Final Report

CHAMPIONING COMMUNITY STORMWATER SOLUTIONS

2020 Dow Sustainability Fellows Project

Client: Huron Pines

Acknowledgements

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Executive Summary

This report contributes to the seminal efforts of the Great Lakes One Water (GLOW) Partnership to advance innovative water management for the economic, environmental, and cultural benefit of communities throughout the Great Lakes Basin. This project, led by the nonprofit Huron Pines, contributes to the Lake Huron Regional Team's desire to increase awareness of sustainable, nature-based solutions to address stormwater challenges throughout Lake Huron's coastal communities.

Working with Huron Pines, a nonprofit conservation organization that serves the Northeastern lower peninsula of Michigan, and Rogers City, MI, our pilot community for the project, our Dow Fellows Team aimed to better understand the opportunities and barriers for Lake Huron communities in planning and prioritizing innovative, sustainable stormwater solutions. To accomplish this, our project integrates (1) background research and stakeholder collaboration, (2) community engagement in the form of qualitative interviews with key stakeholders, and (3) an analysis of the potential application of an innovative tool - the Community Vibrancy Dashboard. Our ultimate goal was to determine how Huron Pines can use the Community Vibrancy Dashboard tool to support their efforts leading sustainable stormwater improvements in coastal Lake Huron communities.

Primary Takeaway -- The Community Vibrancy Dashboard is a powerful tool with potential to support the sustainable transformation of stormwater infrastructure in coastal Lake Huron. However, this tool is not self-implementing. It requires a champion, Huron Pines, to lead the distribution of, engagement with, and interpretation of this tool with communities to ensure full effectiveness.

Key Findings

Dashboard Strengths

- **Opinion-based Questions Generate Valuable and Usable Results:** The Dashboard effectively captures vibrancy trends of 'Connectedness' and 'Relationship to Water'.

- **Community Vibrancy Scores are Explicitly Generated:** The Dashboard provides a powerful medium for quickly comparing and contrasting the relative rank of "Community Vibrancy" between communities.

Dashboard Weaknesses

- **Quantitative Questions Require Expertise:** Many interviewees expressed difficulty answering questions which required specialized knowledge on community metrics, particularly within the 'Community Engagement' and 'Government' Dashboard sections.

- **Community Awareness and Knowledge of Stormwater Issues is Not Captured:** The information we gathered about community awareness, education, and knowledge of current stormwater issues in Rogers City was gained through interviews and community engagement and is not captured by the Dashboard.

- **Water Resource Management Strategies are Not Captured:** The Dashboard does not capture how water resources management is prioritized in comparison to other community concerns.

- **Results Lack Actionable Next Steps:** The Dashboard scores are currently not paired with actionable next steps a community could take to improve their vibrancy ranking.

Recommendations

The following short- and long-term recommendations are intended to help Huron Pines leverage value from the Dashboard tool. We also present key short- and long-term recommendations specific to Rogers City to advance stormwater solutions in the community (listed in report).

Short-Term Recommendations: These can be implemented without changes to the Dashboard, and are intended to address its current weaknesses.

- Identify a community Dashboard "local expert" who can help find specific quantitative and economic data not widely available to the community.

- Interview local stakeholders to better understand connections to water resources and overall community perceptions, in addition to using the Dashboard.

- Provide opportunities for community input where Dashboard respondents can write in and identify issues related to local water resources.

- Better understand community priorities by gathering additional information on how residents rank current water resources issues amongst broader issues identified by local government officials or Huron Pines.

• Debrief Dashboard findings with key stakeholders through an interactive presentation and dialogue, providing interpretation of vibrancy results and scores.

• Use the Dashboard scores to inform future planning and decision-making efforts.

Long-Term Recommendations: These require structural changes to the Dashboard that will help leverage the tool's value toward improving community and water resources planning.

• Enhance the Dashboard's overall user-experience for respondents.

• Reconfigure the Dashboard with adaptive survey questions based on stakeholder groups.

• Create new Dashboard questions that address the weaknesses noted above.

• Scale indicator and vibrancy scores based on the population of the community to better assess vibrancy themes across communities.

• Commit staff time and financial resources to successfully implement structural changes.

The Community Vibrancy Dashboard's efficacy can be improved through collaboration with local government, community, and environmental leaders. Huron Pines has the opportunity to leverage the Dashboard's strengths and to champion its use throughout Lake Huron's coastal communities. By initiating specific improvements to the tool, while providing a supportive framework to the involved communities (i.e. interpretation of results, stakeholder interviews), the Community Vibrancy Dashboard can contribute to the efforts of Huron Pines and the GLOW Partnership in improving sustainability and resilience of stormwater infrastructure in coastal Lake Huron communities.

Introduction & Background Research

GLOW and Huron Pines

Huron Pines is a nonprofit conservation organization that serves the Northeastern lower peninsula of Michigan. The organization is composed of a multidisciplinary team whose service areas cover 4.5 million acres, predominantly along the coast of Lake Huron (Appendix A). Driven by a mission to "conserve and enhance Northern Michigan's natural resources to ensure healthy waters, protected places, and vibrant communities," Huron Pines organizes both on-the-ground conservation work and future visioning planning.[1]

Lake Huron represents a critical natural resource that drives the Northeastern Michigan economy, supports incredible biodiversity, and connects individuals, institutions, and communities throughout the region. The Great Lakes One Water (GLOW) Partnership, a basin-wide initiative representing six regional Great Lakes teams, was formed to address the following challenges recognized by coastal Lake Huron communities: (1) mitigating pollution and flooding from increasing stormwater runoff, (2) strengthening and enhancing aging stormwater infrastructure, and (3) balancing economic development along waterfronts with water resource protections. In addressing these challenges, GLOW engages and unites local community stakeholders (e.g. foundations, businesses, environmental groups) to improve water resources management so that the people and businesses of the Great Lakes region can benefit. Jointly, Huron Pines and GLOW developed the "Lake Huron Forever" action agenda, which aims to assess and address communities' local stormwater issues and planning.

The Community Vibrancy Dashboard

To better understand the opportunities and barriers in planning and prioritizing sustainable stormwater solutions, Huron Pines aims to utilize a new interactive tool, the Community Vibrancy Dashboard. Developed by the Michigan Office of the Great Lakes and Michigan State University's Institute for Water Resources, the Dashboard measures a community's vibrancy with respect to its water resources. Community vibrancy is defined as: "The existence of accessible processes and networks that facilitate collective action toward shared goals, catalyze diverse opportunities for pursuing long-term community wellbeing, and foster the capacities needed for effectively responding to change over time in a particular place and driven by connection to that place."[2] Vibrancy in a coastal community in Michigan connotes a place where people (1) want to live, work, and recreate, (2) feel comfortable, safe, stimulated, and engaged, and (3) want to be.[2]

Previous work by the Institute for Water Resources identified a series of measurable indicators of community vibrancy that relate to a community's development of water resources. The Dashboard consists of quantitative and qualitative survey questions which are analyzed to produce a score for each indicator. Survey questions are broken into six indicator categories relating to a community's water resources: (1) access to water resources, (2) governance, (3) community development, (4)

community engagement, (5) relationship with water, and (6) connectedness. The Dashboard's survey and indicator results and scores are presented online in a publicly available and interactive manner. The questions assess how connected respondents are to local water resources and how communities include water amenities in their day-to-day activities and long-term decision making. Upon completion of the Dashboard survey, users receive a vibrancy score which ranks their community amongst others in the Great Lakes Region. The Community Vibrancy Dashboard is accessible at _https://iwr.msu.edu/CI/_.

