How Often You Wash Your Vehicle?



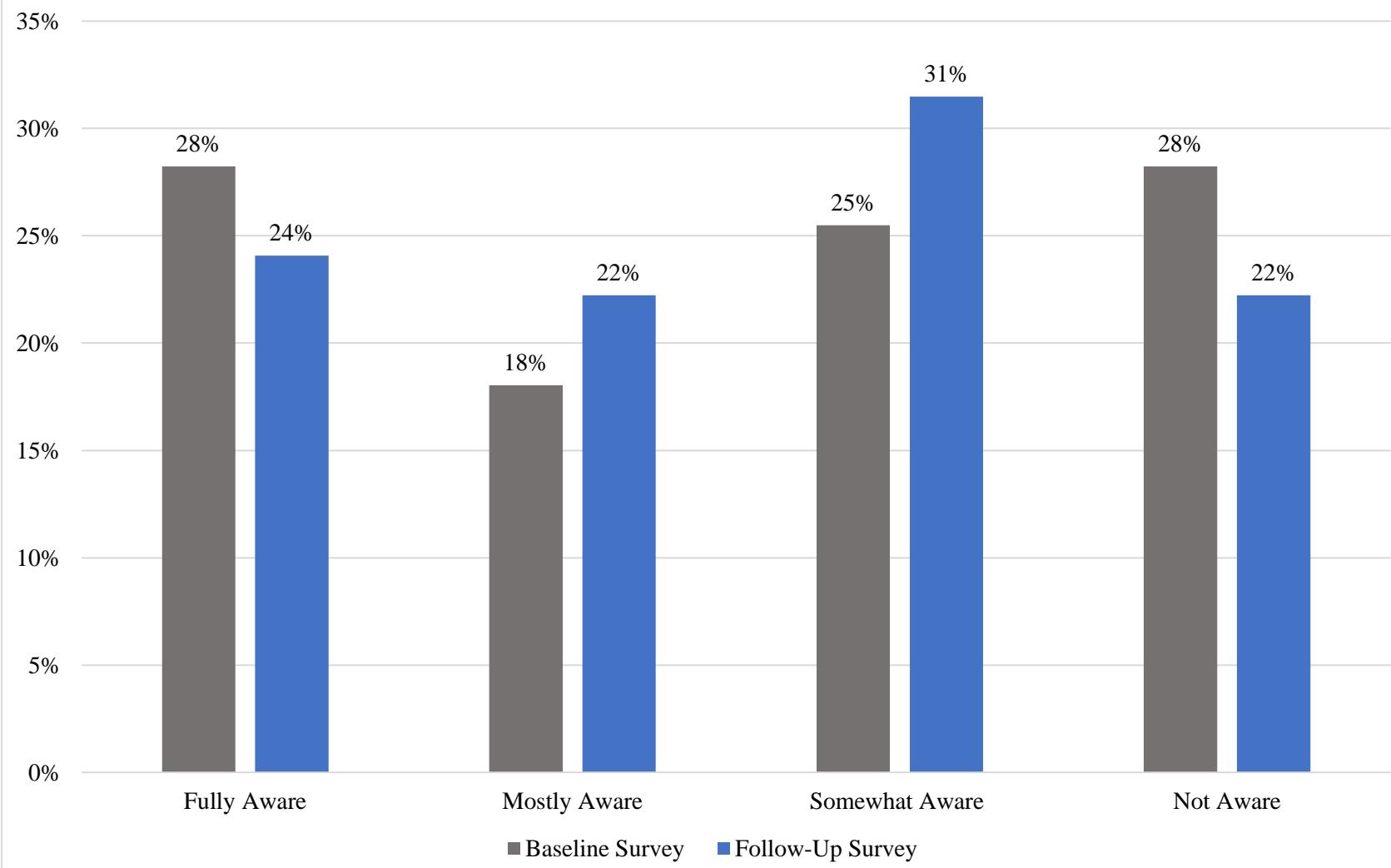
### 7. How Often Do You Wash Your Vehicle at Home?



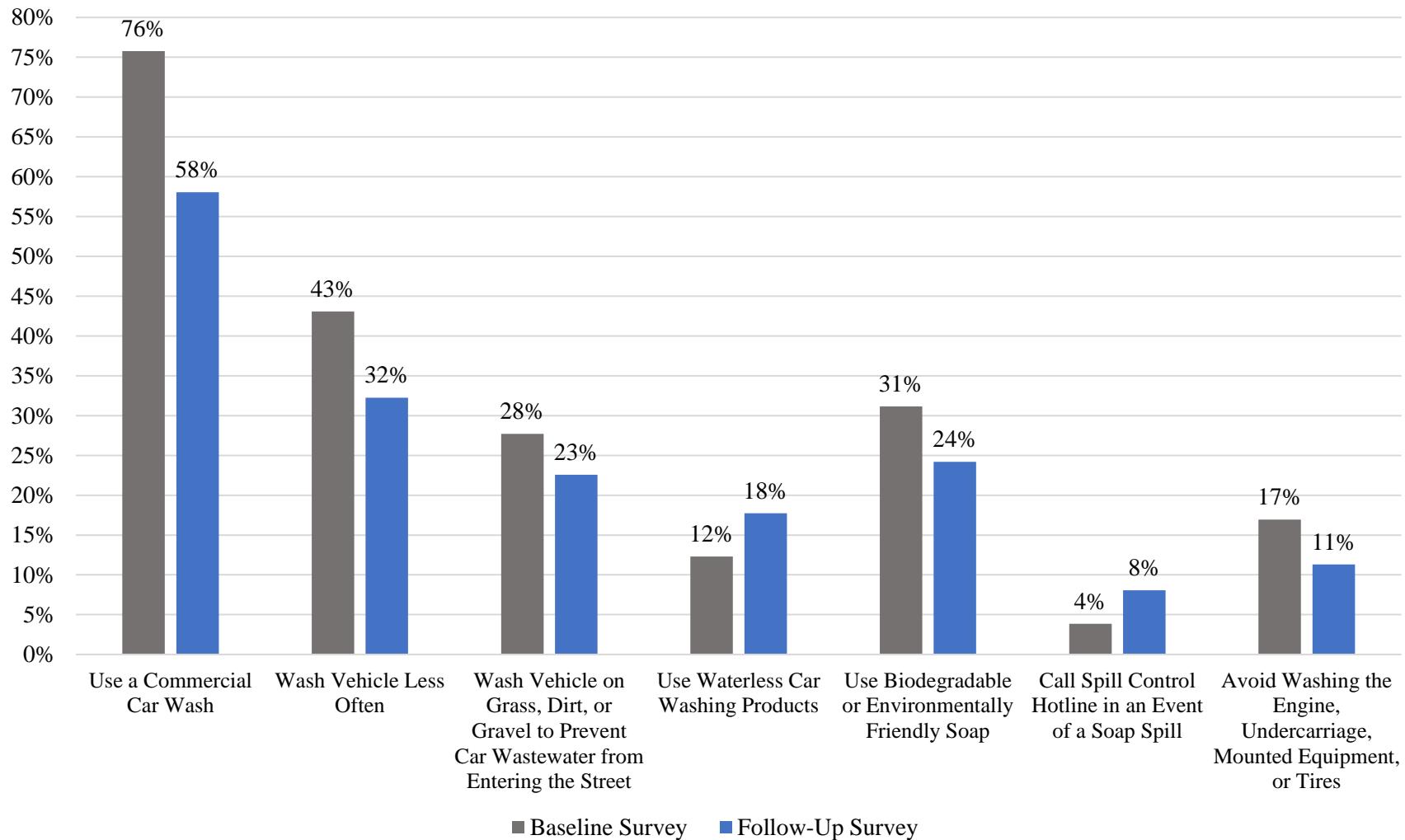
8. Where Do You Think It is Best for the Environment to Wash your Vehicle?



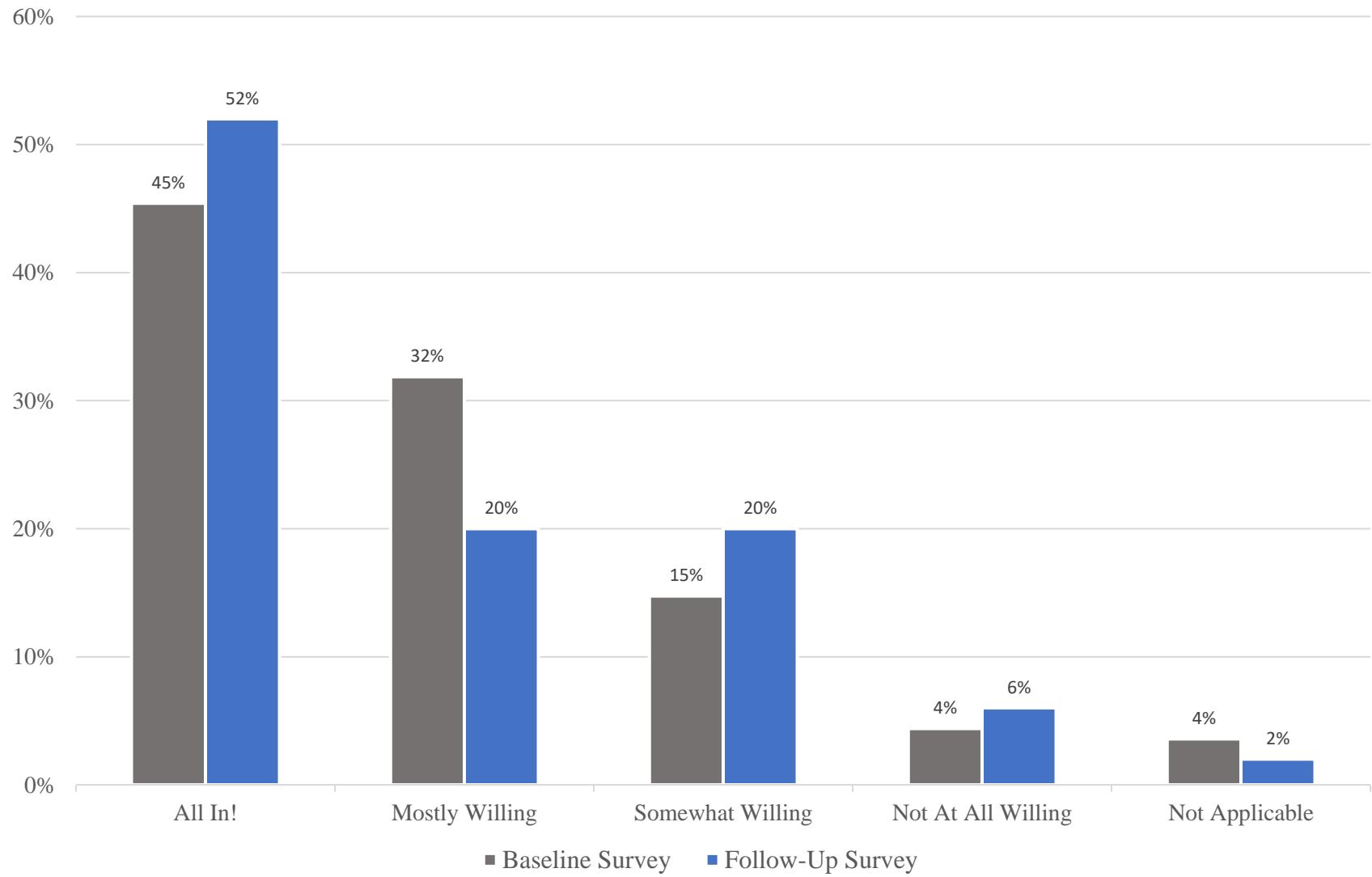
9. Did You Know that Car Wash Wastewater can Pollute Our Streams, Lakes, and Rivers?



