

Eastern Washington Stormwater Effectiveness Studies

Final Report

BMP Owner Awareness

Study Classification:

- Structural BMP Operational BMP Education & Outreach

Study Objective:

- Evaluate Effectiveness Compare Effectiveness



Prepared By:

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Final Report Public Information

The final report will be available on the regional Wenatchee Valley Stormwater Technical Advisory Committee webpage hosted by the City of Wenatchee, www.wenatcheewa.gov/wvstac.

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G19 Certification and Signature for Stormwater Management Program Effectiveness Studies, Eastern Washington Phase II Municipal Stormwater Permit, Section/Paragraph: S8.A.1: Effectiveness Study Final Report

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that Qualified Personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations.


Jessica Shaw, Deputy Public Works Director, Utilities


Date

1.0 Background

Increasingly dense development within urbanized areas has required improved methods to manage stormwater runoff from impervious surfaces. The use of pipes and catch basins was adequate for a time, but rapid urbanization, persistent degradation of natural landscapes, water quality and climate-change related increases in the amount and intensity of rainfall have all made stormwater management a high priority. To prevent or minimize water quality impacts of new and redevelopment projects, Eastern Washington Phase II Municipal Stormwater Permittees were required to develop, implement, and enforce a program to address post-construction stormwater runoff from public and private projects beginning in 2011. The minimum requirement set forth by the Permit was a regulatory mechanism for projects meeting a one-acre threshold to manage a percentage of stormwater onsite using post-construction best management practices (BMPs). Permitted jurisdictions were also required to implement a regulatory mechanism to ensure long-term maintenance of the BMPs.

The Permit states that project proponents shall ensure implementation of long-term operation and maintenance standards to protect water quality and reduce the discharge of pollutants to the maximum extent practicable. As project are completed, developers transfer BMP maintenance responsibility to property owners and homeowners associations. In many jurisdictions, for projects built after 2011, BMP owners have a recorded Declaration of Stormwater Covenants, also referred to as an Operations and Maintenance Agreement (O&M agreement), detailing the type, location, and maintenance requirements for the BMP requiring inspection and maintenance. For many Permittees, the O&M agreement recorded with the County Auditor at the time of BMP installation is used to inform property owners about the purpose and maintenance requirements of the BMP. For many projects built before 2011, information about the stormwater BMP was incorporated into the covenants recorded on the subdivision plat or in the homeowners' association covenants.

The effectiveness of the O&M agreement used as the primary mechanism to inform property owners about their BMP, maintenance responsibilities and purpose of their BMP was evaluated based on owner awareness of the BMP and the O&M agreement. Surveys responses were compared from a test group (Test (w/ O&M)), consisting of residents in subdivisions with an O&M agreement, and a control group (Control (w/o O&M)), consisting of residents in subdivisions without an O&M agreement, to determine if there was any significant difference in owner awareness between the two groups.

2.0 Study Method

Goldstreet Design, in collaboration with their research partner, Corona Insights, was hired to conduct the surveys and provide the statistical analysis of the results. All survey data was collected by the consultant. The standard operating procedures, notification mailing, and survey used in this study can be found in Appendix A.

There were two modifications made to the Residential Survey Standard Operating Procedure (SOP) documented in the BMP Owner Awareness Education and Outreach Study Quality Assurance Project Plan, approved February 14, 2022. The first change to the SOP included

utilizing only a web-based survey and removing the option for a mail in survey. During the survey validation process, the consultant advised the Technical Advisory Group, for the cost and effort of mailing and returning paper surveys, the number of responses would be minimal. Removing the mail survey option was also determined to be more environmentally conscious, by reducing printed and mailed pages, which would likely be recycled or thrown away. The second modification to the SOP included the use of an incentive to complete the survey. The use of an incentive was authorized by consulting with jurisdiction Finance Departments to determine how the incentive could be included. After a respondent completed the survey, they would be eligible to enter a drawing for a fifty-dollar Visa gift card. The incentive was offered by Goldstreet Design and included in the jurisdiction invoices.

2.1 Survey Instrument

The survey instrument was designed to evaluate BMP owner awareness using questions to address overall knowledge of the BMP, any concerns or attitudes that residents may have about the BMP, and any maintenance or actions that have been done associated with the BMP. The homeowner survey was conducted by Goldstreet Design through distribution of a post card with a QR code and a traditional web link to the survey. To encourage survey responses and avoid being mistaken as “junk” mail, the postcard was designed with an introduction to Goldstreet Design and Corona Insights that included the purpose of the survey, the logos for the jurisdictions in the study area, and a local return address.

2.2 Test and Control Area Surveys

Each jurisdiction in the study area, which includes Chelan County, Douglas County, East Wenatchee, and Wenatchee, compiled a list of subdivisions meeting the study criteria; one acre or larger at the time of construction with one or more BMPs serving more than one home. As development is regularly occurring and to prevent changing population sizes, only subdivisions which were finalized at the time of the QAPPP approval were included in the study. To establish the test and control populations when providing the list of subdivisions, the jurisdictions indicated if the subdivision had an O&M agreement. Subdivisions with an O&M agreement would be the test population and subdivisions without an O&M agreement would be the control population. With the list of subdivisions meeting the study criteria, the mailing list was created by using tax parcel data layers from the County Assessor’s ArcGIS database. The Test (w/O&M) population consisted of 703 homes and the Control (w/o O&M) population consisted of 1,345 homes.

Goldstreet Design mailed the survey postcards on January 10, 2023 to all of the homes within the study area. The online survey was available from January 10, 2023 to February 3, 2023.

3.0 Results

Goldstreet Design and Corona Insights summarized the results of the subdivision survey in a report. The preliminary data report of the survey data was received from the consultant on April 5, 2023 and the final data package with all of the data collected by the consultant was received May 11, 2023. The Goldstreet Design preliminary report and complete survey data can be found in Appendix B.

3.1 Survey Results

Following the online survey closure, 132 responses were collected. Two of the survey responses were partial, but considered to be complete enough to include in the final data report. There were 87 responses from the Control (w/o O&M) population and 45 responses from the Test (w/ O&M) population. The following section presents the survey results from the test and control group.

3.1.1 Subdivision Survey Responses

Question 1: How familiar are you with the stormwater facility that collects stormwater for your neighborhood?

	Total	Control (w/o O&M)	Test (w/ O&M)
Very familiar	36%	36%	38%
Moderately familiar	23%	17%	33%
Somewhat familiar	18%	22%	11%
Slightly familiar	12%	11%	13%
Not at all familiar	11%	14%	4%
	132	87	45

Question 2: Based on your understanding, whose responsibility is it to maintain the stormwater facility? Please select all that apply.

	Total	Control (w/o O&M)	Test (w/ O&M)
The local homeowners association	58%	55%	62%
The County	29%	24%	38%
The City	17%	21%	11%
The property owner	4%	3%	4%
Someone else	4%	2%	7%
I don't know	8%	11%	2%
	132	87	45

Question 3: How familiar with the Operations & Maintenance Agreement (O&M agreement) for the stormwater facility in your neighborhood?

	Total	Control (w/o O&M)	Test (w/ O&M)
Very familiar	7%	3%	13%
Moderately familiar	9%	8%	11%
Somewhat familiar	6%	7%	4%
Slightly familiar	15%	15%	16%
Not at all familiar	59%	63%	51%
Not applicable- Our neighborhood doesn't have an O&M agreement	4%	3%	4%
	132	87	45

Question 4: How concerned are you about the stormwater facility?