Problem Statement

Driving Question: How can Huron Pines use the Community Vibrancy Dashboard to support sustainable stormwater improvements in coastal Lake Huron communities?

Huron Pines has asked the Dow Sustainability Fellows to determine if the Community Vibrancy Dashboard can be used to evaluate a community's readiness for sustainable stormwater infrastructure improvements. Through this evaluation, Huron Pines and GLOW will gain an understanding of how to best implement this tool to further their conservation mission in coastal Lake Huron communities. Using the Lake Huron community, Rogers City, MI, as a case study, the Dow Fellows Team assessed the Dashboard's effectiveness at predicting a community's readiness for sustainable stormwater improvements, as well as barriers to its implementation in a community setting.

Statement on Impacts of COVID-19

This project was introduced to the Dow Sustainability Fellows team prior to the onset of the COVID-19 pandemic in the United States. Our research methodology was impacted dramatically due to the pandemic. Specifically, our team intended to learn from the pilot case study of Rogers City, through participatory methods of town halls, community meetings, and interactive sessions in a shared physical space. In response to the pandemic, our team developed a virtual framework for all outreach, interviews, and meetings to ensure safety of the participants involved. While the methods changed, the underlying goals were still achieved. Our team was able to reach a variety of residents and stakeholders and were welcomed into the Zoom-realm of Rogers City community meetings. We believe both stormwater issues and the heart of Rogers City spirit were still captured in our research despite the change in settings.

Rogers City Case Study

Rogers City is located in Presque Isle County, halfway between Cheboygan and Alpena along US Highway 23. Rogers City is a well-suited pilot community due its existing connection with Huron Pines. Past engagement efforts revealed resident enthusiasm towards protecting water resources, though major progress in water infrastructure improvements have yet to be achieved. In 2014, the Rogers City Master Plan outlined how to translate shared values and goals into future growth and effective decision-making[3]. Rogers City's identity is strongly tied to Lake Huron, which is well-represented in local passion towards water resources[3].

Huron Pines developed the Rogers City Stormwater Assessment in September 2006 which outlines a stormwater management plan for future city planning projects.[4] Huron Pines received funding from the Michigan Department of Environmental Quality (DEQ) Coastal Management Program to create the Rogers City Stormwater Assessment. The plan has two parts, the stormwater inventory and stormwater treatment options (Appendix B).

To date, the following recommendations have not been implemented in Rogers City:

- Zone 1. Maintain existing vegetation and stream buffers where runoff drains.

- Zone 2. Filter runoff through an oil/grit separator.

- Zone 3. Install a small sediment basin lined with stone where the outfall is at the beach.

- Zone 4. Install small rain gardens throughout the basin.

- Zone 5. Install rain gardens and two small oil/grit separator units.

- Zone 6. Install a sediment catch basin or a small oil/grit separator unit.

- Zone 7. Remove debris and install a small oil/grit separator unit.

- Zone 8. Install rain gardens and a detention basin or an oil/grit separator unit.

Roger City updated its Zoning Ordinance in 2011 to include stormwater management regulations which (1) reduce safety risks associated with stormwater runoff, (2) reduce economic losses, and (3) protect and conserve water and land resources.[5] The plan supports the creation of simplified stormwater runoff systems to creatively manage water on-site or where it falls. Some proposed

solutions include parking lot depressions, rain gardens, gravel perms, and swales in back-lots. The Zoning Plan mandates that all stormwater runoff control systems be equipped to handle 25-year frequency storm events that occur for 24-hour periods. General themes within the Zoning Plan regulations involved decreasing stormwater velocity, increasing natural infiltration, decreasing sedimentation, and removing pollutants. Through this case study, our team sought to understand how the Community Vibrancy Dashboard evaluates Rogers City, and how Rogers City can progress in implementing their sustainable stormwater goals.

Research Methodology

Through community interviews and the Community Vibrancy Dashboard, we determined if the Dashboard accurately reflects current stormwater and community vibrancy conditions in Rogers City. This helped us to assess the barriers which have inhibited implementation of the Rogers City Stormwater Plan. We divided our research methods into three phases: (1) Background Research and Stakeholder Collaboration, (2) Community Engagement, and (3) Analysis.

1. Background Research and Stakeholder Collaboration

We reviewed relevant literature provided by Huron Pines and other Rogers City officials to understand the context of stormwater and water resources management in Rogers City (Appendix B). We studied existing conditions, specific areas of concern, and potential barriers to inform and streamline our scope of work.

2. Community Engagement

Qualitative Interview Process

We employed a three-phased interview process to better understand the current stormwater conditions and community perceptions in Rogers City (see Appendix C). We interviewed 12 water resource professionals or active community residents that have worked or are still employed in Rogers City. Community engagement allowed us to accurately capture perceptions of water resources, stormwater management, and overall community relationship to water in Rogers City. This occurred through a process of interviews, guided completion of the Community Vibrancy Dashboard survey (see Appendix D for survey questions), and a focus group.

Outside of the three-phased interview, we learned more about community perceptions of water resources and provided education on stormwater infrastructure during a presentation for a local community group, Team Rogers City (Appendix F).

3. Analysis

Interview Coding

We employed a qualitative coding process followed by a quantitative analysis to identify and catalogue major themes and sub-themes, both inductively and deductively (Appendix H). We split coding into two categories.

The first category inductively focused on stormwater topics through the: (1) identification of stormwater related issues, (2) identification of stormwater management solutions, (3) identification of barriers to stormwater management, and (4) identification of past successes in addressing a stormwater-related issue in the community (Appendix I). The final stormwater codes and subcodes emerged from the interview data through an interactive process of reading, grouping, and refining.

The second category utilized a deductive coding approach to catalogue the drivers of community vibrancy that were mentioned during community interviews. These codes and drivers as defined by Rutty and Goralnik are:[6] (1) Governance, (2) Community Leadership, (3) Access to Water Resources, (4) Relationship with Water, and (5) Socioeconomic and Environmental Opportunities (Appendix J). Within each code, we refined and applied sub-codes when necessary.

Quantifying Coding

Following the coding processes, we summarized and illustrated the number of mentions within each code and subcode (see Appendix K and Appendix L). Codes within the community vibrancy category were further refined into positive or negative connotations within each subcode.