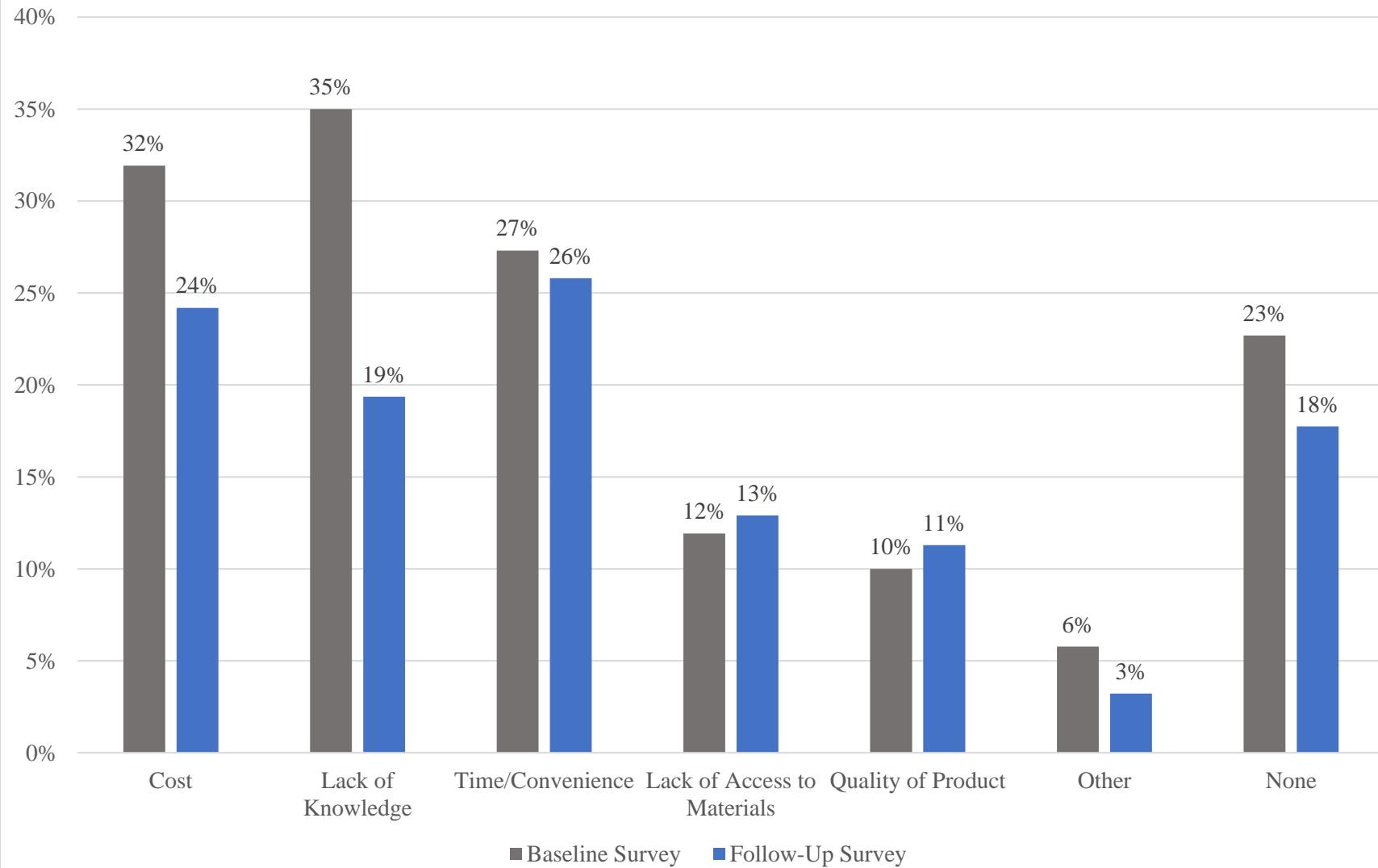
11. Before Taking this Survey, How Many Environmentally Friendly Car Washing Methods Were You Aware of? Select All That Apply.



12. How Willing are You to Change Your Car Washing Methods to be More Environmentally Friendly?



13. Which of These Categories are Barriers that Prevent You from Practicing Environmentally Friendly Car Wash Techniques? Select All That Apply.



Appendix C.2: Observational Data Record

**Observational Data Form #18132741456**Name of the Inspector: Jack WeissInspection Date and Time: 12:30 7/31/21Jurisdiction the inspector works for: YAK CO

Location of the observed evidence of residential car wash (neighborhood, street name, etc.):

1212 33rd Ave. Neighborhood #2  
181327-41456

Were any of the following car wash practices observed?

Vehicle washed on pervious surface (grass, dirt, or gravel) and wash water not entering street

Vehicle washed on impervious surface

Washing of the engine, undercarriage, mounted equipment, ~~or tires~~

Objects used to divert car wash wastewater away from storm drain to permeable surface

Other, please specify

Is there evidence of car wash wastewater entering the storm drain?

Yes

No

Please provide a brief description of what you observed (for example: no barriers used to prevent wash water from entering storm drain, barriers used to prevent wash water from entering storm drain but is not effective, etc.)

Vehicle was wash in driveway. No water reached street. Drive way is L-shaped run off went toward grass.

**Observational Data Form #18132741507**Name of the Inspector: Jack WellsInspection Date and Time: 12:20 7/31/21Jurisdiction the inspector works for: YAK GOLocation of the observed evidence of residential car wash (neighborhood, street name, etc.): 32 & Vincent

181327-41507 - Washing car in driveway  
3201 Vincenta Dr.

Were any of the following car wash practices observed?

Vehicle washed on pervious surface (grass, dirt, or gravel) and wash water not entering street

Vehicle washed on impervious surface

Washing of the engine, undercarriage, mounted equipment, or tires

Objects used to divert car wash wastewater away from storm drain to permeable surface

Other, please specify

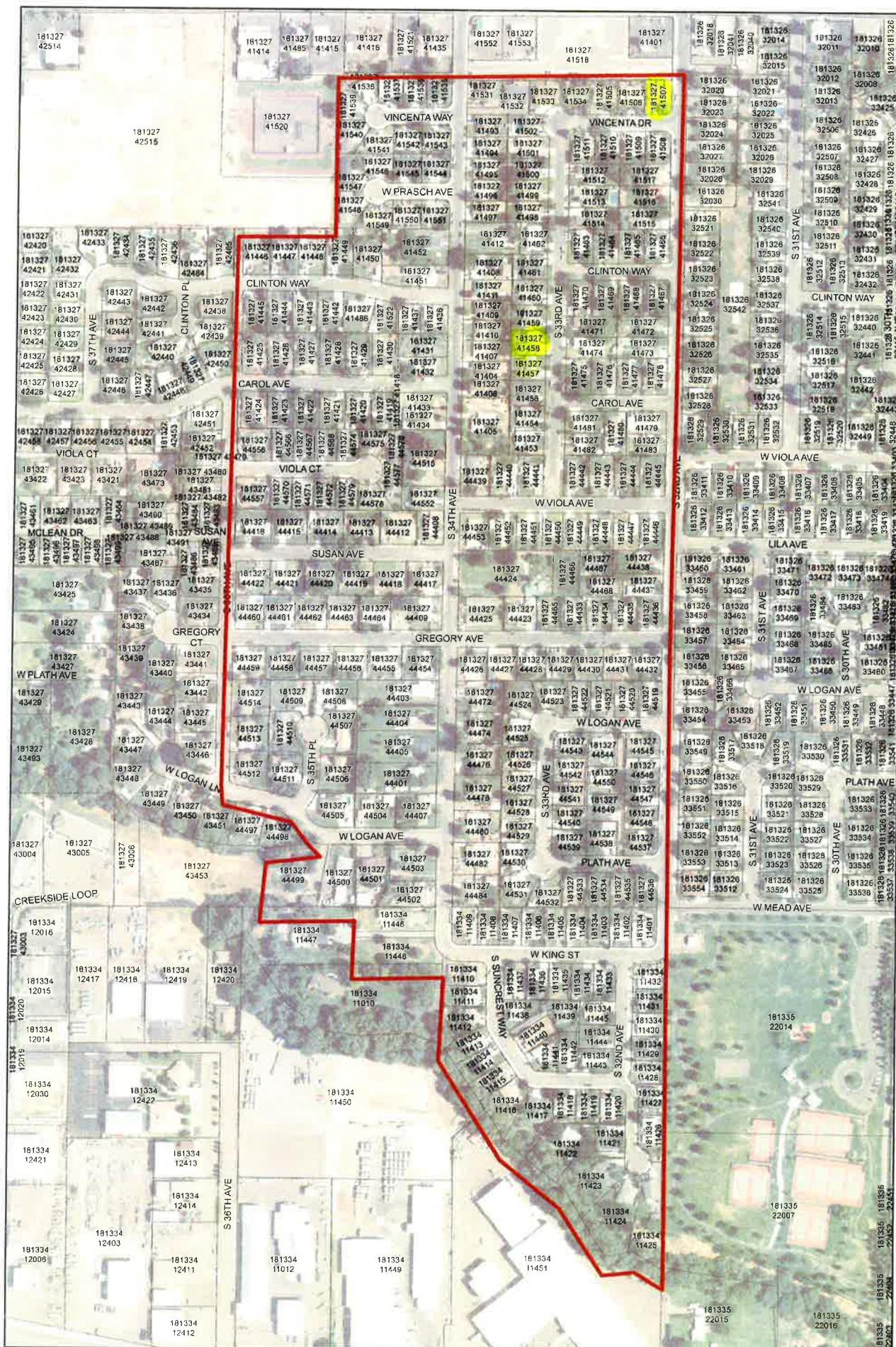
Is there evidence of car wash wastewater entering the storm drain?

Yes

No

Please provide a brief description of what you observed (for example: no barriers used to prevent wash water from entering storm drain, barriers used to prevent wash water from entering storm drain but is not effective, etc.)

Vehicle was washed in driveway.  
Driveway had a slope that water ran into  
street at around corner to storm drain



 1 inch = 250 feet

## Car Wash Neighborhood #2

**Observational Data Form #** 191319412485

Name of the Inspector: Randy Melop

Inspection Date and Time: 7/31/21 15:20

Jurisdiction the inspector works for: City of Yakima

Location of the observed evidence of residential car wash (neighborhood, street name, etc.):

Neighborhood #3, 409 S. Naches Ave. in the back off the alley.

Were any of the following car wash practices observed?

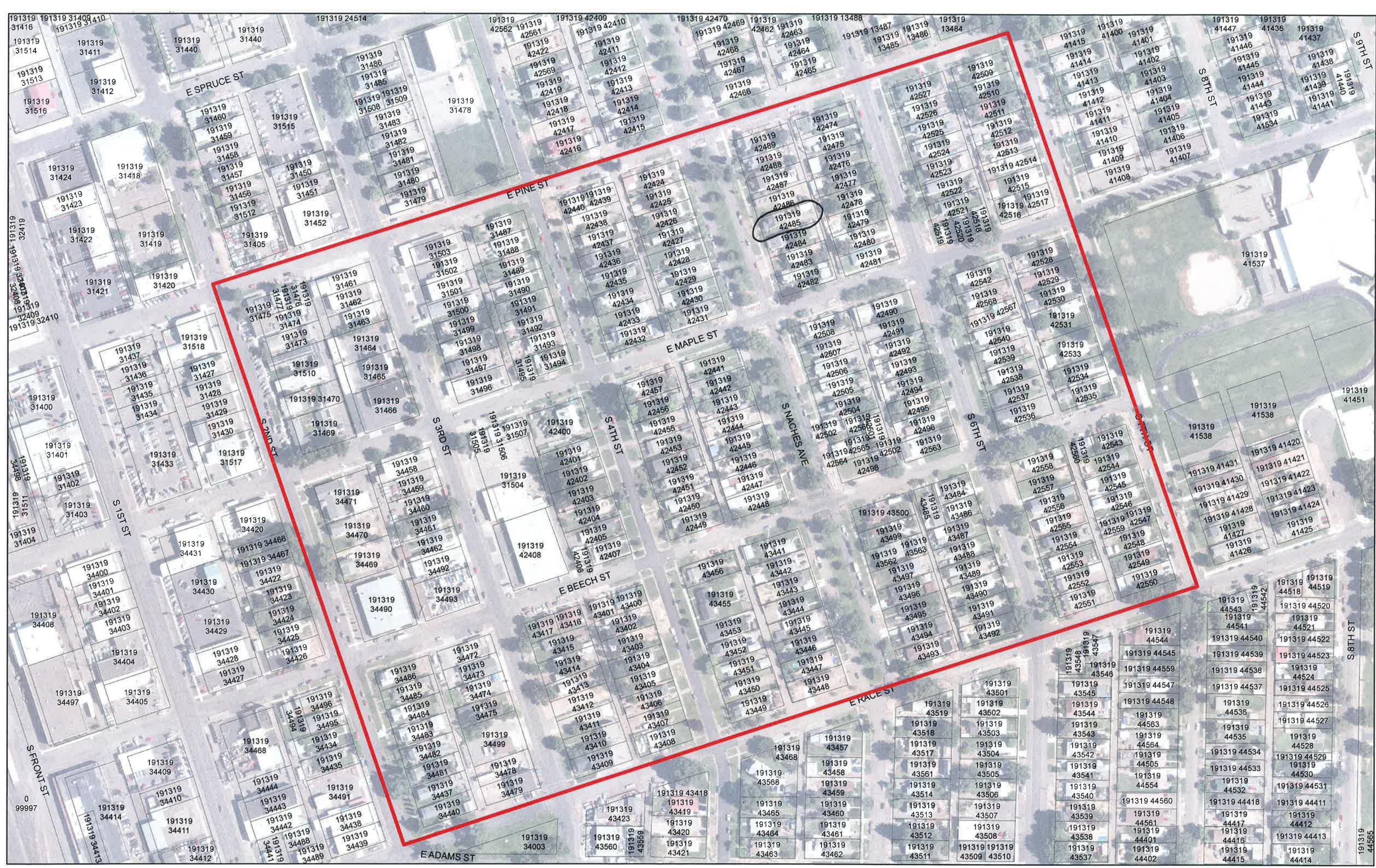
- Vehicle washed on pervious surface (grass, dirt, or gravel) and wash water not entering street
- Vehicle washed on impervious surface
- Washing of the engine, undercarriage, mounted equipment, or tires
- Objects used to divert car wash wastewater away from storm drain to permeable surface
- Other, please specify

Is there evidence of car wash wastewater entering the storm drain?