	Total	Control (w/o O&M)	Test (w/ O&M)
Extremely concerned	8%	8%	9%
Somewhat concerned	16%	17%	14%
A little concerned	25%	21%	34%
Not concerned at all	42%	43%	39%
No opinion	8%	10%	5%
	132	87	45

Question 5: Are you concerned about any of the following related to the stormwater facility? Please select all that apply.

	Total	Control (w/o O&M)	Test (w/ O&M)
Unsafe, steep slopes	11%	30%	49%
Mosquito breeding	36%	22%	27%
Attracting pests (e.g., rats, raccoons)	26%	22%	33%
Flooding	23%	29%	20%
Water Retention	17%	21%	11%
Being Vandalized	8%	10%	11%
Making the neighborhood look bad	26%	9%	4%
Other	9%	10%	31%
None of the above	27%	25%	31%
	132	87	45

Question 6: Have you ever received any information about the stormwater facility in your neighborhood?

	Total	Control (w/o O&M)	Test (w/ O&M)
Yes	21%	17%	29%
No	79%	83%	71%
	132	87	45

Questions 7, 8, and 9 of the survey were shown only to respondents who answered “Yes” to receiving information about the stormwater facility in their neighborhood.

Question 7: Where have you received information from regarding the stormwater facility in your neighborhood? Please select all that apply?

	Total	Control (w/o O&M)	Test (w/ O&M)
Title company	4%	0%	8%
Real estate agent	0%	0%	0%
The local homeowner’s association	86%	93%	77%
Local government (City or County)	14%	7%	23%
Other	7%	0%	15%
Don’t recall	4%	7%	0%
	28	15	13

Question 8: Based on your understanding, what type of recordkeeping is there regarding the maintenance of the stormwater facility in your neighborhood? Please select all that apply.

	Total	Control (w/o O&M)	Test (w/ O&M)
Checklist(s)	25%	7%	46%
Photos	14%	13%	15%
Other	7%	7%	8%
None	11%	13%	8%
I don’t know.	54%	67%	38%
	28	15	13

Question 9: Based on your understanding, what type of maintenance has been done to the stormwater facility in your neighborhood? Please select all that apply.

	Total	Control (w/o O&M)	Test (w/ O&M)
Mowing the grass	39%	13%	69%
Weed removal	57%	67%	46%
Removing sediment	25%	20%	31%
Cleaning catch basins	21%	27%	15%
Other	11%	7%	15%
I don't know	7%	7%	8%
	28	15	13

Question 10: How often are inspections and maintenance done on the stormwater facility?

	Total	Control (w/o O&M)	Test (w/ O&M)
Monthly	5%	3%	7%
Yearly	12%	11%	13%
Only after a major rain event	2%	3%	0%
Never	6%	3%	11%
I don't know	75%	78%	69%
	132	87	45

Question 11: What is the best away for you to receive stormwater information about your neighborhood's stormwater facility.

	Total	Control (w/o O&M)	Test (w/ O&M)
Direct mail to me	56%	60%	49%
Communication through the HOAs	34%	28%	44%
City/ County website	4%	5%	2%
City/ County social media	2%	3%	0%
Something else	7%	7%	8%
	131	86	45

Demographics

The full list of demographic questions is included in the data report found in Appendix B.

Question 12: How long have you lived at your current residence?

	Total	Control (w/o O&M)	Test (w/ O&M)
0-5 years	31%	31%	40%
6-10 years	39%	31%	56%
11-15 years	11%	15%	4%
Longer than 15 years	15%	23%	0%
	132	87	45

Question 13: Do you rent or own your home?

	Total	Control (w/o O&M)	Test (w/ O&M)
Rent	1%	1%	0%
Own	99%	99%	100%
	132	87	44

Question 14: Which of the following categories includes your age?

	Total	Control (w/o O&M)	Test (w/ O&M)
Under 18	0%	0%	0%
18 to 24	0%	0%	0%
25 to 34	1%	0%	2%
35 to 44	11%	13%	9%
55 to 64	21%	22%	20%
65 or older	50%	46%	58%
	132	87	45

4.0 Discussion and Recommendations

The data was collected in accordance with the quality control procedures set forth in the QAPP and was determined to be acceptable. The audit and data verification reports can be found in Appendix C.

4.1 Discussion of Results

With 132 responses, the response rate for the survey was approximately seven percent. This response rate is within the typical range of a mailed survey, which often have response rates of less than 10 percent (McKenzie-Mohr, 2011). Due to the relatively low number of survey responses, the data was presented in percentages because additional statistical analysis would have increased the margin of error.

Despite the low number of results, the survey to the subdivisions did yield some important information about BMP owner awareness. Over half (59%) of residents within the study area are moderately to very familiar with the stormwater facility in their neighborhood. It was also noted from the study area that respondents who were more familiar with the stormwater structure in their neighborhood were more likely to know that the local homeowners association (HOA) is responsible for the maintenance in comparison to those less familiar with the structure, who were more likely to believe maintenance responsibility fell with the City or County. When asked about the familiarity with the O&M agreement, over half (59%) of the total residents were not familiar at all with the O&M agreement. Within the Test (w/O&M) population, less than half (44%) reported any familiarity with the O&M agreement for their neighborhood.

The survey was designed to address several factors which may influence awareness of a stormwater BMP, including concerns related to safety, appearance, or perceptions of usefulness. When asked about having any concerns about the BMP, approximately half of the total residents reported having no concerns or no opinion about the BMP; however, when presented with a specific list of potential concerns, 79% of all residents reported having at least one concern. The primary concerns identified were steep slopes, mosquito breeding, attracting pests, and flooding. In the section of the survey which allowed responders to add additional comments, concerns associated with flooding and steep slopes were reiterated and concerns were also raised about the stormwater structure becoming a fire hazard due to overgrown vegetation. Comments suggested the stormwater structures may be oversized and unnecessary for Eastern Washington weather patterns. The significant percentage of respondents indicating they had one or more concerns about the BMP may reveal while not everyone is familiar with the specifics associated with the BMP, there may be a larger population aware of the structure or if problems are occurring, though they may not know where to direct their concerns.

The survey was also intended to assess actions associated with the BMP, including receiving information, inspections, and maintenance. When residents were asked if they had received information about the BMP, the majority (71%) of the total population indicated they have not received any information about their BMPs, which is equal to 83% of the Control (w/o O&M) population and 71 % of the Test (w/ O&M) population. The remaining 29% of respondents (32) were asked where they received their information. The local homeowners association was reported as the predominant source of information, selected by 93% of the Control (w/o O&M) population and 77% of the Test (w/ O&M) population. Local government was also reported as a common source of information by 23% of the Test (w/ O&M) population. Of the individuals reporting they have received information about their BMP, data collected about record keeping indicated the majority (68%) of the Control (w/o O&M) group does not know how records are kept of inspections and maintenance in comparison to the 61% of the Test (w/ O&M) group knowing that inspections and maintenance are tracked with checklists and photos. In contrast to the data about record keeping, 7% of the total responders were unable to identify maintenance activities completed on their stormwater structure. The majority of all responders identified mowing grass, removing weeds and sediment, and cleaning catch basins as the most common maintenance activities. All survey responders (132) were asked how frequently maintenance is completed on the neighborhood BMP, the majority of the Control (w/o O&M) and Test (w/ O&M) populations (78% and 69% respectively) did not know how often inspections and maintenance are done.