Community Vibrancy Dashboard Results

Thirteen Rogers City community members filled out the Community Vibrancy Dashboard. Rogers City's total vibrancy score is 339 out of 600 possible points (a breakdown of this score by indicator category is shown in **Figure 1**.) Based on a score of 339, Rogers City is in the "*Setting the Stage*" phase along the Dashboard's Vibrancy, Wellbeing, and Blueness scale. This is the second phase of community vibrancy, preceded by "*Interventions/Tools/Training/ Education*" and followed by "*Transformation*" and "*Saturation*". The Community Vibrancy Dashboard reports vibrancy scores on the web-based platform by indicator categories, stakeholder groups, and as compared to other communities (see Appendix M for additional dashboard results).
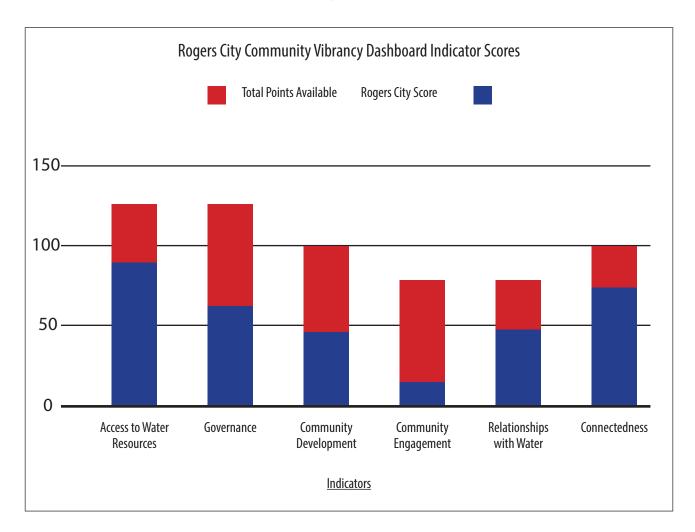
Figure 1. Rogers City Community Vibrancy Score by indicator categories reported by the Dashboard. Category descriptions include Access to Water Resources: Presence of water resources, features, and amenities and how people use them; Governance: Community visioning, planning, and local government support that focuses on water resources; Community Development: The role of water projects in supporting community development, potentially leading to expanded economic, social, and environmental opportunities; Community Engagement: Stakeholder involvement, volunteerism, and public and private philanthropy.; Relationships with Water: Water resources as part of our background and everyday life. Connectedness; Your opinions on how well you and your community connect with water resources.

Primary Barrier Categories The team identified these categories from interview coding, with definitions supported by background research (Winz et. al.).	Identified Instances of Barriers in Rogers City Each instance represents a 'sub code' through the interview coding process (See Appendix G: Indicators of Stormwater Barriers)	Related Indicator Categories The Community Vibrancy Dashboard has six Indicator Categories used to determine overall Vibrancy Score
Problem Hierarchy: Technological, geographic, or infrastructural limitations of water management designs	- Problems with other infrastructure - Lack of community development - Problems with current infrastructure - Misc. problems	- Access to Water Resources - Governance - Connectedness
Government: The structure of the political and electoral system of a given community or the level of stakeholder support available	- Inadequate dissemination of information - Inadequate zoning laws/enforcement - Resistance from local government - Lack of intergovernmental collaboration	- Governance - Connectedness
Educational/Knowledge: Understanding of sustainable stormwater infrastructure; level of communication across institution and stakeholder groups	- Lack of community problem knowledge - Lack of problem visibility - Misconception of science	The Community Vibrancy Dashboard does not consider this barrier.
Financial: Manifested lack of resources, including financial and educational.	- Lack of funding - Ability to maintain green infrastructure - Difficulty competing for grant money - Lack of community development - Difficulty raising money	- Access to Water Resources - Governance - Community Development - Community Engagement
Attitudinal/Cultural: A community's conceptual knowledge, perceptions, attitudes, and culture.	- Lack of community concern - Community resistance to change - Generational divide - Skepticism of green infrastructure - Community resistance to regulations	- Connectedness - Relationships with Water

Table 1: Barriers to sustainable stormwater management implementation applied to Rogers City and the Community Vibrancy Dashboard.

This table describes a vital connection between barriers to sustainable stormwater management, specific examples of barriers as experienced by Rogers City, and if/which indicator categories of the Community Vibrancy Dashboard describe this information. Primary barrier categories were derived from coding of stakeholder interviewers, whose definitions are supported by Winz, Trowsdale, and Brierley[7]. This analysis revealed the Dashboard's failure to include 'Educational/Knowledge' barriers in its determination of community vibrancy.

Findings and Recommendations

The following findings address the extent to which the Community Vibrancy Dashboard (1) accurately reflects interviewee's perceptions of community vibrancy in Rogers City and (2) captures current community stormwater perceptions and awareness. Following findings, we list short-term recommendations that can be implemented without changes to the Dashboard to overcome its current weaknesses. Long-term recommendations require structural changes to the Dashboard that will leverage the tool's value to aid community and water resource planning.

Community Vibrancy Dashboard Finding

Primary Takeaway -- **The Community Vibrancy Dashboard is a powerful tool with great potential to support the sustainable transformation of stormwater infrastructure in Coastal Lake Huron. However, this tool is not self-implementing. It requires a champion, Huron Pines, to lead the distribution of, engagement with, and interpretation of, this tool with communities to ensure full effectiveness. We believe Huron Pines can serve as a Dashboard champion, given the organization's expertise in environmental conservation and involvement with a variety of Lake Huron coastal communities.**

Community Vibrancy Dashboard Strengths

• **Opinion-based Questions Generate Valuable and Usable Results:** The Dashboard is effective at capturing community vibrancy trends of 'Connectedness' and 'Relationships with Water', both of which included opinion-based qualitative questions. Our interview results reflect this finding with the high proportion of positive mentions (17/21) in our related coding theme of 'Relationship with Water' (Appendix L). Additionally, qualitative and opinion-based questions increased the accessibility and usability to all respondents.

• **Community Vibrancy Scores are Explicitly Generated:** The Dashboard provides a powerful medium for quickly comparing and contrasting the relative rank of Community Vibrancy Scores between a wide range of communities. By subscribing an easily comprehensible number (i.e. Community Vibrancy Score) to communities' paths towards implementing sustainable stormwater infrastructure, this tool quantifies an otherwise broad and complex topic.

Community Vibrancy Scores are broken down into six different Indicator Scores, highlighting specific areas of successes or targets for improvement which can also be compared on a community-by-community basis.

Community Vibrancy Dashboard Weaknesses

• **Quantitative Questions Require Expertise:** Many interviewees expressed difficulty answering questions which required specialized knowledge on community metrics, particularly within the 'Community Engagement' and 'Government' sections. Many reported "I don't know" for multiple questions. Some interviewees expressed concern that questions were ill-suited for Rogers City due to its small population and lack of available economic data. When given the opportunity to research answers, interviewees often reported the inability to find necessary data. This likely skewed vibrancy scores lower than if quantitative questions were less expertise-dependent.

• **Community Awareness and Knowledge of Stormwater is Not Captured:** In this report, information on community awareness of current stormwater issues in Rogers City was gained through interviews and community engagement (Appendix F) Equivalent information is not captured by the Community Vibrancy Dashboard. Community education on the topic of stormwater infrastructure itself is not accounted for (Table 1 & Appendix I). Most questions falsely assume respondents are highly educated on local water-related issues. Without the opportunity to submit written feedback on community water issues, the Dashboard cannot fully capture community attitudes, awareness, and education regarding water resource issues and management.

• **Water Resource Strategies are Not Captured:** The Dashboard fails to fully capture a The Dashboard fails to fully capture a community's water resource strategies, including: (1) how stormwater management falls within the problem hierarchies of competing community interests, (2) the current financial capacity of the community to manage stormwater, and (3) the alignment of government structures and community interests in investing in and maintaining future stormwater improvement projects. These details are necessary for describing the full scope of vibrancy for a given community.