- Yes
- No

Please provide a brief description of what you observed (for example: no barriers used to prevent wash water from entering storm drain, barriers used to prevent wash water from entering storm drain but is not effective, etc.)

Car was being washed in a gravel area at the back of house. The alley is not paved so there is no chance of any waste water getting to a storm drain.



N

1 inch = 200 feet

## Car Wash Neighborhood #3

**Observational Data Form #** 191328 21479

Name of the Inspector: Randy Meloy

Inspection Date and Time: 8/7/21 12:55 pm

Jurisdiction the inspector works for: City of Yakima

Location of the observed evidence of residential car wash (neighborhood, street name, etc.):

Neighborhood #1, 706 S. 57<sup>th</sup> Ave.

Were any of the following car wash practices observed?

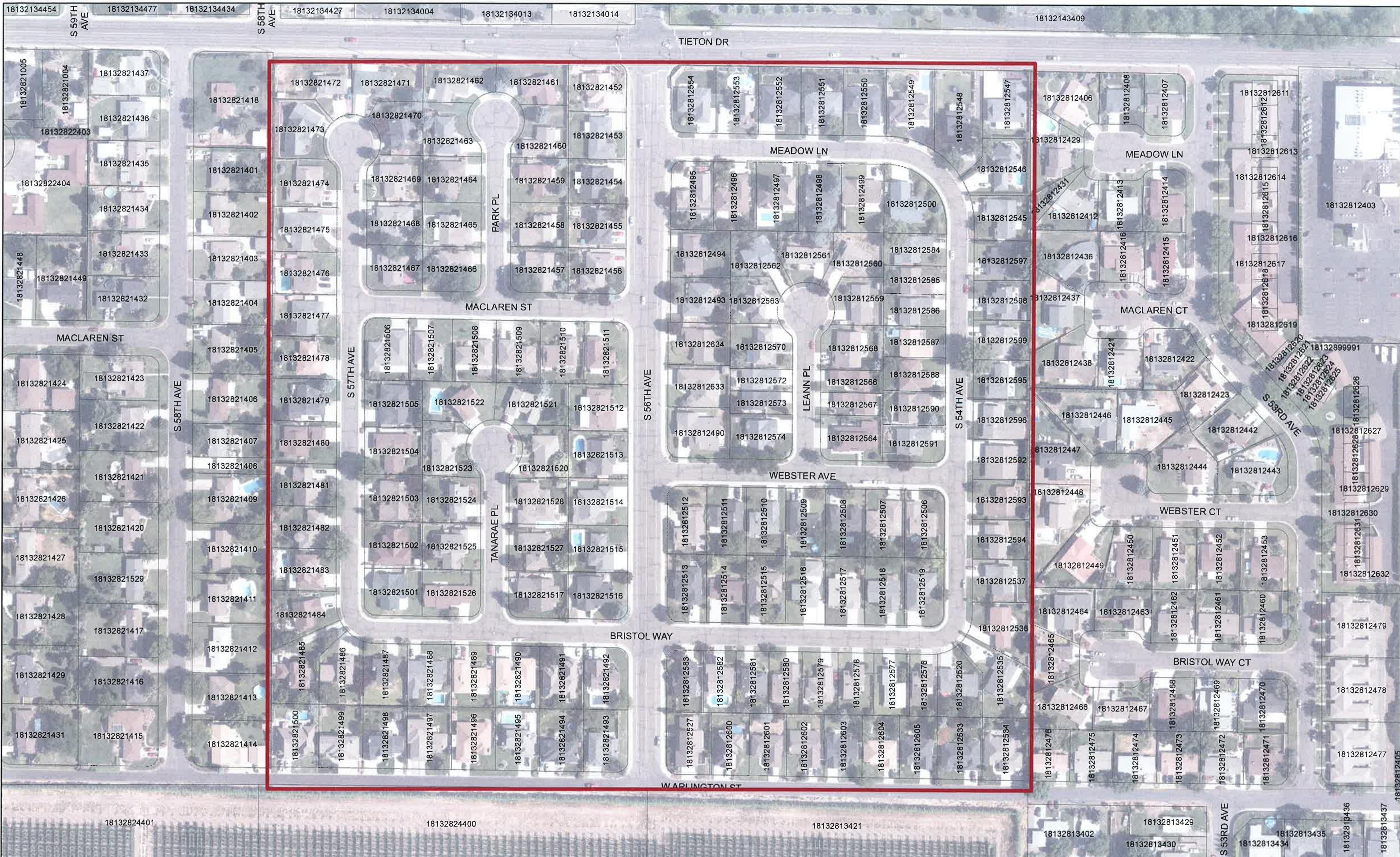
- Vehicle washed on pervious surface (grass, dirt, or gravel) and wash water not entering street
- Vehicle washed on impervious surface
- Washing of the engine, undercarriage, mounted equipment, or tires
- Objects used to divert car wash wastewater away from storm drain to permeable surface
- Other, please specify

Is there evidence of car wash wastewater entering the storm drain?

- Yes
- No

Please provide a brief description of what you observed (for example: no barriers used to prevent wash water from entering storm drain, barriers used to prevent wash water from entering storm drain but is not effective, etc.)

Washing a boat that is parked on the street. Soapy water was running into storm drain.



Car Wash Neighborhood #1

N  
1 inch = 150 feet

---

**From:** Meloy, Randy <Randy.Meloy@yakimawa.gov>  
**Sent:** Monday, November 1, 2021 1:47 PM  
**To:** Taylor Hoffman-Ballard <taylorh@osbornconsulting.com>  
**Cc:** Aimee S. Navickis-Brasch <aimeen@osbornconsulting.com>  
**Subject:** Car Wash Observational Data

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you know the content is safe.

Hi Taylor,

Well, between Jack Wells and myself we witness no car washing over the past two weekends in the three neighborhoods. The weather on 10/23-24 was very rainy and wet so no surprise there. This past weekend was not too bad weather wise but still no one was outside washing cars 10/30-31.

Thanks

Randy Meloy, P.E.  
Surface Water Engineer  
City of Yakima  
(509) 576-6606

Appendix C.3: Statistical Analysis

The first row, "C1, C2, C#....," is the column name.

	→C1	C2	C4	C5	C7	C8	C10	C11	C13	C14
	Pre-Q8_All	Post-Q8_All	Pre-Q8	Post-Q8	Pre-Q9_All	Post-Q9_All	Pre-Q9	Post-Q9	Pre-Q11_All	Post-Q11_All
1	1	1	0	1	0.50	-1.00	0.00	-1.00	2	1
2	0	0	0	1	0.25	1.00	0.00	-1.00	1	5
3	-1	1	0	1	-1.00	1.00	0.00	-1.00	1	0
4	-1	0	-1	1	-1.00	0.50	1.00	0.25	1	3
5	1	0	0	1	1.00	0.25	1.00	0.25	7	3
6	1	1	1	1	1.00	-1.00	0.50	0.25	7	1
7	1	1	1	1	-1.00	1.00	-1.00	1.00	1	3
8	1	1	0	1	0.25	0.50	0.25	0.25	0	4
9	-1	1	-1	-1	-1.00	1.00	0.00	-1.00	1	4
10	1	1	1	1	-1.00	1.00	0.25	-1.00	0	7
11	-1	1	0	1	1.00	1.00	0.00	0.25	5	4
12	1	0	0	1	-1.00	1.00	0.50	1.00	1	3
13	1	1	-1	1	0.25	-1.00	0.25	0.25	2	1
14	0	-1	1	1	1.00	1.00	1.00	0.25	0	1
15	0	1	1	1	-1.00	1.00	0.50	0.50	0	5
16	0	-1	1	1	0.25	1.00	1.00	0.50	3	0
17	0	-1	1	-1	0.25	0.25	-1.00	-1.00	2	0
18	1	0	1	1	1.00	1.00	0.25	0.25	2	1
19	1	1	0	0	1.00	-1.00	0.25	0.25	3	1
20	1	-1	0	0	0.25	0.25	-1.00	0.00	1	1
21	1	1	1	0	0.50	0.50	0.50	0.00	6	1
22	-1	1	-1	-1	0.50	1.00	0.25	0.25	1	1
23	1	1	1	0	1.00	1.00	1.00	0.00	5	2
24	0	0	1	0	-1.00	-1.00	-1.00	1.00	1	2
25	1	1	1	0	1.00	1.00	1.00	0.00	3	5
26	1	1	1	0	-1.00	0.50	1.00	0.00	4	4
27	1	0	1	0	0.50	-1.00	1.00	0.00	1	2
28	1	-1	1	0	-1.00	1.00	0.50	0.00	1	1
29	0	0	1	1	0.25	0.00	0.50	0.25	6	0
30	0	0	0	-1	0.00	0.00	0.25	0.00	0	0
31	0	0	1	-1	0.00	0.00	0.50	0.25	0	0
32	0	1	1	1	0.00	-1.00	0.25	0.50	4	2
33	-1	0	1	1	1.00	0.00	-1.00	1.00	4	0
34	0	1	1	1	1.00	-1.00	-1.00	-1.00	2	0
35	1	1	-1	1	0.50	-1.00	-1.00	1.00	1	1
36	1	1	1	1	-1.00	-1.00	0.25	1.00	0	1
37	0	1	1	1	0.25	0.25	1.00	1.00	0	2
38	-1	1	1	1	0.00	0.25	-1.00	-1.00	0	1
39	1	1	1	1	0.25	0.25	0.25	0.50	1	1
40	0	1	1	1	0.00	1.00	0.50	0.50	0	1
41	0	1	0	1	0.50	0.25	0.50	-1.00	4	1

	C1	C2	C4	C5	C7	C8	C10	C11	C13	C14
	Pre-Q8_All	Post-Q8_All	Pre-Q8	Post-Q8	Pre-Q9_All	Post-Q9_All	Pre-Q9	Post-Q9	Pre-Q11_All	Post-Q11_All
42	-1	-1	1	1	0.25	-1.00	0.50	1.00	1	1
43	1	1	0	-1	1.00	-1.00	-1.00	0.50	1	3
44	1	1	1	-1	0.50	0.25	0.25	0.50	0	2
45	1	1	1	-1	1.00	1.00	-1.00	0.50	1	1
46	1	1	1	-1	-1.00	0.25	-1.00	1.00	1	1
47	1	1	0	-1	0.25	0.25	-1.00	0.25	0	1
48	0	1	1	1	0.25	0.50	0.50	1.00	1	6
49	0	1	1	1	-1.00	0.50	-1.00	0.50	0	1
50	1	-1	1	1	0.50	-1.00	-1.00	1.00	2	0
51	-1	1	1	1	0.25	0.25	0.25	0.50	2	0
52	1	0	1	1	1.00	0.25	1.00	0.50	2	1
53	1	0	1	1	-1.00	0.00	-1.00	-1.00	6	0
54	1	0	-1	1	1.00	0.00	0.25	1.00	4	0
55	1	-1	0	0	1.00	0.25	0.25	0.50	2	1
56	1	0	1	-1	1.00	0.00	0.50	0.25	6	0
57	1	0	-1	1	0.50	1.00	0.50	-1.00	3	2
58	1	0	1	-1	0.50	0.00	-1.00	0.25	1	0
59	0	0	1	1	0.25	0.00	-1.00	0.25	2	0
60	1	0	0	1	0.50	0.00	0.50	-1.00	2	0
61	1	0	1	1	0.25	0.00	-1.00	1.00	1	0
62	1	1	0	-1	-1.00	0.25	0.50	0.25	2	1
63	1	-1	0		-1.00	0.00	0.50		3	1
64	-1	-1	0		-1.00	0.25	1.00		1	1
65	1	1	1		0.25	0.50	0.50		1	0
66	1	1	1		1.00	1.00	1.00		2	3
67	1	1	1		-1.00	-1.00	1.00		1	2
68	1	1	1		0.25	1.00	-1.00		1	5
69	1	1	1		0.50	1.00	1.00		1	4
70	0	1	1		0.50	1.00	-1.00		2	5
71	1	1	-1		0.50	-1.00	-1.00		2	1
72	0	1	1		-1.00	0.50	-1.00		1	1
73	1	1	-1		0.25	0.50	-1.00		3	1
74	1	1	1		-1.00	-1.00	-1.00		1	1
75	1	1	1		-1.00	1.00	0.25		1	1
76	0	-1	1		-1.00	0.50	0.25		1	1
77	1	-1	1		0.50	0.50	-1.00		1	1
78	1	-1	1		-1.00	0.50	1.00		1	1
79	1	-1	1		-1.00	1.00	1.00		1	1
80	1	-1	1		0.25	0.25	0.25		2	2
81	1	1	0		1.00	1.00	0.25		7	4
82	1	1	1		-1.00	0.50	1.00		1	3