Data was also collected regarding how residents would like to receive information in the future. Over half (56%) of all respondents indicated they would prefer direct mailings and 34% indicated communication through the HOA was preferred. Receiving information from a City or County social media page was the least preferred option, selected by 2% of residents. Residents also provided comments expressing the desire to receive more information about protecting water quality and the stormwater structures, while others expressed frustration with not knowing who to contact when a problem or concern arises.

The survey represents primarily homeowners (99%). Within the Test (w/ O&M) group, over

half (56%) of residents have lived in their home for 6-10 years and 0% have lived in their homes longer than 15 years. In the Control (w/o O&M) group, length of time is more evenly dispersed, with the largest percentages living in their homes for 0-5 years and 6-10 years (31%) and 23% living in their homes for longer than 15 years. Half of the total survey responses were provided by individuals over 65 years of age (58% in the test group and 46% in the control group).

4.2 Recommendations for O&M Agreement and BMP Owner Awareness Education

While the O&M agreement is the regulatory mechanism to require ongoing maintenance, it is not effective as the primary source of information for BMP owners. As BMPs that have O&M agreements associated with them are beginning to age, it is important to develop education strategies to inform all BMP owners, about their ownership and role in the BMP maintenance. Based on this study the recommended improvements to education and outreach for BMP owners includes:

- Consider reviewing the O&M agreement language and template to reduce the usage of legal terminology and stormwater jargon.
- Provide additional education and outreach to property owners using a direct mailing, which was noted as the preferred method of communication by study participants. The mailing will provide information and access to the effectiveness study data as well as refreshed information regarding stormwater BMPs, and develop some frequently asked questions about BMPs and required maintenance.

5.0 Study Participation

The purpose of this section is to document and recognize the Eastern Washington jurisdictions that participated in this study. Notes and attendance taken at effectiveness study meetings are included in Appendix D.

5.1 Eastern Washington Jurisdiction Participation Summary

Jurisdiction Name	Participant	Financial Supporter	Lead Entity
City of Wenatchee	X	X	X
City of East Wenatchee	X	X	
Chelan County	X	X	
Douglas County	X	X	
City of Pullman	X	X	

References

McKenzie-Mohr, D. (2011). *Fostering Sustainable Behavior; An Introduction to Community- Based Social Marketing*. Canada: New Society Publishers.

Appendix A Standard Operating Procedure, Post Card & Survey

Residential Survey SOP

Step 1: Permittees located in study area will compile a list of all residential subdivisions meeting the one acre threshold with one of more stormwater BMPs serving multiple homes. .

Step 2: Consultant and Technical Advisory Group will validate survey questions and postcard.

Step 3: Consultant administers survey by mailing postcard with link and QR to online survey.

Step 4: Survey respondents will receive surveys with a link specifically designed to designate whether the respondent is in the test or control group. The color designation will protect anonymity of the respondents. The online survey will be available for 1 month.

Step 5: Consultant will collect survey results and provide statistical analysis.

YOUR INPUT IS NEEDED

Dear Resident,

The City of Wenatchee, City of East Wenatchee, Chelan County, and Douglas County are working together to evaluate a stormwater program for individuals in subdivisions like yours. As a member of a select group of subdivisions chosen to participate, your responses are very important and will be used to improve future programs. Goldstreet Design, along with their research partner, Corona Insights, is conducting this research to ensure your responses are confidential and that your residence is not tied to your answers.

The questionnaire will take about 5-10 minutes to complete and will help us better understand important stormwater issues and how best to provide education to our community. The goal of this survey is to assist our local stormwater utilities in developing programs which will better serve your neighborhood, prevent flooding, and pollution.

We would like to hear from a variety of adults over the age of 18. Any adult in the household may participate.

We are inviting you to go online to fill out this confidential questionnaire. To participate:

Visit
[www.coronainsights.com/
WenatcheeValleyStormwater](http://www.coronainsights.com/WenatcheeValleyStormwater)



Scan the QR code at right with
your smartphone.

And enter your code found on the
mailing label on the reverse side.



Thank you in advance for your assistance!

YOUR INPUT IS NEEDED

Dear Resident,

The City of Wenatchee, City of East Wenatchee, Chelan County, and Douglas County are working together to evaluate a stormwater program for individuals in subdivisions like yours. As a member of a select group of subdivisions chosen to participate, your responses are very important and will be used to improve future programs. Goldstreet Design, along with their research partner, Corona Insights, is conducting this research to ensure your responses are confidential and that your residence is not tied to your answers.

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WenatcheeValleyStormwater](http://www.coronainsights.com/WenatcheeValleyStormwater)



**Scan the QR code at right with
your smartphone.**

**And enter your code found on the
mailing label on the reverse side.**



Thank you in advance for your assistance!



Wenatchee Valley Stormwater Program
c/o City of Wenatchee
P.O Box 519
Wenatchee, WA 98807-0519

THANK YOU FOR YOUR RESPONSE!

At the end of the survey you will have an opportunity to enter into a drawing to win a \$50 Visa gift card.

Using the QR Code, enter your unique code found below



www.coronainsights.com/WenatcheeValleyStormwater

La encuesta también está disponible en español a través del código QR.

SURVEY INSTRUMENT

HOMEOWNER SURVEY

SURVEY LOGISTICS

The following are logistical notes for this survey.

- > The survey will be conducted online and via mail.
- > The survey will be offered in English and Spanish.
- > The survey length is no longer than 4 pages, printed.
- > The sample will be provided by the Wenatchee.
- > Up to 2,000 mailers will be sent to households by the client.
- > No incentive is currently included, though one is recommended to boost participation.
- > Programming notes are in [RED] and research design notes and explanation are in [BLUE]. Highlighted areas are areas we need specific input to finalize the question.

PUSH-TO-WEB LETTER/POSTCARD

Wenatchee Valley Stormwater Program



Chelan County · Wenatchee · Douglas County · East Wenatchee

Dear Resident,

The City of Wenatchee, City of East Wenatchee, Chelan County, and Douglas County are working together to evaluate a stormwater program for individuals in subdivisions like yours. As a member of a select group of subdivisions chosen to participate, your responses are very important and will be used to improve future programs. Goldstreet Design, along with their research partner, Corona Insights, is conducting this research to ensure your responses are confidential and that your residence is not tied to your answers.

The questionnaire will take about 5-10 minutes to complete and will help us better understand important stormwater issues and how best to provide education to our community. The goal of this survey is to assist our local stormwater utilities in developing programs which will better serve your neighborhood, prevent flooding, and pollution.

We would like to hear from a variety of adults over the age of 18. Any adult in the household may participate.

We are inviting you to go online to fill out this confidential questionnaire. To participate:

Visit www.coronainsights.com/WenatcheeValleyStormwater

Or scan the QR code at right with your smartphone.

And enter your code: [\[unique code\]](#)

When you complete the questionnaire, you will be eligible to win one \$50 Visa gift card. We offer this as a way to say thank you for your time and input. To view the official Sweepstakes rules, please visit the survey link above.



Thank you in advance for your assistance!



SURVEY INSTRUMENT

[Headers not programmed – for organizational purposes only]

INTRODUCTION

Thank you for taking time to answer this survey for the Wenatchee Valley Stormwater Technical Advisory Committee.