• **Results Lack Actionable Next Steps:** Vibrancy scores are currently not paired with actionable next steps a community can take to improve their vibrancy ranking. Though the Dashboard does capture whether communities are preparing for improvements (i.e. receiving a score within the "Setting the Stage" range), this ranking does not provide novel information nor guidance for a community eager to make improvements. Score interpretation and actionable recommendations are necessary to fully activate the Dashboard's usefulness.

Dashboard Recommendations

Short-Term Recommendations:

These recommendations layout how Huron Pines can deploy the Dashboard in other communities without making structural changes to the tool.

• **Identify a Community Dashboard "Local Expert":** Additional community outreach should include identifying a Dashboard "local expert" to answer parts of the Dashboard where specific quantitative data is necessary and expertise on the subject is required. This will reduce the likelihood of negatively-skewed results due to lack of knowledge on the subject (i.e. non-experts selecting the "I don't know" answer for multiple questions).

• **Interview Locals to Understand the Story:** Additional community outreach in the form of informal or formal interviews and background research should be used to better understand community perceptions on local water resource management and issues. We were able to determine how the Rogers City community members felt about their relationships and connections with water best by speaking with members of the community.

• **Provide Opportunities for Community Input:** The Dashboard should be used in combination with other public consultation tools where respondents can write-in and identify issues in local water resources. Additional community engagement (i.e. stormwater specific surveys, interviews) can better uncover the community's understanding and concerns with water-related issues like stormwater.

• **Better Understand Community Priorities:** Related to the above finding titled 'Water Resources Strategies are Not Captured', respondents ought to have the opportunity to rank current water resources issues among other issues identified by local government officials, Huron Pines, or others in the community. Such information can be obtained by speaking with community members and studying current management plans and grants that the community is pursuing.

• **Debrief Dashboard Findings with Stakeholders:** Vibrancy scores were best received by Rogers City stakeholders when interpreted via presentation and dialogue. An open discussion about Dashboard results provides necessary explanations on how water resources contribute to community vibrancy and an opportunity to compare scores to other communities.

• **Inform Future Planning and Decision Making:** While the Dashboard does not provide recommendations on how to move forward and improve a Community Vibrancy Score, it should still form the basis of future planning efforts. The overall Dashboard community vibrancy score and indicator scores can help identify goals, initiatives, and next steps to be implemented to achieve sustainable stormwater management in a localized setting.

Long-Term Recommendations

These recommendations include suggestions of structural changes to make to the Dashboard that will best leverage the tool's value toward improving community and water resources planning.

• **Enhance User-Experience:** While the Dashboard includes a "Quick Guide" and website home page, the user-experience could benefit from (1) a revamped website that better highlights the Dashboard's goals and expected outcomes for the community, (2) a series of informational and guidance videos regarding the Dashboard's use, and (3) a process to more effectively interpret the Dashboard's scores.

• **Create Adaptive Survey Questions based on Stakeholder Groups:** Considering that many respondents expressed difficulty answering the highly quantitative and specific economic questions, we suggest re-coding the survey to assign questions to users based on the particular stakeholder group a respondent selects. For example, if a stakeholder selects "Local Government Elected Official", this respondent is better suited to answer both quantitative and economic questions, whereas a "Local Resident/Homeowner" would likely not be able to provide meaningful answers to such

questions.

• **Add New Dashboard Questions:** To structurally change how the Dashboard can better address the weaknesses noted above, additional questions should (1) assess a community's understanding of their impact on water resources, (2) identify strategies and solutions that the community would like to pursue to address water-related issues, (3) identify local government's financial capacity to address water-related issues, and (4) assess how a community prioritizes water resources compared to other issues.

• **Scale Results Based on Population of Community:** Creating a mechanism for normalizing vibrancy scores will be important to assess community vibrancy themes, as current Dashboard scores do not adjust for community population size.

• **Commit Staff Time and Financial Resources:** Successfully implementing long-term updates to the Dashboard will require organizational commitment of specific staff time and financial resources.

Rogers City Recommendations

The underlying driver of the following recommendations is to overcome barriers to implementing the Rogers City Stormwater Assessment Plan, created by Huron Pines in 2006. As Rogers City continues to partner with Huron Pines, there are additional steps that can improve stormwater management internally. These recommendations are drawn from background research, interview perceptions, current development trends, and Community Vibrancy Dashboard results.

Short Term Recommendations

• Use participatory planning methods to empower residents to construct low cost sustainable stormwater solutions in their respective neighborhoods (i.e. training workshops on rain garden construction).

• Implement small-scale sustainable stormwater systems through short term grants as visible prototypes to inspire larger projects (i.e. permeable paving in public parking areas).

• Develop educational programming for K-12 students on watershed planning and resiliency, paired with sustainable infrastructure collaborative projects (i.e. native plant rain garden on school grounds).

• Include focus on stormwater management strategies in the economic and marketing strategy report.

• Update zoning ordinances to mandate all new developments be constructed in accordance with greater frequencies and volumes of precipitation events as instructed by local climate change projections (i.e. 50-year storm, 100-year storm).

Long Term Recommendations

• Engage in an extensive bottom-up participatory process in the Redevelopment Ready Communities initiative across all phases of Michigan Economic Development Corporation. Ensure that sample size includes a variety of stakeholders that vary in profession, age and demographics.

• Develop intergenerational community programs and engagement.

• Redesign of streets, sidewalks and trails to accommodate activity during different hours of the day and week.

• Harness attractive and sustainable stormwater infrastructure as a means for strengthening water-based placemaking.

• Invest in sustainable stormwater infrastructure on upland areas (towards headwaters of the watershed) to support maximum water retention and filtration.

• Develop inter-community relationships with other Lake Huron towns to increase collective economic traction, tourism and outreach.

Anticipated Impact

Our project identifies ways in which the Dashboard can be used with greater efficacy, in collaboration with local government, community, and environmental leaders. Through background research, qualitative interviews with key stakeholders, and evaluation of the innovative Community Vibrancy Dashboard tool, our team gained critical insights regarding community perceptions of stormwater and water-related issues, while also evaluating the effectiveness of the tool itself.

With the proper changes administered, the Community Vibrancy Dashboard has great potential to support sustainable stormwater improvements

in Coastal Lake Huron. Moving forward, it requires a champion, Huron Pines, to execute improvements to the tool and assume the role as its key distributor, implementer, and interpreter with the communities who use it. Ultimately, the Dashboard can play a strong supporting critical role in advancing Huron Pines' efforts to promote regional community resiliency in the response to complex issues such as climate change. When championed by Huron Pines, the Dashboard has the potential to provide communities with an understanding of their current vibrancy status, how they compare regionally, and guide next steps to improving community resiliency in the face of a changing climate.
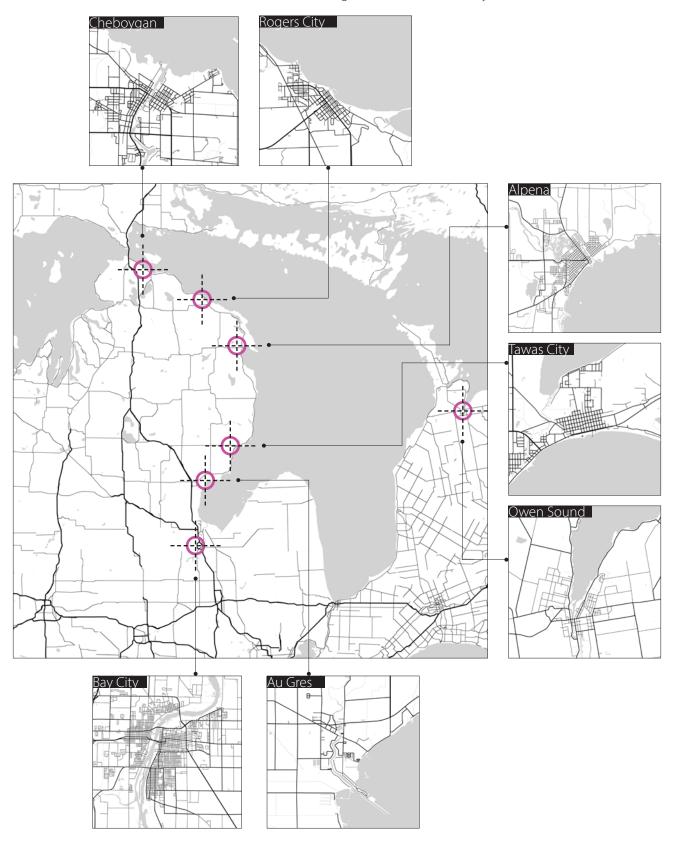
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Appendices