	C1	C2	C4	C5	C7	C8	C10	C11	C13	C14
	Pre-Q8_All	Post-Q8_All	Pre-Q8	Post-Q8	Pre-Q9_All	Post-Q9_All	Pre-Q9	Post-Q9	Pre-Q11_All	Post-Q11_All
83	-1	1	1		0.25	1.00	1.00		2	4
84	0	1	1		0.25	0.50	-1.00		1	2
85	1	1	1		0.50	0.50	0.25		2	2
86	-1	1	1		0.50	-1.00	0.25		5	1
87	1	1	1		-1.00	1.00	0.50		2	4
88	1	0	1		-1.00	0.50	1.00		1	4
89	0	-1	1		0.50	0.25	1.00		1	1
90	1	1	1		-1.00	-1.00	1.00		1	3
91	0	-1	1		0.50	0.25	-1.00		3	3
92	0	1	1		0.50	0.25	0.25		3	1
93	0	1	-1		1.00	-1.00	1.00		3	7
94	1	1	1		0.50	1.00	1.00		3	7
95	1	-1	1		1.00	0.25	0.50		3	1
96	1		1		1.00		-1.00		1	
97	1		1		-1.00		0.50		2	
98	1		1		1.00		1.00		7	
99	1		1		-1.00		1.00		3	
100	-1		-1		-1.00		-1.00		1	
101	1		-1		-1.00		1.00		1	
102	-1		-1		-1.00		0.50		1	
103	1		1		-1.00		1.00		1	
104	1		0		0.25		0.25		1	
105	1		0		0.25		-1.00		1	
106	1		1		-1.00		0.25		1	
107	1		1		1.00		-1.00		1	
108	1		1		1.00		1.00		3	
109	1		-1		0.25		0.50		3	
110	0		1		0.25		1.00		4	
111	1		-1		1.00		0.25		7	
112	1		-1		1.00		1.00		1	
113	1		0		-1.00		0.50		2	
114	1		1		0.25		0.50		3	
115	1		0		0.25		0.25		2	
116	1		-1		0.50		0.25		1	
117	1		1		1.00		1.00		5	
118	1		0		1.00		0.25		1	
119	1		0		1.00		0.25		7	
120	1		0		-1.00		0.25		1	
121	1		1		0.25		1.00		1	
122	-1		-1		1.00		0.50		2	
123	1		1		1.00		0.50		2	

	C1	C2	C4	C5	C7	C8	C10	C11	C13	C14
	Pre-Q8_All	Post-Q8_All	Pre-Q8	Post-Q8	Pre-Q9_All	Post-Q9_All	Pre-Q9	Post-Q9	Pre-Q11_All	Post-Q11_All
124	1		1		0.50		1.00		5	
125	1		-1		-1.00		0.50		2	
126	1		1		0.50		0.50		3	
127	1		1		1.00		-1.00		2	
128	1		1		1.00		1.00		3	
129	-1		1		-1.00		-1.00		3	
130	-1		1		1.00		0.25		5	
131	-1		0		0.50		0.25		6	
132	1		1		1.00		0.50		4	
133	0		0		0.25		0.25		1	
134	0		1		-1.00		1.00		2	
135	1		1		0.25		0.25		1	
136	1		1		-1.00		0.25		1	
137	1		1		1.00		0.50		6	
138	-1		1		0.50		0.50		1	
139	1		1		1.00		0.25		1	
140	-1		-1		0.25		1.00		0	
141	-1		1		1.00		1.00		0	
142	0		1		0.50		0.50		3	
143	1		1		0.50		0.25		3	
144	0		1		0.25		0.25		1	
145	-1		1		0.25		-1.00		1	
146	1		0		1.00		0.50		4	
147	0		-1		0.25		-1.00		3	
148	0		0		0.25		-1.00		1	
149	0		1		0.25		1.00		1	
150	1		1		1.00		1.00		1	
151	-1		1		0.50		1.00		5	
152	1		0		0.50		0.50		1	
153	1		1		1.00		0.25		1	
154	-1		1		0.50		-1.00		5	
155	1		1		0.50		1.00		3	
156	1		1		-1.00		1.00		1	
157	1		1		1.00		-1.00		1	
158	1		1		-1.00		1.00		1	
159	1		1		0.25		1.00		2	
160	0		1		0.25		1.00		1	
161	1		-1		0.50		1.00		3	
162	0		1		0.25		-1.00		1	
163	1		1		1.00		0.50		3	
164	1		1		0.25		-1.00		4	

	C1	C2	C4	C5	C7	C8	C10	C11	C13	C14
	Pre-Q8_All	Post-Q8_All	Pre-Q8	Post-Q8	Pre-Q9_All	Post-Q9_All	Pre-Q9	Post-Q9	Pre-Q11_All	Post-Q11_All
165	1		0		0.25		0.25		4	
166	1		0		0.50		0.50		3	
167	1		1		0.50		1.00		1	
168	1		1		0.25		1.00		2	
169	-1		1		1.00		1.00		2	
170	1		0		1.00		0.25		3	
171	1		0		0.50		0.25		3	
172	1		0		0.25		1.00		5	
173	1		1		0.25		1.00		2	
174	1		0		-1.00		0.25		2	
175	0		0		0.50		0.50		2	
176	-1		1		-1.00		0.50		2	
177	0		-1		-1.00		1.00		3	
178	1		0		1.00		-1.00		1	
179	1		1		1.00		0.25		4	
180	1		1		1.00		-1.00		1	
181	0		0		0.50		1.00		2	
182	1		1		0.25		1.00		2	
183	1		1		-1.00		-1.00		1	
184	1		1		1.00		0.50		5	
185	1		-1		1.00		1.00		4	
186	1		1		-1.00		0.25		1	
187	1		-1		1.00		1.00		1	
188	1		1		1.00		1.00		5	
189	1		1		1.00		-1.00		2	
190	-1		1		1.00		0.25		3	
191	1		1		-1.00		0.25		1	
192	1		1		0.50		0.25		4	
193	1		1		-1.00		-1.00		5	
194	0		1		0.25		0.25		3	
195	0		1		0.50		1.00		3	
196	1		1		1.00		0.25		3	
197	1		1		1.00		0.50		3	
198	1		0		1.00		1.00		3	
199	0		1		0.25		0.25		3	
200	0		1		0.25		-1.00		4	
201	0		1		1.00		0.25		2	
202	1		-1		1.00		0.25		2	
203	0		0		0.25		0.25		1	
204	0		1		0.50		1.00		1	
205	1		-1		0.50		-1.00		4	

	C1	C2	C4	C5	C7	C8	C10	C11	C13	C14
	Pre-Q8_All	Post-Q8_All	Pre-Q8	Post-Q8	Pre-Q9_All	Post-Q9_All	Pre-Q9	Post-Q9	Pre-Q11_All	Post-Q11_All
206	-1		-1		1.00		-1.00		3	
207	0		1		-1.00		0.25		1	
208	1		1		0.25		0.25		2	
209	1		1		-1.00		1.00		2	
210	0		0		1.00		0.50		1	
211	1		1		1.00		-1.00		7	
212	1		-1		-1.00		1.00		4	
213	1		1		0.50		-1.00		1	
214	-1		-1		1.00		0.50		2	
215	1		-1		0.25		0.50		3	
216	-1		1		1.00		0.25		3	
217	1		-1		1.00		-1.00		3	
218	1		-1		-1.00		0.50		1	
219	1		1		0.25		1.00		2	
220	1		1		0.25		0.25		3	
221	1		0		0.25		-1.00		2	
222	1		-1		-1.00		0.25		1	
223	1		1		0.25		1.00		2	
224	1		1		1.00		0.50		4	
225	1		0		0.25		0.25		2	
226	1		0		0.50		-1.00		4	
227	0		1		1.00		0.50		3	
228	1		1		0.25		-1.00		3	
229	1		1		-1.00		1.00		1	
230	1		1		0.25		-1.00		1	
231	-1		1		0.25		-1.00		2	
232	0		-1		0.25		1.00		1	
233	1		0		1.00		0.25		3	
234	-1		1		-1.00		0.25		2	
235	-1		1		-1.00		0.25		2	
236	1		1		0.25		0.25		3	
237	1		1		0.25		1.00		2	
238	1		0		1.00		-1.00		1	
239	0		1		0.50		-1.00		2	
240	1		1		-1.00		0.25		4	
241	-1		0		1.00		-1.00		1	
242	1		1		-1.00		-1.00		0	
243	-1		1		0.50		-1.00		0	
244	-1		1		0.50		-1.00		2	
245	1		1		0.25		-1.00		2	
246	-1		1		-1.00		-1.00		1	

	C1	C2	C4	C5	C7	C8	C10	C11	C13	C14
	Pre-Q8_All	Post-Q8_All	Pre-Q8	Post-Q8	Pre-Q9_All	Post-Q9_All	Pre-Q9	Post-Q9	Pre-Q11_All	Post-Q11_All
247	-1		1		0.50		1.00		2	
248	1		0		1.00		-1.00		0	
249	1		1		0.25		-1.00		4	
250	0		1		-1.00		1.00		2	
251	-1		1		0.25		1.00		1	
252	1		1		1.00		-1.00		2	
253	1		1		0.50		-1.00		1	
254	0		-1		0.25		1.00		2	
255	0		0		-1.00		-1.00		0	
256	1		1		0.50		-1.00		1	
257	1		0		-1.00		-1.00		0	
258	1		1		1.00		1.00		1	
259	1		0		-1.00		0.25		1	
260	1		1		-1.00		-1.00		3	
261	-1				1.00				4	
262	0				0.25				1	
263	1				0.25				1	
264	1				0.25				0	
265	1				0.25				2	
266	1				1.00				2	
267	0				-1.00				1	
268	1				-1.00				1	
269	1				0.25				1	
270	0				-1.00				1	
271	1				-1.00				1	
272	1				-1.00				1	
273	1				-1.00				2	
274	1				-1.00				2	
275	1				-1.00				3	
276	1				1.00				1	
277	0				-1.00				3	
278	1				-1.00				1	
279	1				1.00				2	
280	1				1.00				2	
281	1				-1.00				1	
282	1				-1.00				3	
283	-1				1.00				4	
284	0				-1.00				1	
285	1				-1.00				1	
286	0				-1.00				1	
287	1				1.00				3	

	C1	C2	C4	C5	C7	C8	C10	C11	C13	C14
	Pre-Q8_All	Post-Q8_All	Pre-Q8	Post-Q8	Pre-Q9_All	Post-Q9_All	Pre-Q9	Post-Q9	Pre-Q11_All	Post-Q11_All
288	0				0.25				1	
289	1				-1.00				2	

	C16	C17
	Pre-Q11	Post-Q11
1	0	0
2	0	1
3	4	1
4	4	2
5	2	1
6	1	1
7	0	1
8	0	1
9	0	1
10	1	3
11	0	2
12	4	1
13	1	1
14	1	1
15	0	6
16	1	1
17	1	0
18	0	0
19	1	1
20	0	0
21	2	0
22	2	1
23	2	0
24	6	2
25	4	0
26	2	0
27	6	0
28	3	0
29	1	1
30	2	1
31	2	1
32	1	0
33	2	3
34	3	2
35	1	5
36	1	4
37	2	5
38	1	1
39	1	1
40	1	1
41	2	1

	C16	C17
	Pre-Q11	Post-Q11
42	2	1
43	1	1
44	3	1
45	1	1
46	1	1
47	1	2
48	1	4
49	1	3
50	1	4
51	2	2
52	7	2
53	1	1
54	2	4
55	1	4
56	2	1
57	5	3
58	2	3
59	1	1
60	1	7
61	1	7
62	3	1
63	3	
64	3	
65	3	
66	3	
67	1	
68	2	
69	7	
70	3	
71	1	
72	1	
73	1	
74	1	
75	1	
76	1	
77	1	
78	1	
79	3	
80	3	
81	4	
82	7	

	C16	C17
	Pre-Q11	Post-Q11
83	1	
84	2	
85	3	
86	2	
87	1	
88	5	
89	1	
90	7	
91	1	
92	1	
93	2	
94	2	
95	5	
96	2	
97	3	
98	2	
99	3	
100	3	
101	5	
102	6	
103	4	
104	1	
105	2	
106	1	
107	1	
108	6	
109	1	
110	1	
111	0	
112	0	
113	3	
114	3	
115	1	
116	1	
117	4	
118	3	
119	1	
120	1	
121	1	
122	5	
123	1	