The City of Wenatchee, City of East Wenatchee, Chelan County, and Douglas County are working together to evaluate a stormwater program for individuals in subdivisions like yours. As a member of a select group of subdivisions chosen to participate, your responses are very important and will be used to improve future programs. Goldstreet Design, along with their research partner, Corona Insights, is conducting this research to ensure your responses are confidential and that your residence is not tied to your answers.

The questionnaire will take about 5-10 minutes to complete and will help us better understand important stormwater issues and how best to provide education to our community. The goal of this survey is to assist our local stormwater utilities in developing programs which will better serve your neighborhood and prevent flooding and pollution.

As a thank you for completing this survey, you will have an opportunity at the end to enter your information into a sweepstakes with a chance to win one \$50 Visa gift card. To view the official Sweepstakes rules, please click here [\[link\]](#). You do not have to complete a survey to be entered into the drawing. See the rules for alternate means of entry.

We would like to hear from a variety of adults over the age of 18. Any adult in the household may participate.

If you have any technical issues with the survey, please contact Goldstreet Designs (www.goldstreetdesigns.com).

To view the survey in Spanish, please select Spanish in the lower righthand corner. [\[Will display as Spanish on the English version\]](#)

Please click 'next' or '>' when you are ready to begin.

AWARENESS

Examples of stormwater facilities below: Stormwater pond (top) and swale (bottom).



1. How familiar are you with the stormwater facility that collects stormwater for your neighborhood?
 - a. Not at all familiar
 - b. Slightly familiar
 - c. Somewhat familiar
 - d. Moderately familiar
 - e. Very familiar
2. Based on your understanding, whose responsibility is it to maintain the stormwater facility? *Please select all that apply.*
 - a. The City
 - b. The County
 - c. The property owner
 - d. The local homeowner's association
 - e. Someone else *Please tell us:* _____
 - f. I don't know **[Exclusive]**
3. How familiar are you with the Operations & Maintenance Agreement (O&M Agreement) for the stormwater facility in your neighborhood?
 - a. Not at all familiar

- b. Slightly familiar
 - c. Somewhat familiar
 - d. Moderately familiar
 - e. Very familiar
 - f. Not applicable - Our neighborhood doesn't have an O&M agreement
4. How concerned are you about the stormwater facility?
- a. Extremely concerned
 - b. Somewhat concerned
 - c. A little concerned
 - d. Not concerned at all
 - e. No opinion
5. Are you concerned about any of the following related to the stormwater facility? *Please select all that apply.*
[Randomize except other and none]
- a. Unsafe steep slopes
 - b. Mosquito breeding
 - c. Attracting pests (e.g., rats, raccoons)
 - d. Flooding
 - e. Water retention
 - f. Being vandalized
 - g. Making the neighborhood look bad (e.g., weeds, trash accumulation, tall grass)
 - h. Other *Please tell us:* _____
 - i. None of the above [Exclusive]

ACTIONS

6. Have you ever received any information about the stormwater facility in your neighborhood?
- a. Yes
 - b. No
7. [If yes to Q6] Where have you received information from regarding the stormwater facility in your neighborhood? *Please select all that apply.*
- a. Title company
 - b. Real estate agent
 - c. The local homeowner's association
 - d. Local government (city or county)
 - e. Other *Please tell us:* _____
 - f. Don't recall [Exclusive]
8. [If yes to Q6] Based on your understanding, what type of recordkeeping is there regarding the maintenance of the stormwater facility in your neighborhood? *Please select all that apply.*
- a. Checklist(s)

- b. Photos
 - c. Other *Please tell us:* _____
 - d. None [Exclusive]
 - e. Don't know [Exclusive]
9. [If yes to Q6] Based on your understanding, what type of maintenance has been done to the stormwater facility in your neighborhood? *Please select all that apply.*
- a. Mowing the grass
 - b. Weed removal
 - c. Removing sediment
 - d. Cleaning catch basins
 - e. Other *Please tell us:* _____
 - f. None [Exclusive]
 - g. Don't know [Exclusive]
10. How often are inspections and maintenance done on the stormwater facility?
- a. Monthly
 - b. Yearly
 - c. Only after a major rain event
 - d. Never
 - e. Don't know

COMMUNICATIONS

11. What is the best way for you to receive stormwater information about your neighborhood's stormwater facility? [Select one]
- a. Direct mail to me
 - b. Communication through HOA's
 - c. City/County website
 - d. City/County social media
 - e. Something else *Please tell us:* _____

DEMOGRAPHICS

These final questions are for analysis purposes only to ensure we have heard from a mix of residents. All responses will remain confidential, and you will not be personally associated with your answers.

12. How long have you lived at your current residence?
- a. 0-5 years
 - b. 6-10 years
 - c. 11-15 years
 - d. Longer than 15 years

13. Do you rent or own your house/apartment?
 - a. Rent
 - b. Own
 - c. Other
14. Which of the following categories includes your age?
 - a. Under 18
 - b. 18 to 24
 - c. 25 to 34
 - d. 35 to 44
 - e. 45 to 54
 - f. 55 to 64
 - g. 65 or older
15. What is the highest degree or level of school you have completed?
 - a. Some high school or less, no diploma or GED
 - b. High school diploma or GED
 - c. Some college, no college degree
 - d. Associate degree
 - e. Bachelor's degree
 - f. Graduate or professional degree
16. Are there children (under the age 18) living in your home?
 - a. Yes
 - b. No
 - c. Prefer not to answer

FINAL COMMENTS

17. If you have any final comments regarding stormwater facilities in your neighborhood, please provide them below.
 - a. **[Open-ended]**
18. If you would like to enter the drawing for a chance to win one \$50 Visa Gift Card, please include your contact information here. Your responses will remain confidential. By entering the Sweepstakes, you are agreeing to the official rules **[link]**.
 - a. Name
 - b. Email
 - c. Phone

Appendix B Results & Data Package

Awareness

Q1. How familiar are you with the stormwater facility that collects stormwater for your neighborhood?

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Very familiar	36%	36%	38%	62%	0%	31%	42%	34%	38%	35%	36%	40%	30%	42%	36%
Moderately familiar	23%	17%	33%	38%	0%	20%	23%	26%	18%	27%	21%	21%	27%	8%	27%
Somewhat familiar	18%	22%	11%	0%	44%	20%	12%	26%	21%	15%	14%	21%	18%	17%	17%
Slightly familiar	12%	11%	13%	0%	30%	13%	12%	11%	14%	11%	17%	11%	9%	13%	13%
Not at all familiar	11%	14%	4%	0%	26%	16%	12%	3%	9%	12%	12%	7%	15%	21%	8%
Column n	132	87	45	78	54	45	52	35	66	66	42	57	33	24	104

Q2. Based on your understanding, whose responsibility is it to maintain the stormwater facility? Please select all that apply.