A. Lake Huron communities
The communities that Huron Pines are associated with along Lake Huron bi-nationally

B. Rogers City Stormwater Plan Map

The 2006 Stormwater Management Plan by Huron Pines for Rogers City. It elaborates on the stormwater basins, outfalls, watershed and lakeshore. This was never implemented
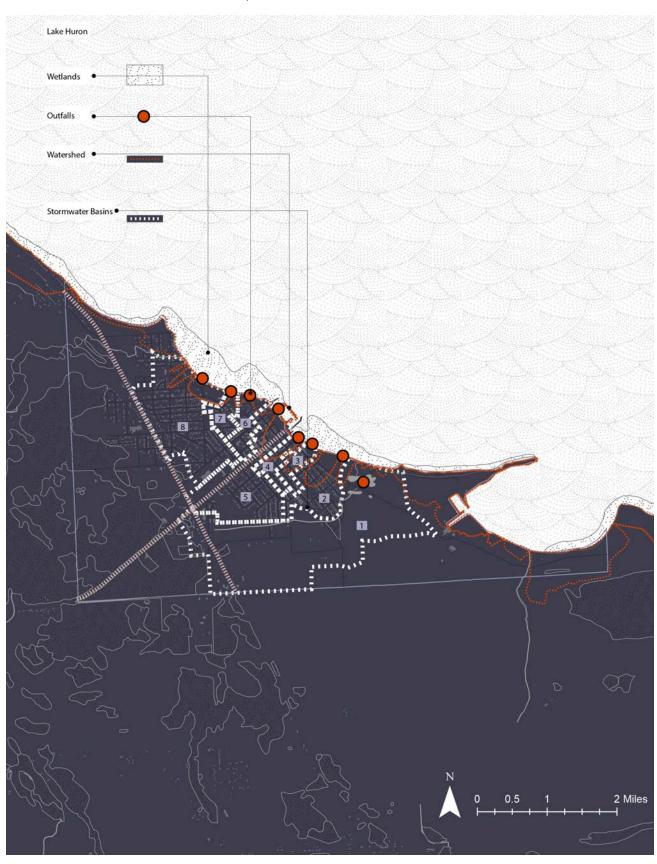
C. Interview structure and Phase I Interview Questions

Phase 1
The Phase 1 interview format was designed with conversational semi-structured interviews lasting approximately one hour. Core interview framework questions coincided with major themes of the Community Vibrancy Dashboard and specific questions about current stormwater challenges and successes in Rogers City. Interview questions we posed to allow us to compare interview and dashboard results. Part one of the interview questions asked interviewees about their relationships to water, their perceptions of community use of water resources, and their motivations for working in resource management or local city government fields. In part two of the interviews we asked participants about stormwater management, their knowledge of stormwater systems, and specific stormwater related issues in Rogers City.

Phase 2
The Phase 2 interviews occurred approximately one month after Phase 1. The primary purpose of the Phase 2 interviews was to assist interviewees in taking the Community Vibrancy Dashboard. We remained on the Zoom call if interviewees encountered technical issues while filling out the dashboard. After the interview, we sent interviewees a followup survey developed by our team to assess the usability of the Dashboard tool. Questions asked in the Community Vibrancy Dashboard and the Dashboard usability follow up survey are included in Appendices B and C, respectively.

Phase 3
Phase 3 of our qualitative interview process occurred approximately two months after Phase 2. The purpose of Phase 3 was to share results of the Community Vibrancy Dashboard and Phase 1 interview analysis with a sub-group of interviewees from Phases 1 and 2. In this phase we facilitated a small group conversation with 5 identified interviewees representing local government, business, and community stakeholders. In this Phase we aimed to receive additional feedback about the efficacy of the Dashboard as well as hear about participant's overall perspectives on Phase 1 and 2 results. Topics covered in this conversation included: the role of community engagement, commonly identified stormwater issues and possible solutions, and actions that community leaders can take to management and invest in stormwater improvements in the future. Our goal with the focus group format was to facilitate a conversation among a diverse group of stakeholders in Rogers City to help inform our recommendations for the city itself and for how Huron Pines can use the Dashboard moving forward in other Lake Huron communities.

Objectives	Core Interview Framework Questions
Part One Understanding of Water Resources: Identify interviewees personal and professional connections to water resources.	**Relationship to Water and Motivations** • Can you describe your personal connection to water resources in and around Rogers City? • Can you describe your motivations for pursuing a career involving water resource management // or being a community leader around water?
Part Two Perceptions on stormwater management in Rogers City: Gain an understanding of both successful and challenging stormwater management initiatives in Rogers City. Understand how the interviewee perceives community engagement and governance aspects of stormwater management.	**Individual Perceptions** • What stormwater management initiatives and practices in Rogers are you most proud of in Rogers City? • Can you describe challenges, or barriers, that you have observed related to stormwater management initiatives in Rogers City? • How have these evolved, improved, or worsened over time? **Community Engagement** • Describe how the community as a whole perceives stormwater management in Rogers City. • How have community perceptions towards stormwater changed over time in Rogers City? **Governance and Community Leaders** • Who are the key individuals and organizations that are most invested in stormwater management in Rogers City? • How have these individuals and orgs impact stormwater decision-making and planning in Rogers City? **Additional Questions:** • Are there additional community members who you would recommend we speak with? • Is there anything else you would like to share?
Part Two Next Steps: Introduce the interactive Community Vibrancy Dashboard	**U-M research team discusses next steps:** • Describe the dashboard, including taking the dashboard and analyzing the results. • Discuss expectations for taking the dashboard. • Share document indicating how to complete dashboard.