	C16	C17
	Pre-Q11	Post-Q11
124	1	
125	5	
126	3	
127	1	
128	1	
129	1	
130	2	
131	1	
132	3	
133	1	
134	3	
135	4	
136	4	
137	3	
138	1	
139	2	
140	2	
141	3	
142	3	
143	5	
144	2	
145	2	
146	2	
147	2	
148	3	
149	1	
150	4	
151	1	
152	2	
153	2	
154	1	
155	5	
156	4	
157	1	
158	1	
159	5	
160	2	
161	3	
162	1	
163	4	
164	5	

	C16	C17
	Pre-Q11	Post-Q11
165	3	
166	3	
167	3	
168	3	
169	3	
170	3	
171	4	
172	2	
173	2	
174	1	
175	1	
176	4	
177	3	
178	1	
179	2	
180	2	
181	1	
182	7	
183	4	
184	1	
185	2	
186	3	
187	3	
188	3	
189	1	
190	2	
191	3	
192	2	
193	1	
194	2	
195	4	
196	2	
197	4	
198	3	
199	3	
200	1	
201	1	
202	2	
203	1	
204	3	
205	2	

	C16	C17
	Pre-Q11	Post-Q11
206	2	
207	3	
208	2	
209	1	
210	2	
211	4	
212	1	
213	0	
214	0	
215	2	
216	2	
217	1	
218	2	
219	0	
220	4	
221	2	
222	1	
223	2	
224	1	
225	2	
226	0	
227	1	
228	0	
229	1	
230	1	
231	3	
232	4	
233	1	
234	1	
235	0	
236	2	
237	2	
238	1	
239	1	
240	1	
241	1	
242	1	
243	1	
244	2	
245	2	
246	3	

	C16	C17
	Pre-Q11	Post-Q11
247	1	
248	3	
249	1	
250	2	
251	2	
252	1	
253	3	
254	4	
255	1	
256	1	
257	1	
258	3	
259	1	
260	2	
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287		

	<b>C16</b>	<b>C17</b>
	Pre-Q11	Post-Q11
288		
289		

AWARENESS

## Mann-Whitney: Pre-Q8, Post-Q8

### Method

$\eta_1$ : median of Pre-Q8

$\eta_2$ : median of Post-Q8

Difference:  $\eta_1 - \eta_2$

### Descriptive Statistics

Sample	N	Median
Pre-Q8	260	1
Post-Q8	62	1

### Estimation for Difference

Difference	CI for Difference	Achieved
		Confidence
-0.0000000	(-0.0000000, 0.0000000)	95.01%

### Test

Null hypothesis  $H_0: \eta_1 - \eta_2 = 0$

Alternative hypothesis  $H_1: \eta_1 - \eta_2 \neq 0$

Method	W-Value	P-Value
Not adjusted for ties	42385.50	0.549
Adjusted for ties	42385.50	0.477

AWARENESS

## Mann-Whitney: Pre-Q9, Post-Q9

### Method

$\eta_1$ : median of Pre-Q9

$\eta_2$ : median of Post-Q9

Difference:  $\eta_1 - \eta_2$

### Descriptive Statistics

Sample	N	Median
Pre-Q9	260	0.25
Post-Q9	62	0.25

### Estimation for Difference

Difference	CI for Difference	Achieved
		Confidence
0.0000000	(-0.0000000, 0.0000000)	95.01%

### Test

Null hypothesis  $H_0: \eta_1 - \eta_2 = 0$

Alternative hypothesis  $H_1: \eta_1 - \eta_2 \neq 0$

Method	W-Value	P-Value
Not adjusted for ties	42268.50	0.673
Adjusted for ties	42268.50	0.664

AWARENESS

## Mann-Whitney: Pre-Q11, Post-Q11

### Method

$\eta_1$ : median of Pre-Q11

$\eta_2$ : median of Post-Q11

Difference:  $\eta_1 - \eta_2$

### Descriptive Statistics

Sample	N	Median
Pre-Q11	260	2
Post-Q11	62	1

### Estimation for Difference

Difference	CI for	Achieved
	Difference	Confidence
-0.0000000 (0.0000000, 1)		95.01%

### Test

Null hypothesis  $H_0: \eta_1 - \eta_2 = 0$

Alternative hypothesis  $H_1: \eta_1 - \eta_2 \neq 0$

Method	W-Value	P-Value
Not adjusted for ties	43651.50	0.012
Adjusted for ties	43651.50	0.009

ADOPTION

## Mann-Whitney: Carwash\_Pre, Carwash\_Post

### Method

$\eta_1$ : median of Carwash\_Pre

$\eta_2$ : median of Carwash\_Post

Difference:  $\eta_1 - \eta_2$

### Descriptive Statistics

Sample	N	Median
Carwash_Pre	260	0.50
Carwash_Post	62	0.25

### Estimation for Difference

Difference	CI for Difference	Achieved
		Confidence
-0.0000000	(-0.0000000, 0.250000)	95.01%

### Test

Null hypothesis  $H_0: \eta_1 - \eta_2 = 0$

Alternative hypothesis  $H_1: \eta_1 - \eta_2 \neq 0$

Method	W-Value	P-Value
Not adjusted for ties	43623.00	0.013
Adjusted for ties	43623.00	0.010

ADOPTION

## Mann-Whitney: Positive BMPs\_Pre, Positive BMPs\_Post

### Method

$\eta_1$ : median of Positive BMPs\_Pre

$\eta_2$ : median of Positive BMPs\_Post

Difference:  $\eta_1 - \eta_2$

### Descriptive Statistics

Sample	N	Median
Positive BMPs_Pre	260	0.06250
Positive BMPs_Post	62	0.09375

### Estimation for Difference

Difference	CI for Difference	Achieved
		Confidence
0.0000000	(-0.0625000, -0.0000000)	95.01%

### Test

Null hypothesis  $H_0: \eta_1 - \eta_2 = 0$

Alternative hypothesis  $H_1: \eta_1 - \eta_2 \neq 0$

Method	W-Value	P-Value
Not adjusted for ties	41088.00	0.171
Adjusted for ties	41088.00	0.153

ADOPTION

## Mann-Whitney: NegBMPs\_Pre, NegBMPs\_Post

### Method

$\eta_1$ : median of NegBMPs\_Pre

$\eta_2$ : median of NegBMPs\_Post

Difference:  $\eta_1 - \eta_2$

### Descriptive Statistics

Sample	N	Median
NegBMPs_Pre	260	0.166667
NegBMPs_Post	62	0.083333

### Estimation for Difference

Difference	CI for Difference	Achieved
		Confidence
-0.0000000	(-0.0833333, 0.0000000)	95.01%

### Test

Null hypothesis  $H_0: \eta_1 - \eta_2 = 0$

Alternative hypothesis  $H_1: \eta_1 - \eta_2 \neq 0$

Method	W-Value	P-Value
Not adjusted for ties	41519.50	0.476
Adjusted for ties	41519.50	0.465

*Appendix D: Data Quality*

Appendix D.1 Assessment of MPCs and DQIs

MPC	DQI Addressed	Result of Data Quality Assessment
During the pilot test of survey, the group pilot testing mutually agrees on interpretation of survey and interview questions.	Validity, Reliability	During pilot testing, the survey questions were revised as needed until the group pilot testing the survey mutually agreed upon interpretation of survey questions. Interview questions were developed as a group and based upon survey questions to streamline the process.
During the audit, it is verified that data is being collected in accordance with SOPs.	Reliability, Objectivity, Integrity	Data was collected in accordance with the SOPs and any deviations from the SOPs were documented. Results of the audit are documented in Appendix D.2. A summary of deviations is included in Appendix D.3.
Responses from the surveys and observational data are consistent.	Reliability, Credibility,	The total number of parcels which could be observed during each observational drive-by visit was approximately 700. Four at-home car washing events were observed for the baseline drive-by visit and none were observed for the follow-up visit. Because of the low number of car washing events observed during the study, the survey and observational data could not be compared for consistency. Commercial car wash usage data was requested to supplement the observational drive-by visit data however no quantitative, longer-term data was received by the time this document was written. Observational data from one commercial car wash was obtained, which aligned with results from the survey and a market status report. Collection of additional commercial car wash data is recommended if surveys are collected in the future (see Section 6.4). Responses provided by participants for the survey were checked for consistency and were flagged if inconsistent. A summary of flagged data is included in Section 5.1.2.
During peer debriefing process, the group will mutually agree on the interpretation of the coding.	Objectivity	No data was generated for the study which needed to be coded. All survey data generated was translated to quantitative data using a Likert Scale. As such, peer debriefing did not occur for coded data.
Procedures for handling missing data and coding are followed.	Completeness	Missing data from incomplete surveys was flagged and identified with a flag code of "XRU." The incomplete surveys were kept as useable data, but the missing data was not included in the analyzed dataset.
The sample size identified for the study is consistent with the number who participated in the study.	Completeness, Transferability	The sample size identified for the study was 500-1,000 responses for both baseline and follow-up survey responses. During the study, 260 baseline and 62 follow-up survey responses were collected.  The goal for the study was to obtain at least 500 survey responses per the study QAPP. If a target sample size of 400 and 1,000 survey responses indicates a 95% and 97% confidence level, respectively; then a smaller sample size of 260 and 62 responses indicates a lower confidence level that the results are representative of the total City of Yakima population. The confidence level for the study's sample size was evaluated using a fact sheet provided by the University of Florida (Israel,1992), a revised confidence level of 94% and less than 90% for baseline and follow-up E&O survey data, respectively.

Hypothesis testing at a defined confidence interval was used to compare baseline and follow-up E&O program implementation data.	Objectivity	The baseline and follow-up E&O program implementation data was compared using hypothesis testing at a defined confidence interval.
Data was collected using mixed methods.	Credibility	The mixed methods used to collect data included survey and observational data. As mentioned previously, only four at-home car washing events were observed for the baseline drive-by visit and none were observed for the follow-up visit. Commercial car wash usage data was requested to supplement observational data and serve as another method of data collection. No long-term, quantitative data was received by the time this document was written. Observational data from one commercial car wash was obtained, which aligned with results from the survey and a market status report. Collection of additional commercial car wash data is recommended if surveys are collected in the future (see Section 6.4).
Participants being assessed were residents who drive one or more vehicle and live in the City of Yakima limits.	Transferability	In the survey, each participant was asked whether they drove a personal vehicle. Participants who responded “No,” were identified as a flagged response and the survey was removed from the analyzed dataset. Participants were also asked whether they lived in the City of Yakima limits, Yakima County limits, or “other”. Participants were included if they reported they lived City of Yakima or Yakima County. Yakima County was included as the County included a link to the City of Yakima car wash E&O materials and survey on their website; as a result, it is expected that Yakima County residents would also have been exposed to the E&O materials created for City of Yakima.
All those involved in data collection were trained on the SOPs prior to data collection.	Integrity	Those involved in data collection were trained on the SOPs prior to data collection.
Observational data will be used to verify survey reflects changes in awareness and behavior.	Integrity	During the baseline observational drive-by visit, four at-home car washes was observed, and none was observed for the follow-up visit. Due to a lack of at-home car washing during the time of the visits, residential car washing observational data was not used to verify survey data. Commercial car wash usage data was also requested to verify survey data. No commercial car wash usage data was received by the time this document was written. Observational data from one commercial car wash was obtained, which aligned with results from the survey and a market status report. Collection of additional commercial car wash data is recommended if surveys are collected in the future (see Section 6.4).