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
The local homeowner's association	58%	55%	62%	72%	37%	58%	56%	60%	53%	62%	60%	60%	52%	46%	61%
The County	29%	24%	38%	29%	28%	31%	27%	29%	32%	26%	31%	32%	21%	33%	27%
The City	17%	21%	11%	12%	26%	16%	17%	20%	23%	12%	19%	14%	21%	25%	14%
The property owner	4%	3%	4%	3%	6%	9%	2%	0%	3%	5%	7%	4%	0%	4%	4%
Someone else	4%	2%	7%	5%	2%	2%	6%	3%	2%	6%	0%	4%	9%	0%	5%
I don't know	8%	11%	2%	1%	19%	7%	10%	9%	8%	9%	7%	7%	12%	13%	8%
Column n	132	87	45	78	54	45	52	35	66	66	42	57	33	24	104

Q3. How familiar are you with the Operations & Maintenance Agreement (O&M Agreement) for the stormwater facility in your neighborhood?

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Very familiar	7%	3%	13%	12%	0%	7%	10%	3%	6%	8%	5%	11%	3%	8%	7%
Moderately familiar	9%	8%	11%	15%	0%	9%	10%	9%	3%	15%	17%	2%	12%	0%	12%
Somewhat familiar	6%	7%	4%	10%	0%	7%	6%	6%	9%	3%	7%	5%	6%	4%	7%
Slightly familiar	15%	15%	16%	18%	11%	11%	12%	26%	15%	15%	19%	12%	15%	13%	16%
Not at all familiar	59%	63%	51%	42%	83%	64%	60%	51%	62%	56%	50%	63%	64%	75%	55%
Not applicable - Our neighborhood does not have	4%	3%	4%	3%	6%	2%	4%	6%	5%	3%	2%	7%	0%	0%	4%
Column n	132	87	45	78	54	45	52	35	66	66	42	57	33	24	104

Q4. How concerned are you about the stormwater facility?

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Extremely concerned	8%	8%	9%	12%	4%	9%	8%	9%	5%	13%	17%	4%	6%	4%	10%
Somewhat concerned	16%	17%	14%	16%	17%	20%	10%	21%	17%	16%	10%	16%	26%	13%	18%
A little concerned	25%	21%	34%	23%	28%	25%	25%	26%	18%	33%	31%	25%	19%	17%	27%
Not concerned at all	42%	43%	39%	44%	38%	36%	44%	44%	50%	33%	31%	51%	39%	54%	38%
No opinion	8%	10%	5%	5%	13%	9%	13%	0%	11%	6%	12%	5%	10%	13%	7%
Column n	130	86	44	77	53	44	52	34	66	64	42	57	31	24	102

Q5. Are you concerned about any of the following related to the stormwater facility? Please select all that apply.

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Unsafe steep slopes	11%	30%	49%	9%	13%	9%	15%	6%	5%	17%	10%	11%	12%	13%	11%
Mosquito breeding	36%	22%	27%	32%	43%	42%	40%	23%	38%	35%	38%	40%	27%	33%	36%
Attracting pests (e.g., rats, raccoons)	26%	22%	33%	24%	28%	27%	31%	17%	21%	30%	26%	25%	27%	21%	27%
Flooding	23%	29%	20%	18%	31%	36%	21%	11%	21%	26%	33%	18%	21%	25%	24%
Water retention	17%	21%	11%	13%	24%	18%	19%	14%	15%	20%	21%	18%	12%	17%	17%
Being vandalized	8%	10%	11%	5%	11%	9%	10%	3%	8%	8%	10%	7%	6%	13%	7%
Making the neighborhood look bad (e.g., weeds, trash accumulation, tall grass)	26%	9%	4%	28%	22%	29%	23%	26%	24%	27%	12%	30%	36%	29%	26%
Other	9%	10%	7%	14%	2%	2%	8%	20%	11%	8%	5%	14%	6%	4%	11%
None of the above	27%	25%	31%	26%	30%	22%	37%	20%	26%	29%	36%	25%	21%	29%	27%
Column n	132	87	45	78	54	45	52	35	66	66	42	57	33	24	104

Actions

Q6. Have you ever received any information about the stormwater facility in your neighborhood?

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Yes	21%	17%	29%	31%	7%	18%	23%	23%	17%	26%	24%	19%	21%	4%	25%
No	79%	83%	71%	69%	93%	82%	77%	77%	83%	74%	76%	81%	79%	96%	75%
Column n	132	87	45	78	54	45	52	35	66	66	42	57	33	24	104

Q7. Where have you received information from regarding the stormwater facility in your neighborhood? Please select all that apply.

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Title company	4%	0%	8%	4%	0%	13%	0%	0%	9%	0%	0%	9%	0%	0%	4%
Real estate agent	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
The local homeowner's	86%	93%	77%	92%	50%	88%	75%	100%	82%	88%	70%	91%	100%	100%	88%
Local government (city or	14%	7%	23%	13%	25%	13%	17%	13%	27%	6%	10%	27%	0%	100%	8%
Other	7%	0%	15%	4%	25%	13%	8%	0%	0%	12%	20%	0%	0%	0%	8%
Don't recall	4%	7%	0%	4%	0%	0%	8%	0%	9%	0%	10%	0%	0%	0%	4%
Column n	28	15	13	24	4	8	12	8	11	17	10	11	7	1	26

Q8. Based on your understanding, what type of recordkeeping is there regarding the maintenance of the stormwater facility in your neighborhood? Please select all that apply.

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Checklist(s)	25%	7%	46%	29%	0%	38%	25%	13%	27%	24%	30%	18%	29%	100%	23%
Photos	14%	13%	15%	17%	0%	25%	8%	13%	18%	12%	20%	18%	0%	0%	15%
Other	7%	7%	8%	8%	0%	0%	8%	13%	9%	6%	0%	9%	14%	0%	8%
None	11%	13%	8%	8%	25%	13%	8%	13%	18%	6%	20%	9%	0%	0%	12%
Don't know	54%	67%	38%	50%	75%	38%	58%	63%	36%	65%	50%	55%	57%	0%	54%
Column n	28	15	13	24	4	8	12	8	11	17	10	11	7	1	26

Q9. Based on your understanding, what type of maintenance has been done to the stormwater facility in your neighborhood? Please select all that apply.

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Mowing the grass	39%	13%	69%	42%	25%	38%	58%	13%	27%	47%	30%	36%	57%	100%	38%
Weed removal	57%	67%	46%	63%	25%	63%	42%	75%	55%	59%	40%	55%	86%	0%	62%
Removing sediment	25%	33%	15%	29%	0%	13%	17%	50%	27%	24%	20%	45%	0%	0%	27%
Cleaning catch basins	25%	20%	31%	25%	25%	25%	17%	38%	18%	29%	20%	36%	14%	0%	27%
Other	21%	27%	15%	25%	0%	0%	42%	13%	27%	18%	30%	27%	0%	100%	19%
None	11%	7%	15%	4%	50%	25%	8%	0%	9%	12%	10%	18%	0%	0%	12%
Don't know	7%	7%	8%	4%	25%	0%	17%	0%	18%	0%	10%	9%	0%	0%	4%
Column n	28	15	13	24	4	8	12	8	11	17	10	11	7	1	26

Q10. How often are inspections and maintenance done on the stormwater facility?

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Monthly	5%	3%	7%	6%	2%	0%	8%	6%	5%	5%	5%	4%	6%	4%	5%
Yearly	12%	11%	13%	17%	6%	13%	13%	9%	9%	15%	19%	11%	6%	13%	13%
Only after a major rain event	2%	3%	0%	4%	0%	2%	0%	6%	3%	2%	5%	2%	0%	4%	2%
Never	6%	3%	11%	6%	6%	9%	6%	3%	6%	6%	10%	7%	0%	0%	8%
Don't know	75%	78%	69%	67%	87%	76%	73%	77%	77%	73%	62%	77%	88%	79%	73%
Column n	132	87	45	78	54	45	52	35	66	66	42	57	33	24	104

Communications

Q11. What is the best way for you to receive stormwater information about your neighborhood's stormwater facility?