D. Community Vibrancy Dashboard Questions

Section I: Access to Water Resources
How many special projects are underway to create or enhance local water resources, features, and amenities within the last 20 years?*
• None
• 1 - 4
• 5 - 9
• 10 or more
• Unsure/don't know

How many local water resources, features, and amenities are accessible within your community?*
• None
• 1 - 4
• 5 - 9
• 10 or more
• Unsure/don't know

How many user-days are supported by local water resources, features, and amenities?*
• None
• 1 - 499
• 500 - 999
• 1,000 or more
• Unsure/don't know

How many acres of recreational space are provided by local water resources, features, and amenities?*
• None
• 40 acres or less
• 41 - 50 acres
• More than 50 acres
• Unsure/don't know

Section II: Governance
Does the community have a master plan, parks and recreation plan, and/or economic development plan that includes water resource development?*
• No
• One or more
• All three
• Unsure/don't know

How many projects to create or enhance a water amenity are envisioned over the next 5 - 10 years?*
• None
• 1 - 4
• 5 - 9
• 10 or more
Unsure/don't know

How many local water resources, features, and amenities have been developed with intergovernmental collaboration?*
• None
• 1 - 4
• 5 - 9
• 10 or more
• Unsure/don't know

Section III: Community Development
How many businesses within your community feature products or services designed to enhance water-related recreation?*
• None
• 1 - 4
• 5 - 9
• 10 or more
• Unsure/don't know

What is the total revenue generated by users of local water resources, features, and amenities within your community each year?*
• None
• Less than $10K
• $10K - $49K
• $50 - $99K
• $100K or more
• Unsure/don't know

Generally speaking, how have water-related projects affected adjacent property values?*
• Decreased
• Stayed the same
• Gained value
• Unsure/don't know

How many overnight accommodations are available to support tourism within your community?*
• None
• 1 - 99
• 100 - 499
• 500 - 999
• 1,000 or more
• Unsure/don't know

Section IV: Community Engagement
How many active stakeholder and volunteer groups typically participate in water-related projects each year?*
• None
• 1
• 2 - 3
• 4 - 5
• 6 or more
• Unsure/don't know

What is the ratio of successful to unsuccessful taxation and other fundraising campaigns for water projects?*
• Less than 1:1
• 1:1
• 2:1
• 3:1
• More than 3:1
• Unsure/don't know

What is the total revenue generated by water resource development within your community

each year?*
- None
- Less than $10K
- $10K - $49K
- $50K - $99K
- $100K or more
- Unsure/don't know

Section V: Relationship with Water
Generally speaking, how well does your community identify or connect with local water resources, features, and amenities?*
- Low (but present)
- Medium
- High
- Unsure/don't know

How many water-related attractions have become available through local water quality improvement projects with your community?*
- None
- 1 - 4
- 5 - 9
- 10 or more
- Unsure/don't know

Section VI: Connectedness
In your opinion, does easy access to local water resources, features, and amenities within your community enhance your utilization of them?
- No
- Don't know
- Unsure (but possible)
- Yes

In your opinion, does your local government view water resources, features, and amenities as essential contributors to community well-being?
- No
- Don't know
- Unsure (but possible)
- Yes

In your opinion, how easy is it to secure funding from local sources (e.g. millage vote, bonds, donations) to finance water-related projects?
- Very difficult
- Difficult
- Easy
- Very easy

Based on your observations, do local water-related projects typically feature collaborative efforts between key stakeholder groups? Check all that apply.
- Local government management
- Community groups
- Volunteers
- State/federal agencies

- Tribal councils
- Industry
- Local businesses
- Residents

In your opinion, how easy is it to mobilize volunteer groups to support water-related projects?
- Very difficult
- Difficult
- Easy
- Very easy

In your opinion, have water-related projects increased public awareness and support of water quality?
- No
- Don't know
- Unsure (but possible)
- Yes

E. Dashboard Usability Survey Questions

Section I – Reaction to Dashboard Components
Please give us your opinion regarding Dashboard content, format, and overall use as a tool to evaluate the contributions of water resources, features, and amenities to vibrancy in your community. A score of 1 indicates a very negative response and a score of 5 indicates a very positive response.

1. Dashboard's overall appearance and user friendliness?
• Very negative
• Negative
• Neutral
• Positive
• Very positive

2. Dashboard's overall appearance and user friendliness?
• Very negative
• Negative
• Neutral
• Positive
• Very positive

3. Range of survey questions?
• Very negative
• Negative
• Neutral
• Positive
• Very positive

4. Additional information provided to help answer each question when selecting the "learn more" link?
• Very negative
• Negative
• Neutral
• Positive
• Very positive

5. Range of answers for survey questions?
• Very negative
• Negative
• Neutral
• Positive
• Very positive

6. Appearance and usefulness of dashboard graphics (results of the survey)?
• Very negative
• Negative
• Neutral
• Positive
• Very positive

7. Results of the comparison between your responses and your community's cumulative responses (as indicated in red and blue)?
• Very negative
• Negative
• Neutral
• Positive
• Very positive

8. Results of the comparison between your community and other communities (as indicated in red and green)?
• Very negative
• Negative
• Neutral
• Positive
• Very positive

Section II – Overall Dashboard Usability

1. Were you able to use the Dashboard website without instructions or did you use the instructions provided?
• With instructions
• Without instructions
• Not aware instructions were provided

2. Did you register an account to save your responses to view or edit them later?
• Yes, I registered an account.
• No, I did not register an account.
• No, but I did not know I could register an account.

3. Which group or organization did you select that best described you?
• Local Government Elected Official
• Local Government Manager / Employee / Professional Planner
• Water-Related Stakeholder Organization
• Community / Neighborhood Group, Association, Volunteer
• Business Owner
• Local Resident / Homeowner
• Visitor / Tourist

4. The questions and additional information for each question were:
• Easy to answer
• Moderately easy to answer
• Difficult to answer
• Very difficult to answer

5. How much time did you take to complete the Dashboard survey? Account for any time taken to research questions, if applicable.
• Less than 30 min
• 30 min – 1 hour
• 1 – 3 hours
• Over 3 hours

6. What resources did you use to answer the Dashboard survey? Check all that apply.
- Personal knowledge of community
- Professional knowledge of community
- Online search
- Professional colleagues (e.g. coworkers, NGOs, local/state government, business owners, etc.)
- Personal colleagues (e.g. family, friends, neighbors, etc.)

Section III – Survey Questions

1. Check the survey questions that gave you the most difficulty answering.
- Access to Water Resources, Q1
- Access to Water Resources, Q2
- Access to Water Resources, Q3
- Access to Water Resources, Q4
- Governance, Q1
- Governance, Q2
- Governance, Q3
- Community Development, Q1
- Community Development, Q2
- Community Development, Q3
- Community Development, Q4
- Community Engagement, Q1
- Community Engagement, Q2
- Community Engagement, Q3
- Relationship with Water, Q1
- Relationship with Water, Q2
- Connectedness, Q1
- Connectedness, Q2
- Connectedness, Q3
- Connectedness, Q4
- Connectedness, Q5
- Connectedness, Q6

Section IV – Additional Comments

- Provide any additional comments you'd like to make. Indicate what you liked, didn't like, and what the project might do to improve the usefulness of the dashboard for communities in the future. *This is a free response question.*

F. Team Rogers City Community Engagement Workshop

The purpose of public engagement is to solicit the needs and desires of the community for stormwater planning in order to empower them to make decisions about their future city. Inclusive planning practices encourage communication between residents and decision-makers which ultimately helps establish trust and the transfer of information, both of which facilitate efficiently achieving community goals.

The purpose of the community workshop that we co-designed with the mayor of Rogers City was to invite members of Team Rogers City (TRC) to learn about natural stormwater solutions, be given the opportunity to provide feedback on our project, and fill out the Community Vibrancy Dashboard. TRC is a collaborative of volunteers in the community dedicated to help drive positive change in the town. The workshop was intended to set the tone for an inclusive and participatory planning process. It was also intended to increase momentum and awareness around issues we're working on.