**Appendix D.2 Results of Audit**

Auditor name: <b>Jeff Wiemer</b>		Date/Time: <b>November 9, 2021 - 9:00 A.M</b>
Name(s) of personnel conducting data collection, data recording, interviews, data management: <b>MaKenna Lindberg, Osborn Consulting &amp; Taylor Hoffman-Ballard, Osborn Consulting</b>		
Standard Operating Procedure (SOP)	Actions Compliant with SOPs?	Comments
<b>Baseline Observational Drive-By Visit</b>		<b>Overall SOP audit notes:</b>
Were Neighborhood 1, Neighborhood 2, and Neighborhood 3 inspected for car washing behavior on two separate weekends, on at least one day per weekend in late July?	Yes	
Was each residence in each neighborhood observed during drive-by visit?	Yes	
Was evidence of observed at-home car washing behavior recorded on observational form and parcel map?	Yes	
Was the observational form filled out entirely for each observed at-home car wash?	Yes	
Was data scanned and sent to the research team to include in the analysis?	Yes	
<b>Baseline Survey</b>		<b>Overall SOP audit notes:</b>
Was the survey made available to each participant via online platform?	Yes	<b>Survey was available through Survey Monkey.</b>
Was the survey advertised via social media, the City website, the Yakima Herald Republic, and doorknockers in target neighborhoods?	Modified	<b>Survey was not advertised in the Yakima Herald Republic.</b>
Were incentives (car wash coupons) distributed to participants?	Yes	<b>There was 180 coupons handed out to participants.</b>
Were responses downloaded from SurveyMonkey and recorded for analysis?	Yes	
<b>Follow-Up Survey</b>		<b>Overall SOP audit notes:</b>
Was the survey made available to each participant via online platform?	Yes	<b>A paper format was also available to participants at the County Fair.</b>
Were surveys included in the baseline or follow-up data set based on their responses (whether they have seen E&O materials)?	Yes	
Were incentives (car wash towels) distributed to participants during fair?	Modified	<b>The towels were used as incentives to draw participants, so they could take the survey.</b>
Were responses downloaded from SurveyMonkey and recorded for analysis?	Yes	

Auditor name: <b>Jeff Wiemer</b>	Date/Time: <b>November 9, 2021 - 9:00 A.M</b>	
Name(s) of personnel conducting data collection, data recording, interviews, data management: <b>MaKenna Lindberg, Osborn Consulting &amp; Taylor Hoffman-Ballard, Osborn Consulting</b>		
Standard Operating Procedure (SOP)	Actions Compliant with SOPs?	Comments
<b>Follow-up Observational Drive-By Visit</b>	<b>Overall SOP audit notes:</b>	
Were Neighborhood 1, Neighborhood 2, and Neighborhood 3 inspected for car washing behavior on two separate weekends, on at least one day per weekend in late September to early October?	<b>Modified</b>	<b>The dates were changed to mid-October and late October.</b>
Was each residence in each neighborhood observed during drive-by visit?	<b>Yes</b>	
Was evidence of observed at-home car washing behavior recorded on observational form and parcel map?	<b>Yes</b>	<b>The follow-up observational drive-by visit was conducted, but no car washing activities were observed.</b>
Was the observational form filled out entirely for each observed at-home car wash?	<b>Yes</b>	<b>No car washing activities were observed during the follow-up visit.</b>

Data Management Procedures	Actions Compliant with Procedures?	Comments:
<b>Data Identification</b>	<b>Overall SOP audit notes:</b>	
Was data collected identified by a unique identification number that incorporates order and date/time received/recorded?	Modified	The identification number column didn't include the date & time. The date & time is located in a different column.
Were baseline data identified with "B" and follow-up data identified with "F"?	Modified	Two separate tabs on the spreadsheet was used instead of using letters for the identifiers.
Were survey and observational data identified with "S" and "O" respectively?	Modified	Wanted to keep the survey and observational data separated, so two tabs on the spreadsheet was used.
<b>Data Recording &amp; Reporting Requirements</b>	<b>Overall SOP audit notes:</b>	
Were survey responses exported from SurveyMonkey® and recorded in Excel?	Yes	
Were observational forms scanned and transcribed into Excel?	Yes	
<b>Procedures for Missing Data</b>	<b>Overall SOP audit notes:</b>	
Was missing data coded with "M" in Excel and was a note included explaining why data is missing (if known)?	Yes	It was flagged and noted in a separate column.

Appendix D.3 SOP Deviations Documentation

Revision #	Section	Original Instructions	Suggested Revision	Reason for Change
1	7.1	The survey link will be located on water utility bills.	The survey link was not included in the utility bills.	Survey links in the utility bills is proposed for future recommendations.
2	7.1	There will be separate baseline and follow-up survey links.	One link was used to access the online survey.	The baseline and follow-up data was categorized using a question in the survey asking whether the participant has seen any car washing E&O information.
3	7.1	City and other contributing entities staff will distribute brochures and stickers at a Central Washington State Fair booth.	City and other contributing entities staff will distribute tote bags and hand sanitizers at the Central Washington State Fair.	Brochure and stickers were not distributed at the Fair. Stickers were ordered but was not delivered in time to distribute.
4	8.1	The survey will be disseminated via newspaper advertisement, social media posts, the City's website and the Central Washington State Fair	Instead of the survey being in the newspaper, a story was published in the newsletter and Yakima Public Affairs Channel (Y-PAC).	The newsletter was used to supplement the newspaper and an additional news source, Y-PAC, was used to increase resident outreach.
5	8.2.4	The follow-up observational drive-by visits will occur on two consecutive weekends following the fair in late September to early October.	Follow-up observational drive-by visits were performed on two consecutive weekends in late October.	The drive-by site visits dates were planned in late October due to schedule availability.
6	10.1	Data will be identified with a unique identification number that includes the date and type of information. The data will be logged will be identified with the following codes, "B" baseline, "F" for follow-up, "S" survey and "O" for observational data.	The English survey responses were identified with the prefix "E-A," followed by a randomly assigned number between 1-300 whereas the Spanish surveys were identified with "S-A" followed by a randomly assigned number between 1-100. Observational data was identified by parcel number.	The survey identification number was revised to include whether the type of survey was English or Spanish. The location of the at-home car wash observation could be identified better by the parcel number.
7	10.2	Observational data forms will be transcribed into Excel and analyzed.	No follow-up observational data was observed during the visits; therefore, the data could not be analyzed and compared. Commercial car wash usage data was obtained to supplement the observational data.	No at-home car washing was observed during two consecutive weekends after the Central Washington State Fair.
8	10.3	Missing data will be denoted by the code "M."	Surveys with missing data were flagged and an explanation of the flagged reasoning was provided.	The flag code denoted for missing data was identified as "XRU." The survey was started but one or more questions was either not selected properly or skipped.
9	11.0	Audits will be conducted four times: prior to the use of the checklist to collect baseline observational data; following the use of the checklist to collect baseline observational data;	An audit will be conducted after data collection for the study is complete. Staff which are involved in data collection will be trained on the SOPs prior to beginning data collection.	The entities participating in collection of observational data were trained in the SOPs prior to use of the checklist to collect baseline observational data. Following collection of baseline observational data, the participating entities involved in data

Revision #	Section	Original Instructions	Suggested Revision	Reason for Change
		prior to the use of the checklist to collect follow-up observational data; and following the use of the checklist to collect follow-up observational data.		collection described collecting data in accordance with the SOPs. An audit was conducted after data collection for the study was complete to determine whether all of the SOPs in the QAPP were followed for the study.
10	12.1	Peer debriefing will be used to validate coding responses and barriers	No peer debriefing was completed to validate the coding responses and barriers because no data needed to be coded.	No data needed to be coded because the survey data collected was all multiple-choice answers. Data was translated to quantitative data using a Likert Scale.

Appendix D.4 Results of Data Verification

---

**From:** Dominguez, David <[David.Dominguez@uniongapwa.gov](mailto:David.Dominguez@uniongapwa.gov)>  
**Sent:** Thursday, December 2, 2021 4:42 PM  
**To:** Taylor Hoffman-Ballard <[taylorh@osbornconsulting.com](mailto:taylorh@osbornconsulting.com)>  
**Subject:** RE: City of Yakima E&O Effectiveness Study Data Verification Materials

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you know the content is safe.

Taylor:

Attached corrected data.

Thank you,



**David Dominguez, E.I.T.**  
Public Works & Community Development  
City of Union Gap  
(509) 249-9211  
[david.dominguez@uniongapwa.gov](mailto:david.dominguez@uniongapwa.gov)

---

P.O. BOX 3008 | 102 WEST AHTANUM | UNION GAP, WA 98903-0008

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This table summarizes the results of the data verification for the study. Data verification was performed by a data verifier, whose role for the study was to review the survey paper copies (in PDF format) and verify that the responses were correctly transferred to an excel spreadsheet. The rows of data in the table represent discrepancies between the responses in the survey paper copies and the responses in the excel spreadsheet show how they were resolved. The "PDF" column reports what was shown in the survey paper copies and the "Excel" column reports what was shown in the excel sheet at the time of data verification. The resolution column summarizes the actions completed (as needed) to resolve the differences between what was shown in the survey paper copies and recorded in the excel spreadsheet.

Respondant ID	Question No.	PDF	EXCEL	Resolution
P0002	10(3)	no answer	never	Revised to match PDF
P0004	11	all	all but "use a commercial car wash"	Revised to match PDF
P0029	5	c	d	Revised to match PDF
P0044	11	no answer	not applicable	No Change (Excel Matches PDF)
P0044	12	no answer	e	Revised to match PDF
P0048	11	no answer	blank	No Change (Excel Matches PDF)
P0054	11	no answer	blank	No Change (Excel Matches PDF)
	12	no answer	blank	No Change (Excel Matches PDF)
	13	no answer	blank	No Change (Excel Matches PDF)
	5	no answer	not applicable/have not seen any information	Revised to match PDF
P0056	8	c	blank	Revised to match PDF
P0056	10(1)	sometimes	frequently/sometimes	Revised to match PDF
P0058	10(5)	no answer	blank	No Change (Excel Matches PDF)
P0059	12	no answer	blank	No Change (Excel Matches PDF)
P0059	13	no answer	blank	No Change (Excel Matches PDF)
P0061	10(6)	no answer	not applicable	Revised to match PDF
P0065	5	no answer	not applicable/have not seen any information	Revised to match PDF
P0071	10(2)	always, never	always	Revised to match PDF
P0073	10(2)	always, never	always	Revised to match PDF (always, sometimes)
p0075	13	cost, lack of knowledge	cost	Revised to match PDF
P0077	10(8)	sometimes, never	sometimes	Revised to match PDF
	13	lack of knowledge, time/convenience, none	lack of knowledge, time/convenience, other	Revised to match PDF
P0084	8	a	blank	Revised to match PDF
P0085	10(4)	sometimes	blank	Revised to match PDF
P0089	4	a,b,c,d,e	a	Revised to match PDF
P0089	10(4)	no answer	never	Revised to match PDF
P0095	5	no answer	not applicable/have not seen any information	Revised to match PDF

*Appendix E: Car Wash Usage Data Collected*

Name	Address	Phone #	Description	Resolution
Spanky's Auto Wash	1609 W Lincoln Ave, Yakima, WA 98902	(509)-469-4494	Left a voicemail with call back number, obtained a manager's email who said would provide car wash data	Sent email with request of data. No response
Auto Spa Central Washington	416 S 72nd Ave, Yakima, WA 98908	(509)-965-4500	Called 2-3 times, No Answer (Voicemail box full)	N/A
Classic Auto Wash	907 E Nob Hill Blvd, Yakima, WA 98901	(509)-576-6850	Called 2-3 times, No Answer, Voicemail with call back number was provided	N/A
GTO Carwash	2121 S 1st St, Yakima, WA 98903	(509)-575-0049	Called 2-3 times, No Answer, Voicemail with call back number was provided	N/A
Elephant Super Car Wash	1220 N 40th Ave, Yakima, WA 98908	(509)-457-4140	Spoke with someone who stated usage used to be 110-120 cars per week, Now they are only getting 20-30 per week. It will take him a while to reach the data but he will try and send through email	Car Wash never reached back with data. From verbal description, this car wash has declined in users/week compared to previous years.

## Nicole Chen

---

**From:** Taylor Hoffman-Ballard  
**Sent:** Monday, November 1, 2021 3:04 PM  
**To:** gabrielp.spankys@gmail.com  
**Cc:** Francisco Jimenez  
**Subject:** Spanky's Yakima Car Wash Usage Data

Hello,

I believe my coworker Francisco reached out to you in the last week or so. I wanted to check in and see if you had any questions regarding his request for car wash usage data. As he mentioned, we're working with the City of Yakima on a study which is evaluating the City's public education and outreach program related to residential car washing. The education and outreach program encourages City of Yakima residents to use commercial car washes, and we were hoping to look at some car wash usage data (specifically number of car washes purchased on a daily, weekly, or monthly basis) to determine if we see a change in number of people using commercial car washes, particularly this year. He mentioned you may need some time to gather data, but I wanted to make sure you had my contact information (see below) as well in case you had any questions.