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Direct mail to me	56%	60%	49%	51%	65%	64%	46%	62%	58%	55%	52%	58%	59%	50%	58%
Communication through HOAs	34%	28%	44%	38%	28%	27%	40%	32%	30%	37%	31%	35%	34%	42%	33%
City/County website	4%	5%	2%	3%	6%	4%	4%	3%	5%	3%	7%	4%	0%	4%	2%
City/County social media	2%	3%	0%	4%	0%	4%	2%	0%	5%	0%	5%	0%	3%	4%	2%
Something else	4%	3%	4%	5%	2%	0%	8%	3%	3%	5%	5%	4%	3%	0%	5%
Column n	131	86	45	77	54	45	52	34	66	65	42	57	32	24	103

Demographics

Q12. How long have you lived at your current residence?

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
0-5 years	34%	31%	40%	29%	41%	100%	0%	0%	32%	36%	40%	28%	36%	42%	34%
6-10 years	39%	31%	56%	44%	33%	0%	100%	0%	44%	35%	43%	40%	33%	33%	39%
11-15 years	11%	15%	4%	10%	13%	0%	0%	43%	8%	15%	5%	18%	9%	13%	11%
Longer than 15 years	15%	23%	0%	17%	13%	0%	0%	57%	17%	14%	12%	14%	21%	13%	16%
Column n	132	87	45	78	54	45	52	35	66	66	42	57	33	24	104

Q13. Do you rent or own your house/apartment?

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Rent	1%	1%	0%	0%	2%	0%	0%	3%	2%	0%	0%	2%	0%	4%	0%
Own	99%	99%	100%	100%	98%	100%	100%	97%	98%	100%	100%	98%	100%	96%	100%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Column n	131	87	44	77	54	45	51	35	66	65	42	56	33	24	103

Q14. Which of the following categories includes your age?

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Under 18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
18 to 24	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
25 to 34	1%	0%	2%	1%	0%	0%	2%	0%	2%	0%	0%	2%	0%	4%	0%
35 to 44	11%	13%	9%	8%	17%	11%	15%	6%	23%	0%	14%	11%	9%	33%	6%
45 to 54	17%	20%	11%	14%	20%	18%	15%	17%	33%	0%	21%	14%	15%	50%	10%
55 to 64	21%	22%	20%	24%	17%	18%	23%	23%	42%	0%	14%	26%	21%	4%	25%
65 or older	50%	46%	58%	53%	46%	53%	44%	54%	0%	100%	50%	47%	55%	8%	60%
Column n	132	87	45	78	54	45	52	35	66	66	42	57	33	24	104

Q15. What is the highest degree or level of school you have completed?

	Group			Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
	Total	Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Some high school or less, no diploma or GED	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High school diploma or GED	7%	6%	9%	4%	11%	4%	10%	6%	8%	6%	21%	0%	0%	8%	5%
Some college, no college	25%	26%	22%	27%	22%	33%	25%	14%	24%	26%	79%	0%	0%	25%	26%
Associate degree	13%	15%	9%	14%	11%	13%	6%	23%	15%	11%	0%	30%	0%	17%	12%
Bachelor's degree	30%	25%	40%	31%	30%	22%	38%	29%	30%	30%	0%	70%	0%	33%	30%
Graduate or professional	25%	28%	20%	24%	26%	27%	21%	29%	23%	27%	0%	0%	100%	17%	28%
Column n	132	87	45	78	54	45	52	35	66	66	42	57	33	24	104

Q16. Are there children (under the age of 18) living in your home?

	Total	Group		Familiarity with stormwater facility		Years at Current Residence			Age		Education			Children Under 18 Living in Home	
		Control	Test	Moderately or very familiar	Somewhat familiar or less	0-5 years	6-10 years	11+ years	Under 65	65 or older	High school diploma, GED, or some college	Associate or Bachelor degree	Graduate or professional degree	Yes	No
Yes	18%	21%	13%	15%	22%	22%	15%	17%	33%	3%	19%	21%	12%	100%	0%
No	79%	77%	82%	83%	72%	78%	79%	80%	64%	94%	76%	75%	88%	0%	100%
Prefer not to answer	3%	2%	4%	1%	6%	0%	6%	3%	3%	3%	5%	4%	0%	0%	0%
Column n	132	87	45	78	54	45	52	35	66	66	42	57	33	24	104

Q17. If you have any final comments regarding stormwater facilities in your neighborhood, please provide them below.

A pamphlet sent out to residents outlining what can and cannot go into the stormwater system would be helpful. For example if pool/spa water

Are large stormwater drainage works fine

City's do a very good job mitigating stormwater issues

Find the storm water regulations to be onerous and too stringent.

Given the amount of snow/rain that the valley is now experiencing, this matter should probably receive more attention vis-a-vis public education

I am concerned that I have never seen the catch basins cleaned out in over 10 years. I am retired and I am here much of the time.

I am interested in learning more about Wenatchee Valley Stormwater issues.

I am pretty sure that we as homeowners pay for this. I pay the bill once a year, in March. Our storm water are not bad, they are not full of trash.

I HAVE NEVER SEEN A RETENTION POND WITH THE BOTTOM AREA COVERED WITH WATER... THE SIZE OF MANY PONDS SEEMS LIKE

I have photo proof that the design of our storm water ponds are not large enough and are a concern with future rains. The city should be liable for damages that may occur. The residents of this HOA had no involvement of design or installation. Building inspections for this development was either missed or overlooked by the city, which leaves many people on the hook from oversight by local govt.

I think the City, County and State requirements for storm water is over done. It seems to be over engineered for our dry climate.

I think these are very important to prevent flooding. I do not know if there is one attach to my system on 5th St., Southeast. The floods in

I'd like to see the cities and counties engage in storm water educational programming to teach homeowners what they can do to protect water

I'm glad my neighborhood has storm drains and pond! I think for some houses in my neighborhood it would help if there was a way for water from roof tops could connect with the stormwater drains.

It appears to work properly with no major issues that I know of

Keep them clean and well-maintained, and or large river rock on sides

More planning should be done by the builder and the County/City planning departments for proper property drainage in neighborhoods.

Most people are unaware they even exist

None

None

Our drainage has been an issue especially during rain storms- entire neighborhood was not built with proper drainage and our 'dainage system '

Our property contains a steep slope. We are very concerned that the storm water runoff continues to be channeled and piped to the large

Our storm water facility is of ongoing concern of potential flooding of a significant weather event.

Storm water utility is just another unnecessary government bureaucracy that overburdens the public with rules, regulations and taxes. This survey is a perfect example of wasted dollars spent. A \$50 sweepstake enticement to get people to participate? Pathetic.

Stormwater facilities should include elevated areas of bridges and paths so that they can fill vital connectivity and park functions rather than being fenced in an not accessible. These green spaces should not be converted into buildable lots. The one above 19th in particular was built with funds from sand canyon irrigation district rather than improve the irrigation system which now need major repairs it was built and fenced in, no the proposed 19th st project would remove the need and the value should be returned to the neighborhood or district not resold for city

Thanks to the right board member finally becoming aware, I got some actions. But it took too long (As two years). I could not find the appropriate channel to direct my concerns. I would like to know what maintenance/ inspections are in place. Conditions change after 25 years.