23 attendees participated in the workshop that occurred digitally over Zoom on August 28, 2020 from 8:30 - 10:30am. They were associated with Rogers City in a variety of ways including elected officials, government employees, professional planners, water-related stakeholders, community group members, local business owners and active residents Most participants in this workshop were local residents or lived in the surrounding area of northeast Michigan.

Presentation
The first portion of the presentation was aimed to introduce our team backgrounds, interests, and goals of the project in order to establish relationships with community members. We proceeded to outline the components of our project and how it was applicable to Rogers City. Next, we quoted community members from our interview transcripts to emphasize lessons that we have learned from this project. After the presentation, we reserved time for community questions and comments to have a more informal discussion about green stormwater management strategies.

Polls
This virtual community engagement was an opportunity to broaden public relationships virtually for the project; therefore alternate methods and platforms were employed to gather perception

In order to collect data, we decided that poll questions would be the most simple and efficient way to receive feedback from the community. We asked 8 poll questions on our Zoom Call to attendees that covered a variety of topics including their relationship to water resources in Rogers City, personal experiences with stormwater flooding, and thoughts on green stormwater management strategies.
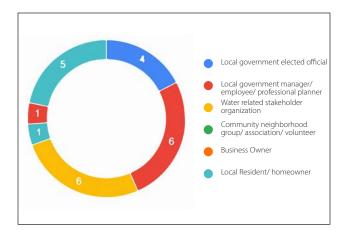
Post-Workshop Engagement
In our post workshop follow up, we designed a survey for attendees who would be interested in advancing our project. We sent a link to attendees to fill out the survey that provided them an opportunity to share any additional comments about our project and if they would be interested in filling out the Community Vibrancy Dashboard. We also created a one-page poster that summarized the project and attached a QR Code in the flyer that directed users to the Community Vibrancy Dashboard through Rogers City community Facebook groups. One additional participant filled out the Community Vibrancy Dashboard after our post-workshop engagement.
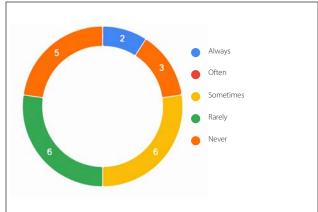
Results and Key Takeaways
The following figures below show our results from our polling questions at the TRC Community Engagement Workshop. The results from the workshop indicate that participants identify closely with water resources in Rogers City. About half the participants indicated that they regularly experience stormwater flooding issues on their property and recognize that stormwater management is a problem in Rogers City. In addition, participants would be excited to see many types of green stormwater infrastructure projects implemented in Rogers City. While participants expressed interest in all types of green infrastructure, they indicated that they would be most excited to see rain gardens added to their community. However, the majority of participants responded that it would be relatively hard to mobilize volunteer groups to support water-related projects.
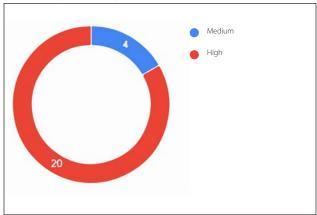
What best describes your relationship to Rogers City?

- Local government elected official
- Local government manager/ employee/ professional planner
- Water related stakeholder organization
- Community neighborhood group/ association/ volunteer
- Business Owner
- Local Resident/ homeowner
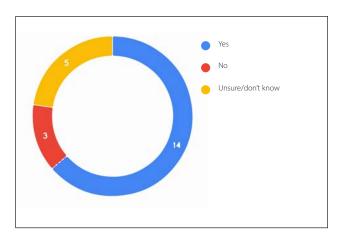
Have you experienced any flooding or standing pools of water after a rain event on your property?

- Always
- Often
- Sometimes
- Rarely
- Never

To what degree to you identify with local water resources, features, and amenities?

- Medium
- High

Do you think stormwater is an issue in Rogers City?

- Yes
- No
- Unsure/don't know

Do you think Rogers City is managing its stormwater efficiently?

- Yes
- No
- Unsure/don't know

Would you consider incorporating green stormwater infrastructure into your own yard?

- Yes
- No
- Maybe
- Unsure/don't know
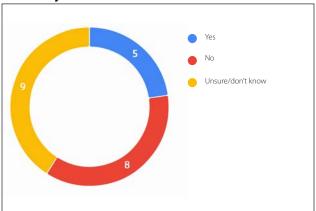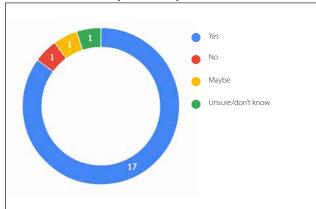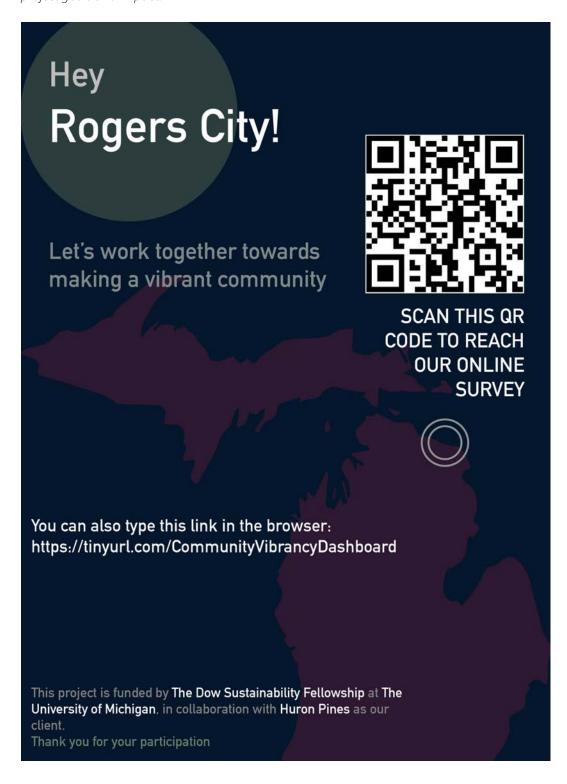
Figure 2: *Poll results from the Team Rogers City Town hall*

G. Team Rogers City Community Engagement Workshop Digital Posters

Our team created interactive QR coded flyers to increase engagement and participation in Rogers City to take the Dashboard. This was an attempt to champion this tool within the community for a greater sample size to learn about stormwater initiatives and become aware of our project goals and impact.