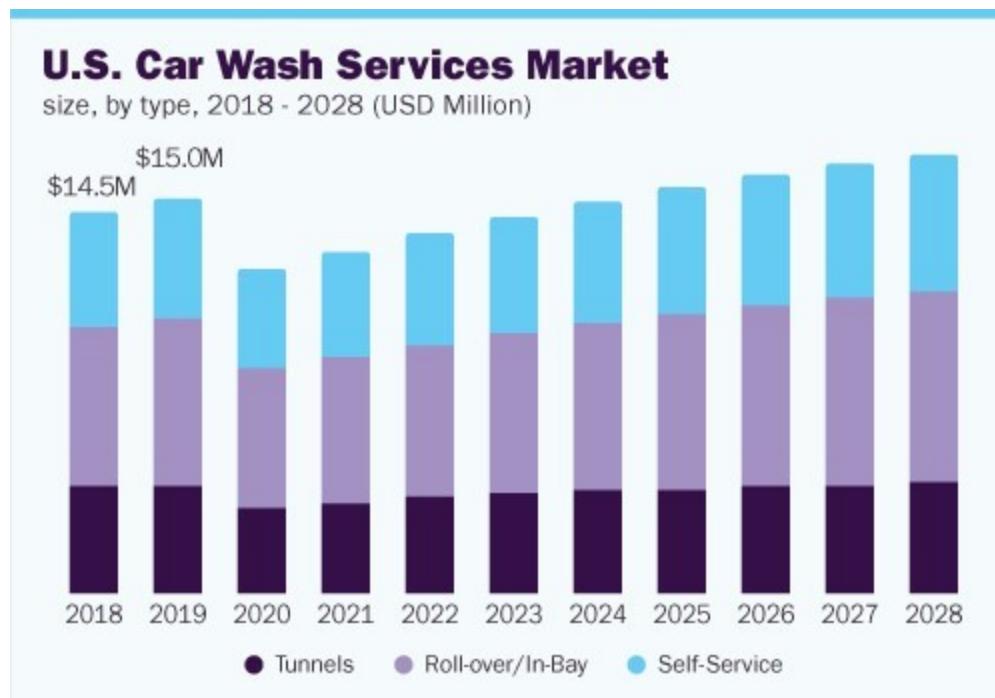
Thank you for your time, and I look forward to hearing from you.

Taylor

### **Taylor Hoffman-Ballard, PE**

Project Manager  
Osborn Consulting  
office. (509) 867-3654 Ext. 302

Source: Varma, J. (2021). Car Wash Service Market Analysis, 2016-2018. Grand View Research, Inc



Source: Varma, J. (2021). Car Wash Service Market Analysis, 2016-2018. Grand View Research, Inc.

*Appendix F: Summary of QAPP Revisions*

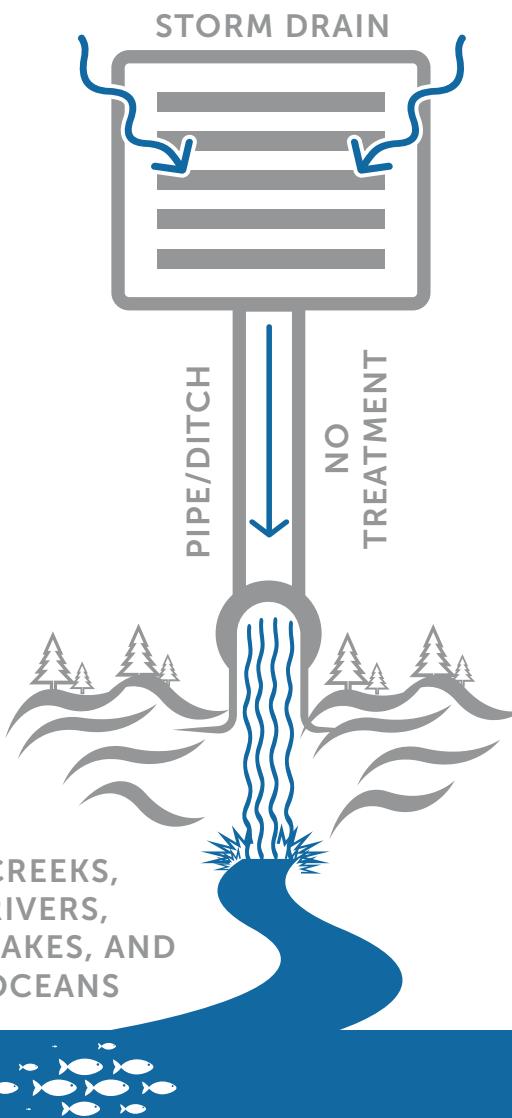
No changes to the QAPP were made except for the changes to SOPs located in Appendix D.3.

*Appendix G: Revised E&O Materials and Survey*

## Revised Brochure

Washing your car on the street or in your driveway causes wash wastewater to flow into the storm drain system.

Water collected by a storm drain **IS NOT TREATED** and goes directly into our natural environment.



If car wash wastewater enters a storm drain, let us know!

## REPORT A SPILL

509.575.6077

MADE BY: OSBORN CONSULTING, INC.  
FOR THE CITY OF YAKIMA



# ENVIRONMENTALLY FRIENDLY CAR WASHING METHODS



A PUBLIC SERVICE MESSAGE FROM

# WASH CARS, NOT FISH

## THE FACTS

Changing the way you wash your car can help protect our natural environment.

Outdoor car washing can result in harmful pollutants from soap and cleaners entering the storm system. Our storm system flows directly to critical natural habitats.

These pollutants degrade the water quality of our streams and endanger the wildlife that lives in or near the streams.



## ENVIRONMENTALLY FRIENDLY METHODS

(what you can do!)



**Use a commercial car wash.** Commercial car washes are required to send all their wash water to sanitary sewers for treatment and recycle most of the water. Most commercial car washes use 60% less water in the entire washing process compared to rinsing your car at home.



**If a commercial car wash isn't an option, wash cars on an area that absorbs water**, such as gravel, grass, or loose soil. Be sure to use biodegradable, non-toxic cleaners. Diverting any water that may enter the storm system is easy! Use items you already own (boxes, towels, etc.) to keep the flow of water away from storm drains.



**Avoid using soap**, instead, try using only water or a waterless car wash product that can be applied and wiped off with a cloth, leaving the storm drains clear of potential pollutants. If you need soap, be sure to use chlorine-free and phosphate-free soap, or use biodegradable soap.



**Only wash the exterior of your car.** Cleaning the engine bay, truck cargo area, mounted equipment, or the undercarriage of your vehicle can lead to harmful pollutants entering the storm system.

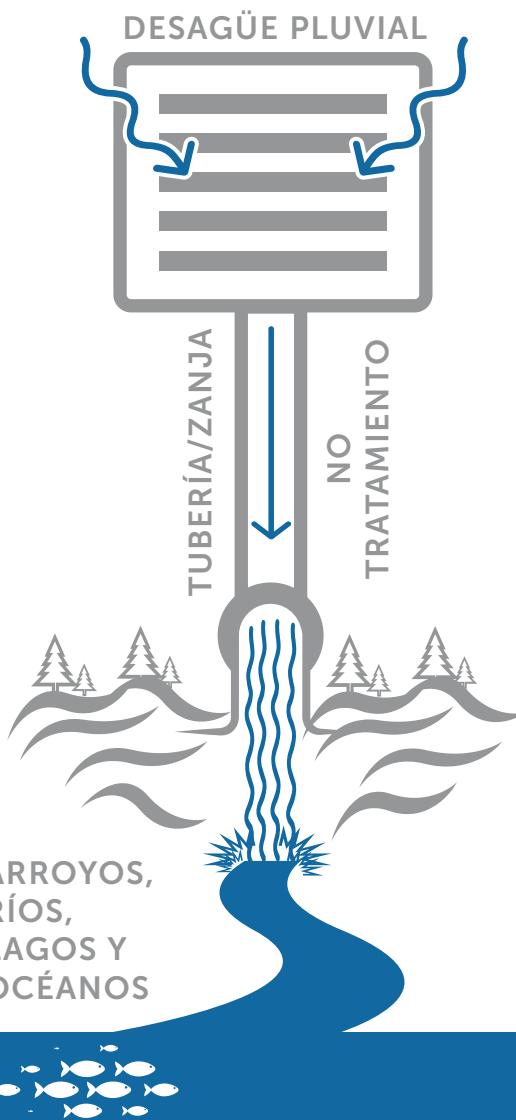
### IN CASE OF SPILL:

If car wash wastewater does enter the storm system, we want to know! Report spills to the Spill Hotline by calling:

**509.575.6077**

Lavando su coche en la calle o en su camino de entrada hace que las aguas residuales de lavado fluyen en el sistema de desagüe pluvial.

El agua recogida por un desagüe pluvial **NO ES TRATADA** y va directamente a nuestro medioambiente natural



Si las aguas residuales del lavado de coches ingresan al sistema de desagüe, ¡Queremos saberlo!

#### EN CASO DE DERRAME

509.575.6077

MADE BY: OSBORN CONSULTING, INC.  
FOR THE CITY OF YAKIMA



## MÉTODOS DE LAVAR COCHES QUE SON RESPETUOSO CON EL MEDIOAMBIENTE



## LOS HECHOS

Cambiando la forma de lavar su coche puede ayudar a proteger nuestro medioambiente natural.

El lavado de coches a fuera puede resultar en contaminantes dañinos del jabón y los limpiadores que ingresan al sistema de desagüe pluvial. Nuestro sistema de desague fluye directamente a habitats naturales críticos.

Estos contaminantes degradan la calidad del agua de nuestros arroyos y ponen en peligro la vida silvestre que vive en o cerca de los arroyos.



## MÉTODOS RESPETUOSOS CON EL MEDIOAMBIENTE

(lo que puede hacer!)



**Utilice un lavado de coches comercial.** Los lavados comerciales de coches están obligados enviar toda su agua de lavado a las alcantarillas sanitarias para su tratamiento y reciclar la mayor parte del agua. La mayoría de los lavados comerciales de coches utilizan un 60% menos de agua en todo el proceso de lavado en comparación con enjuagando su coche en casa.



**Si un lavado comercial de coches no es una opción, lava los coches en un área que absorba agua,** como grava, sácate o tierra suelta. Asegúrese de utilizar limpiadores biodegradables y no tóxicos. ¡Es fácil desviar cualquier agua que pueda entrar en el sistema de desagües! Utilice los artículos que ya posea (cajas, toallas, etc.) para mantener el flujo de agua lejos de los desagües pluviales.



**Evite el uso de jabón,** en su lugar, intente utilizar sólo agua o un producto de lavado de coches sin agua que se puede aplicar y limpiar con un trapo, dejando los desagües pluviales libre de contaminantes potenciales. Si necesita jabón, asegúrese de usar jabón sin cloro y sin fosfato, o use jabón biodegradable.



**Lava sólo el exterior de su coche.** La limpieza del compartimiento del motor, el área de carga del camión, el equipo montado o, el chasis de su vehículo puede provocar la entrada de contaminantes dañinos al sistema de desagüe pluvial.

### EN CASO DE DERRAME:

Si las aguas residuales del lavado de coches ingresan al sistema de desagüe, ¡Queremos saberlo! Reporte derrames a la Línea Directa de Derrames llamando al

**509.575.6077**

## Revised Flier



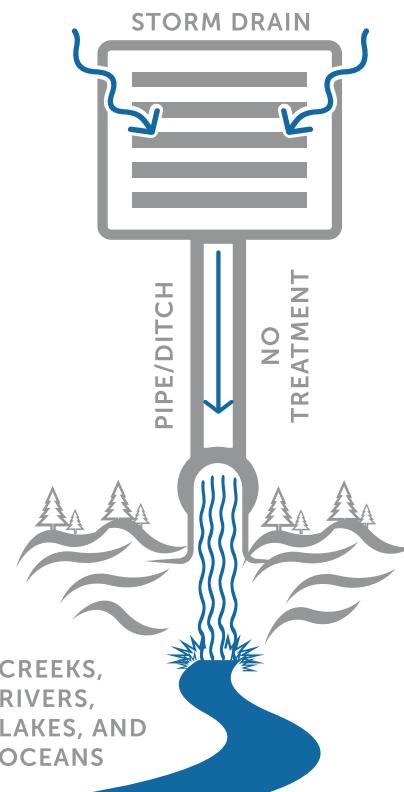
# ENVIRONMENTALLY FRIENDLY CAR WASHING METHODS



Changing the way you wash your car can help protect our natural environment. Outdoor car washing can result in harmful pollutants from soap and cleaners entering the storm system. Our storm system flows directly to critical natural habitats. These pollutants degrade the water quality of our streams and endanger the wildlife that lives in or near the streams.

**Washing your car on the street or in your driveway causes wash wastewater to flow into the storm drain system.**

**Water collected by a storm drain IS NOT TREATED and goes directly into our natural environment.**



**Use a commercial car wash.** Commercial car washes are required to send all their wash water to sanitary sewers for treatment and recycle most of the water. Most commercial car washes use 60% less water in the entire washing process compared to rinsing your car at home.



**If a commercial car wash isn't an option, wash cars on an area that absorbs water**, such as gravel, grass, or loose soil. Be sure to use biodegradable, non-toxic cleaners. Diverting any water that may enter the storm system is easy! Use items you already own (boxes, towels, etc.) to keep the flow of water away from storm drains.



**Avoid using soap**, instead, try using only water or a waterless car wash product that can be applied and wiped off with a cloth, leaving the storm drains clear of potential pollutants. If you need soap, be sure to use chlorine-free and phosphate-free soap, or use biodegradable soap.



**Only wash the exterior of your car.** Cleaning the engine bay, truck cargo area, mounted equipment, or the undercarriage of your vehicle can lead to harmful pollutants entering the storm system.