The bottom dirt level is halfway up the entrance pipe.

The city inspection schedule and maintenance requirements should be published and distributed to residents and our HOA. The city did not do a thorough inspection with our HOA representatives present nor hold our developer responsible for short comings in our storm water detention ponds that did not meet the original design specifications before releasing his construction bond. Now we are left with the aftermath.

The county should be responsible for maintaining and upkeep not the homeowners. I get absolutely no services for my very high taxes!!! the storm pond is next to our back yard (not in our HOA but the neighbors). I consider this to be an EXTREME FIRE DANGER, I am concerned it might have noxious weeds, the fence surrounding the pond is open and never locked. In the past I have contacted the fire district , the county commissioners nothing seems to happen. The residents in that neighborhood do not seem to think they have an HOA, although it is listed with the State of Washington. Again I will say: SOMEONE OWNS THAT LAND AND IT IS NOT BEING CARED FOR. So asking my opinion I am feeling that the stormwater program has not done a good job at enforcing maintenance or surveillance. I appreciate the opportunity to, again, voice my concerns. thank you

We do not have either of these type of stormwater facilities in our neighborhood

We have grates on the side of the streets that take the water to underground drain fields. We live in an area where we do not have any or

We have had a somewhat casual approach to weed management in our catch/sediment basins. Catch and fix as necessary.

We have several stormwater sections in the neighborhood - and these are contracted annually to be maintained which they are. These always

We pay a county storm water tax

Appendix C Data Audit & Verification Forms

Audit Number 1				
Completed prior to start of study				
Date	1/9/23	Auditor	Kelsey Grover	
Audit Task	Yes	No	N/A	Comments
Survey has been validated by panel of experts, approval and changes have been documented.	X			Survey validated by TAC, Goldstreet Design & Survey team from Corona Insight
Homeowner survey is written at 6 th grade level or lower.		X		Survey design uses BMP + other utility jargon. Design validated by industry Professionals
List of subdivisions is complete and consistent with the target population criteria.	X			
The survey is available translated into Spanish.	X			Survey Postcard Provides option for spanish
Pre-survey post card has been sent to target neighborhoods with local jurisdiction logos	X			
Auditor Signature				
Kelsey Grover				

Audit Number 2

Completed during the survey data collection

Date

1/18/2023

Auditor

Kelsey Grover

Audit Task**Yes****No****N/A****Comments**

Survey is sent with pre-paid return postage

X

Mail survey not utilized

Test web survey is completed and receipt verification is received from consultant

X

Test mail survey and receipt verification is received from consultant

X

Mail survey not utilized

Survey format for web and mail survey is the same (no web survey questions are required to continue; question format is the same)

X

Mail survey not utilized

Auditor Signature

Kelsey Grover

Audit Number 3				
Completed during the review of the final report				
Date	4/6/23	Auditor	Kelsey Grover	
Audit Task	Yes	No	N/A	Comments
All of the data was collected by the consultant	X			
The survey data from the homeowners was blind coded before receipt	X			
The responses from the target population were compared to the control population using a predefined confidence interval and statistical power		X		Due to the small sample size, Results would not have been reliable to compare the test & control group
Results of the study are consistent with the goals of the study	X			
Auditor Signature	Kelsey Grover			

Data Verification Form

To be completed after the final audit during the completion of the final report

Date	5/24/2023	Data Verifier	Angela Tuetken
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Verification Task	Yes	No	N/A	Comments
Data audits performed at the designated times	X			Physical audits provided dated before, during and after survey are being conducted.
Verify audits addressed MPCs	X			
DQIs have been addressed	X			Surveys collected by Goldstreet Design
Data records are complete, consistent, and correct	X			
Data records have been analyzed for errors and omissions	X			

Data Verifier Signature



Appendix D Meeting Notes & Participation

BMP Owner Awareness Effectiveness Study

Kick-Off Meeting- Notes

Wednesday, November 18, 2020, 1:30 PM

Microsoft Teams

Participants

- City of Wenatchee: Jessica Shaw, Kelsey Grover
- Chelan County: Jason Detamore
- City of East Wenatchee: Garren Melton
- Douglas County: Jennifer Lange
- City of Pullman: Shilo Sprouse

Meeting Agenda

- Study Overview
 - Study Location
- Roles & Responsibilities
- Budget
- Timeline
- Official agreement to work together- letter to Ecology

Task Name	2021				2022				2023				2024		
	Q4: Oct- Dec	Q1: Jan- Mar	Q2: Apr- Jun	Q3: Jul- Sept	Q4: Oct- Dec	Q1: Jan- Mar	Q2: Apr- Jun	Q3: Jul- Sept	Q4: Oct- Dec	Q1: Jan- Mar	Q2: Apr- Jun	Q3: Jul- Sept	Q4: Oct- Dec	Q1: Jan- Mar	Q2: Apr- Jun
Proposal Development															
Ecology Proposal Review															
QAPP Development															
Ecology QAPP Review															
Data Collection Prep.															
Data Collection															
Analysis and Reporting															

- ILA will need to be in place by September 2021 to be submitted as an appendix in QAPP
- Submit a brief description of the study with a list of the project participants and each participants role to Ecology on or before **June 30, 2021**
- Submit a Detailed Study Design Proposal to Ecology on or before **September 30, 2022**

- Begin to conduct the study on or before **December 1, 2023**

MEETING AGENDA

Wednesday, March 3, 2021

1:30 PM to 2:30 PM

Microsoft Teams

Invitees:

Douglas County: Jennifer Lange

Chelan County: Jason Detamore

Wenatchee: Jessica Shaw (Absent) , Kelsey Grover

East Wenatchee: Garren Melton

Pullman: Shilo Sprouse

Discussion Items:

1. Detailed Study Design
 - a. Comments.
 - b. Questions
 - c. Comment Deadline: March 17, 2021
2. Interlocal Agreement
 - a. Address implementation of E&O Materials from previous study into this ILA
 - i. To satisfy the Education & Outreach requirement
 - ii. Satisfaction of permit requirement by another jurisdiction
[Include Pullman in distribution of new materials](#)
3. Pre-Detailed Study Design Submittal Meeting with Ecology
 - a. Meet with Ecology to show PowerPoint- show basics of study, answer questions, etc.
 - b. Planning to make this happen within the next couple weeks
 - i. Goal to get Proposal out by the end of the month

BMP Owner Awareness Effectiveness Study

QAPP Meeting

Wednesday, July 28th, 2021

Microsoft Teams

Participants

City of Wenatchee: Jessica Shaw, Kelsey Grover

Chelan County: Jason Detamore (Absent)

City of East Wenatchee: Garren Melton

Douglas County: Jennifer Lange

City of Pullman: Shilo Sprouse

Meeting Agenda

- Review revived Dump Smart Materials
 - Content
 - DO: septic issues. Have a plan for wastewater disposal for each job
 - Mailing List
 - Presentation format: Postcard, magnet?
 - Stickers, Magnet, Partner with rug doctor (grocery store), posters in maintenance areas (City & County Facilities)
- QAPP Comments & Review:
 - Ecology's Comments
 - Discussion Topics:
 - 3.3: Regulatory Requirements
 - Add S5.B1
 - Table 4.1: Follow Up Procedures: door hangers, post cards, etc?
 - Add in all options, postcard/ addition of phone/email from UB
 - 5.3: ILA estimated funds?
 - ILA will not be changed for administrative costs.
 - Appendices (To review during meeting)
 - Add "Stormwater Covenants" to the Survey
 - Add I don't know to question 13
 - Add questions about inspections (Anyone maintain records)
 - Roles & Responsibilities
 - Secondary Auditor- Douglas County
- Other Discussion Topics?

Task Name	2021					2022				2023				2024	
	Q4: Oct- Dec	Q1: Jan- Mar	Q2: Apr- Jun	Q3: Jul- Sept	Q4: Oct- Dec	Q1: Jan- Mar	Q2: Apr- Jun	Q3: Jul- Sept	Q4: Oct- Dec	Q1: Jan- Mar	Q2: Apr- Jun	Q3: Jul- Sept	Q4: Oct- Dec	Q1: Jan- Mar	Q2: Apr- Jun
Proposal Development	█														
Ecology Proposal Review		█													
QAPP Development			█	█	█										
Ecology QAPP Review				█	█										
Data Collection Prep.						█	█	█	█	█	█	█	█	█	█
Data Collection Analysis and Reporting													█	█	█

- Submit a brief description of the study with a list of the project participants and each participants role to Ecology on or before **June 30, 2021**
- Submit a Detailed Study Design Proposal to Ecology on or before **September 30, 2022**
- Begin to conduct the study on or before **December 1, 2023**

MEETING AGENDA

Wednesday, 5/4/2022, 2022

1:30 PM to 2:00 PM

Microsoft Teams

Invitees:

Douglas County: Jennifer Lange (Present)

Chelan County: Jason Detamore (Present)

Wenatchee: Jessica Shaw, Kelsey Grover (Present)

East Wenatchee: Garren Melton (Present)

Pullman: Shilo Sprouse (Present)

Discussion Items:

1. Consultant Discussion
 - a. Proposals/Quotes Received
 - i. Goldstreet Design
 - ii. Action Research
 - iii. PRR (returned no quote would be submitted for this project)
 - b. Discuss costs (Goldstreet Design with lower quote)
 - c. Discussion to add mailing postcard to scope of work- follow up discussion with Goldstreet to add mailing to quote.

MEETING AGENDA

Wednesday, August 31, 2022

1:30 PM to 2:30 PM

Microsoft Teams

Invitees:

Douglas County: Jennifer Lange

Chelan County: Jason Detamore

Wenatchee: Jessica Shaw, Kelsey Grover

East Wenatchee: Garren Melton, Mark Jennings

Pullman: Shilo Sprouse

Goldstreet Design: John Gross, Lindsay Nelson

Discussion Items:

1. Introductions
 - a. John Gross- Goldstreet President
 - b. Lindsay Nelson- Project Manager
2. Procedures & First Steps
 - a. Goldstreet to review QAPP & Survey
 - i. Survey will be reviewed by survey team for any necessary changes
 - b. Goldstreet will provide digital copy of postcard for online outreach by the jurisdiction.
 - c. Survey to be timed around major holidays
3. Timeline
 - a. After QAPP review- Goldstreet will determine appropriate timeline for sending postcards. TAC responsible for quick review to keep timeline moving quickly.

MEETING AGENDA

Wednesday, October 26, 2022

1:30 PM to 2:00 PM

Microsoft Teams

Invitees:

Douglas County: Jennifer Lange (Present)

Chelan County: Jason Detamore (Present)

Wenatchee: Jessica Shaw, Kelsey Grover (Present)

East Wenatchee: Garren Melton (Present)

Pullman: Shilo Sprouse (Present)

Discussion Items:

1. Survey & Postcard Discussion
 - a. How to address address/location to determine Test vs. Control Group
 - i. Ask for address? Street Name?
 1. Determination to use separate QR code and coloring- Text and QR Code will be red or blue depending on test of control group.
 - b. In survey language
 - i. Remove “and/or” in instance of mentioning City & County
 - c. Make sure all logos are used for survey cover letter
 - d. In web address on cover letter and postcard use “WenatcheeValleyStormwater” instead of Wenatchee Stormwater
 - e. Discussion to add pictures to survey
 - i. Propose to Goldstreet Design- add example pictures of a swale and a pond to survey.
2. Survey Timing
 - a. Postpone survey distribution to after new year- goal of not getting mixed up with holiday mail and missed with travel.
 - b. Request for at least 1 week notice before sending any materials out- all elected officials notified.

MEETING AGENDA

Wednesday, 12/28/2022, 2022

1:30 PM to 2:00 PM

Microsoft Teams

Invitees:

Douglas County: Jennifer Lange (Present)

Chelan County: Jason Detamore (Present)

Wenatchee: Jessica Shaw, Kelsey Grover (Present)

East Wenatchee: Garren Melton

Pullman: Shilo Sprouse (Present)

Discussion Items:

1. Facebook & Website Post Information and Content
 - a. Include language to discuss the purpose of the effectiveness study
 - i. Evaluate stormwater program
 - b. Include language to specify this is an ECY requirement
 - c. Input is intended to assist in developing stormwater programs to benefit community, protect water quality, and prevent flooding
 - d. Use City of Wenatchee's Contact information as the lead agency/ project manager.
2. Posts to be done week of 1/2/2023-1/6/2023, postcards sent week of 1/9/2023
3. City to work on draft post language and send to everyone for feedback.

MEETING AGENDA

Wednesday, 4/19/2023

1:30 PM to 2:30 PM

Microsoft Teams

Invitees:

Douglas County: Jennifer Lange (Present)

Chelan County: Jason Detamore (Present)

Wenatchee: Jessica Shaw, Kelsey Grover (Present)

East Wenatchee: Garren Melton, Angela Tuetken (Present)

Pullman: Clayton Forsemann (Present)

Goldstreet Design: John Gross

Discussion Items:

1. Presentation of Report from John Gross with Goldstreet Design
 - a. For final report purposes, we need the raw data package.
 - i. Goldstreet to send full data package.

BMP Owner Awareness Education & Outreach Effectiveness Study

MEETING AGENDA

Tuesday, 6/13/2023

1:30 PM to 2:30 PM

Microsoft Teams

Invitees:

Douglas County: Jennifer Lange, Justin Roozen, John Keefer (Present)

Chelan County: Jason Detamore (Present)

Wenatchee: Jessica Shaw, Kelsey Grover (Present)

East Wenatchee: Garren Melton, Angela Tuetken (Present)

Pullman: Justin Cohee (Present)

Discussion Items:

1. Final report submission timeline
 - a. Report to be submitted 60 days after study completion- Final data package received May 11, 2023
 - b. Receive draft comments by Friday, June 16 for submission by the 23rd (vacations)
2. Next Steps -> Future E&O to improve BMP owner awareness
 - a. Review/Revise O&M template to use more plain language
 - i. Less "legal-ese", less stormwater jargon- more common terms
 - ii. Make the O&M agreement easier to find
 - b. Direct mailing to property owners
 - i. Selected as the preferred method of receiving information based on survey data
 - ii. Send postcard with link to webpage with effectiveness study information
 - iii. Include information about BMPs and jurisdiction contacts for additional information
3. Fact Sheet
 - a. Will be sent out in next couple days for review