## IN CASE OF SPILL:

If car wash wastewater does enter the storm system, we want to know!  
Report spills to the Spill Hotline by calling **509.575.6077**.





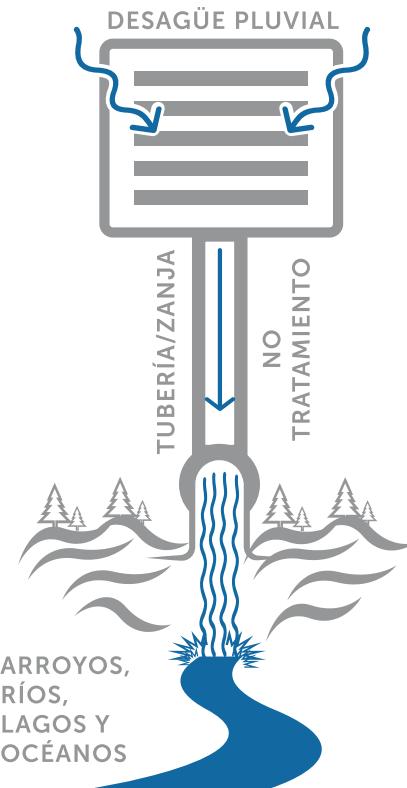
# MÉTODOS DE LAVAR COCHES QUE SON RESPETUOSO CON EL MEDIOAMBIENTE



Cambiando la forma de lavar su coche puede ayudar a proteger nuestro medioambiente natural. El lavado de coches a fuera puede resultar en contaminantes dañinos del jabón y los limpiadores que ingresan al sistema de desagüe pluvial. Nuestro sistema de desagües fluye directamente a hábitats naturales críticos. Estos contaminantes degradan la calidad del agua de nuestros arroyos y ponen en peligro la vida silvestre que vive en o cerca de los arroyos.

**Lavando su coche  
en la calle o en su  
camino de entrada  
hace que las aguas  
residuales de lavado  
fluyen en el sistema  
de desagüe pluvial.**

**El agua recogida por  
un desagüe pluvial  
NO ES TRATADA  
y va directamente  
a nuestro  
medioambiente  
natural.**



**Utilice un lavado de coches comercial.** Los lavados comerciales de coches están obligados enviar toda su agua de lavado a las alcantarillas sanitarias para su tratamiento y reciclar la mayor parte del agua. La mayoría de los lavados comerciales de coches utilizan un 60% menos de agua en todo el proceso de lavado en comparación con enjuagando su coche en casa.



**Si un lavado comercial de coches no es una opción,  
lava los coches en un área que absorba agua,** como grava, sácate o tierra suelta. Asegúrese de utilizar limpiadores biodegradables y no tóxicos. ¡Es fácil desviar cualquier agua que pueda entrar en el sistema de desagües! Utilice los artículos que ya posea (cajas, toallas, etc.) para mantener el flujo de agua lejos de los desagües pluviales.



**Evite el uso de jabón,** en su lugar, intente utilizar sólo agua o un producto de lavado de coches sin agua que se puede aplicar y limpiar con un trapo, dejando los desagües pluviales libre de contaminantes potenciales. Si necesita jabón, asegúrese de usar jabón sin cloro y sin fosfato, o use jabón biodegradable.



**Lava sólo el exterior de su coche.** La limpieza del compartimiento del motor, el área de carga del camión, el equipo montado o, el chasis de su vehículo puede provocar la entrada de contaminantes dañinos al sistema de desagüe pluvial.

## EN CASO DE DERRAME:

Si las aguas residuales del lavado de coches ingresan al sistema de desagüe, ¡Queremos saberlo! Reporte derrames a la Línea Directa de Derrames llamando al **509.575.6077**.



## Revised Social Media Posts

## Post #1 for Environmentally Friendly Car Washing Methods

Did you know storm drains flow directly into our natural environment? Washing your car on the street or in your driveway causes wash wastewater to impact creeks, rivers, streams, and the wildlife that call these places home. Do your part to protect our environment by preventing car wash wastewater from entering our storm system.



## Post #2 for Environmentally Friendly Car Washing Methods

Protect the environment by washing your car at a commercial car wash. Commercial car washes are required to send all their wash water to sanitary sewers for treatment and recycle most of the water. On average, commercial car washes use 60% less water in the entire washing process compared to rinsing your car at home.



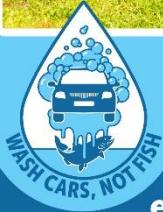
### Post #3 for Environmentally Friendly Car Washing Methods

Planning on washing your car this weekend? If a commercial car wash isn't an option, wash your car on an area that absorbs water, such as gravel, grass, or loose soil. This technique can be used only when using biodegradable, non-toxic cleaners. Protect our environment by preventing wash wastewater from entering the storm drain. Diverting any water that may enter the storm system is easy! Use items you already own (boxes, towels, etc.) to keep the flow of water away from storm drains.

**If you wash your car at home,**



**use a grass or gravel area that can absorb water and prevent water from entering the storm drain**

 **WASH CARS, NOT FISH**

### Post #4 for Environmentally Friendly Car Washing Methods

Did you know you can use waterless products to wash your car? This can make a huge difference on our environment. Use biodegradable soap or waterless products if you wash your car at home.

**Did you know there are waterless car wash products?**



**Use biodegradable soap or waterless products to wash your car at home**

 **WASH CARS, NOT FISH**

**If a commercial carwash isn't an option**

Best Management Practice Post #2:

## Post #5 for Environmentally Friendly Car Washing Methods

When you wash your car, avoid washing the engine bay, truck cargo area, mounted equipment, or the undercarriage of your car. Washing these areas can lead to harmful pollutants entering the storm system. It's best to use a commercial carwash if you can!



## Post #6 for Environmentally Friendly Car Washing Methods

How have you changed your car washing habits to protect the environment? Let us know in the comments!



## Post # 1 Métodos para Lavar Coches que son Respetuosos con el Medioambiente

¿Sabía que los desagües pluviales fluyen directamente a nuestro medio ambiente natural? Lavando su coche en la calle o en su camino de entrada hace que las aguas residuales de lavado afecten arroyos, ríos y la vida silvestre que llama hogar a estos lugares. Haga su parte para proteger nuestro medio ambiente evitando que las aguas residuales del lavado de coches ingresen a nuestro sistema de desagüe pluvial.



## Post # 2 Métodos para Lavando Coches que son Respetuosos con el Medioambiente

Proteja el medio ambiente lavando su coche en un lavado comercial. Los lavados comerciales de coches están obligados enviar toda su agua de lavado a las alcantarillas sanitarias para su tratamiento y reciclar la mayor parte del agua. En promedio, los lavados comerciales de coches usan un 60% menos de agua en todo el proceso de lavado en comparación con el lavado de su coche en casa.



### Post # 3 Métodos para Lavar Coches que son Respetuosos con el Medioambiente

¿Está planeando lavar su coche este fin de semana? Si un lavado de coches comercial no es una opción, lave su coche en un área que absorba agua, como grava, sácate, o tierra suelta. Esta técnica sólo se puede utilizar cuando se utilizan limpiadores biodegradables y no tóxicos. Proteja nuestro medio ambiente evitando que las aguas residuales de lavado entren en el desagüe pluvial. ¡Es fácil desviar cualquier agua que pueda entrar en el sistema de desagüe! Utilice los artículos que ya posea (cajas, toallas, etc.) para mantener el flujo de agua lejos de los desagües pluviales.



### Post # 4 Métodos para Lavar Coches que son Respetuosos con el Medioambiente

¿Sabía que puede usar productos sin agua para lavar su coche? Esto puede hacer una gran diferencia en nuestro medio ambiente. Use jabón biodegradable o productos sin agua si lava su coche en casa.



## Post # 5 Métodos para Lavar Coches que son Respetuosos con el Medioambiente

Cuando lava su coche, evite lavar el compartimiento del motor, el área de carga del camión, el equipo montado o el chasis de su coche. El lavado de estas áreas puede provocar que los contaminantes dañinos ingresen al sistema de desagües. ¡Es mejor utilizar un lavado de coches comercial si usted puede!



## Post # 6 Métodos para Lavar Coches que son Respetuosos con el Medioambiente

¿Cómo ha cambiado sus hábitos de lavar su coche para proteger el medio ambiente? ¡Déjanos saber en los comentarios!



## Revised Survey

# Car Wash Wastewater Management Education and Outreach Effectiveness Study Survey

*This five-minute survey developed by Osborn Consulting, Inc. is part of a research study to understand current methods of car washing in the City of Yakima. Your anonymous response will vitally impact future education and outreach programs implemented by the City of Yakima to help preserve our natural environment.*

**1) Where do you live?**

- a. City of Yakima
- b. Outside of City of Yakima limits, but within Yakima County
- c. Other

**2) Do you drive a personal vehicle?**

- a. Yes
- b. No

**3) Have you seen information on environmentally friendly car washing methods from the City of Yakima, and if so, where did you see it?**

- a. City of Yakima website
- b. City of Yakima social media (Facebook, Instagram, Twitter)
- c. I received a brochure at my home.
- d. No
- e. Other

**4) How frequently do you use these methods? Select all that apply.**

	Always	Sometimes	Never
Wash car at home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use a commercial car wash	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wash car on pavement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wash car on grass or gravel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use waterless car washing products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use environmentally friendly soap	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drain/hose water and soap into the street	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prevent soap spills from entering storm drain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wash vehicle engine, undercarriage, or tires	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**5) Which of the following do you consider to be environmentally friendly practices? Select all that apply.**

- Wash car at home
- Use a commercial car wash
- Wash car of pavement
- Wash car on grass or gravel
- Use waterless car washing products
- Use environmentally friendly soap
- Drain/hose water and soap into the street
- Prevent soap spills from entering storm drain
- Wash vehicle engine, undercarriage, or tires

**6) Which of these are barriers that keep you from using environmentally friendly car wash methods?**

- Cost
- Lack of Knowledge
- Time/Convenience
- Lack of access to materials
- Quality of product
- Other
- None

**7) What is the primary language spoken in your household?**

- a. English
- b. Spanish

Other: \_\_\_\_\_

# **Educación para la gestión de aguas residuales en lavado de coches y encuesta de estudio sobre efectividad de extensión**

*Esta encuesta de cinco minutos desarrollada por Osborn Consulting, Inc. es parte de un estudio de investigación para comprender los métodos actuales de lavado de coches en la Ciudad de Yakima. Su respuesta anónima tendrá un impacto vital en los programas futuros de educación y extensión implementados por la Ciudad de Yakima para ayudar a preservar nuestro medio ambiente natural.*

## **1) ¿Dónde vive?**

- a. La Ciudad de Yakima
- b. Fuera de los límites de la Ciudad de Yakima, pero dentro del Condado de Yakima
- c. Otro

## **2) ¿Conduce un vehículo personal?**

- a. Sí
- b. No

## **3) ¿Ha visto información sobre métodos de lavado de coches con el medio ambiente de la Ciudad de Yakima, y si es así, dónde lo vio?**

- a. El sitio web de la Ciudad de Yakima
- b. Redes sociales de la Ciudad de Yakima (Facebook, Instagram, Twitter)
- c. Recibí un folleto en mi casa
- d. No
- e. Otro

4) ¿Con qué frecuencia utiliza estos métodos? Seleccione todo lo que aplica.

	Siempre	A veces	Nunca
Lavar el coche en casa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Usar un lavado de coches comercial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lavar el coche en el pavimento	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lavar el coche en el sacate o grava	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Usar productos de lavar coches sin agua	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Usar jabón respetuoso con el medio ambiente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drenar el agua de la manguera y jabón en la calle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prevenir derrames de jabón entrando en el desagüe pluvial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lavar el motor del vehículo, el chasis, o las llantas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**5) ¿Cuáles de la siguiente considera prácticas respetuosas con el medio ambiente? Seleccione todo los que aplica.**

- Lavar el coche en casa
- Usar un lavado de coches comercial
- Lavar el coche en el pavimento
- Lavar el coche en el sacate o grava
- Usar productos de lavado de autos sin agua
- Usar jabón respetuoso con el medio ambiente
- Drenar el agua de la manguera y jabón en la calle
- Prevenir derrames de jabón entrando en el desagüe pluvial
- Lavar el motor del vehículo, el chasis, o las llantas

**6) ¿Cuáles de estas son barreras que le impiden utilizar métodos de lavado de coches respetuosos con el medio ambiente?**

- El costo
- Falta de conocimiento
- Tiempo/Conveniencia
- Falta de acceso a los materiales
- Calidad de producto
- Otro
- Ninguno

**7) ¿Qué es el idioma principal en su hogar?**

- a. Inglés
- b. Español

Otro: \_\_\_\_\_

# Technical Evaluation Report