Natural Solutions
COMMUNITY WORKSHOP WITH TEAM ROGERS CITY

Helena Garcia | Eva Roos | Madeeha Ayub | Clare Kucera | Collin Knauss | Jeremy Nyitrai

WHO
Dow Sustainability Fellows, University of Michigan

Understand **community perspectives** on water resources by measuring their **vibrancy/readiness** to implement **green infrastructure**

WHAT
Mission Statement of Huron Pines:
"Conserve and enhance Northern Michigan's natural resources to ensure healthy water, protected places and vibrant communities"

Cheboygan | Rogers City | Owen Sound

Alpena

Tawas City

Bay City | Oscoda

Lake Huron
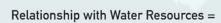
WHERE
Lake Huron communities, with Rogers city as the pilot site

Relationship with Water Resources =

LOCAL COMMUNITY + **CREATIVE PLACEMAKING** + **LOCAL ECONOMY** + **COMMUNITY VIBRANCY**

WHY
Current challenges of rising lake levels, runoff, lack of urgency and climate change

Management Strategies =

INCREMENTAL PLANNING + PARTICIPATORY PLACEMAKING + ACTIONABLE AWARENESS + GREEN INFRASTRUCTURE

Research- Stakeholder Engagement → Community Engagement- Data Gathering → Analysis- Presentations- Report

HOW

We are here

COMMUNITY VIBRANCY DASHBOARD
Tool developed by Office of the Great Lakes and Michigan State University for measuring and evaluating the role that local water-related projects play in enhancing people's connections to water and contributing to overall community vibrancy.

Scan this QR Code to get in touch with us!

This project is funded by The Dow Sustainability Fellowship at The University of Michigan, in collaboration with Huron Pines as our client. Thank you for your participation
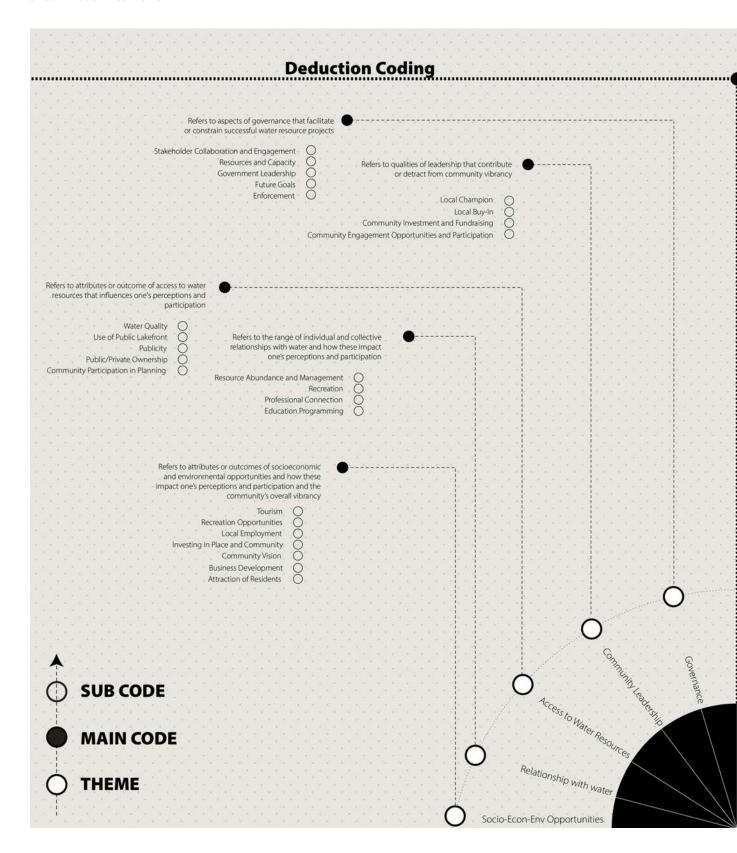
Huron Pines

H. Coding Analysis Hierarchy: Deductive and Inductive Coding

The following table hierarchically outlines the themes, main codes and subcodes from induction and deduction coding of our Phase I interviews

Deduction Coding

Refers to aspects of governance that facilitate or constrain successful water resource projects
- Stakeholder Collaboration and Engagement
- Resources and Capacity
- Government Leadership
- Future Goals
- Enforcement

Refers to qualities of leadership that contribute or detract from community vibrancy
- Local Champion
- Local Buy-in
- Community Investment and Fundraising
- Community Engagement Opportunities and Participation

Refers to attributes or outcome of access to water resources that influences one's perceptions and participation
- Water Quality
- Use of Public Lakefront
- Publicity
- Public/Private Ownership
- Community Participation in Planning

Refers to the range of individual and collective relationships with water and how these impact one's perceptions and participation
- Resource Abundance and Management
- Recreation
- Professional Connection
- Education Programming

Refers to attributes or outcomes of socioeconomic and environmental opportunities and how these impact one's perceptions and participation and the community's overall vibrancy
- Tourism
- Recreation Opportunities
- Local Employment
- Investing in Place and Community
- Community Vision
- Business Development
- Attraction of Residents

Legend:
- ○ SUB CODE
- ● MAIN CODE
- ○ THEME

Community Leadership
Governance
Access to Water Resources
Relationship with water
Socio-Econ-Env Opportunities

Induction Coding

Runoff Concerns
- ○ Local Impermeable Surfaces
- ○ Local Snow Melt
- ○ Local Yards
- ○ Outside Farmers

Problems with current infrastructure
- ○ Poor Design
- ○ Lack of sufficient Drainage
- ○ Debris Clogging drainage

Synergy between high lake levels and stormwater
- ○ Storm Drain backup
- ○ Standing Water

Specific problem area identified
- ○ Lakeside Park
- ○ South Shore Park
- ○ High School Parking Lot

Water Quality Concerns
- ○ Protecting environmental waters
- ○ Protecting Drinking Water
- ○ Wastewater discharge

Government
- ○ Inadequate dissemination of information
- ○ Inadequate zoning laws/enforcement
- ○ Resistance from Local government
- ○ Lack of intergovernmental collaboration

Financial
- ○ Lack of funding
- ○ Ability to maintain green infrastructure
- ○ Difficulty competing for grant money
- ○ Lack of community development
- ○ Difficulty raising money

Problem Hierarchy
- ○ Problems with other infrastructure
- ○ Lack of community development
- ○ Miscellaneous Problems

Attitudinal/Cultural
- ○ Lack of community concern
- ○ Community Resistance to change
- ○ Generational divide
- ○ Skepticism of green infrastructure
- ○ Community Resistance to regulations

Educational/Knowledge
- ○ Lack of community problem knowledge
- ○ Lack of problem visibility
- ○ Misconception of Science

Management
- ○ Forest Management

Outreach
- ○ Networking with other communities
- ○ Education Programming

Infrastructure
- ○ Permeable pavement
- ○ Rain Gardens

Government Actions
- ○ Local regulators enforcing zoning codes
- ○ Creation of stormwater management plan
- ○ Local government acknowledging issue
- ○ Local government educating community

Community organizational actions
- ○ Education programming
- ○ Testing water quality
- ○ Stormwater infrastructure assessment
- ○ Labeling storm drains

Community culture
- ○ Growing public awareness of issue

Identification of stormwater issues

Identification of Potential solution

Identification of stormwater Barriers

Identification of stormwater Success

Stormwater Awareness

Barriers and Successes

I. Stormwater Codes

| Stormwater Code	Main Code & Description
Identification of Stormwater Issues Refers to the mention of a stormwater related problem known to or experienced by the interviewee	*Runoff concerns* -Refers to interviewee identifying a source of stormwater runoff and contaminants that may be present in runoff *Problems with current infrastructure* -Refers to interviewee describing a problem with current gray stormwater infrastructure in community *Synergy with high lake levels & stormwater* -Refers to interviewee describing how stormwater problems have been exacerbated by high lake levels *Specific problem area identified* -Refers to interviewee identifying a specific location in Rogers City where stormwater is a problem *Water quality concerns* -Refers to concerns related to stormwater impacting environmental water quality
Identification of Stormwater Solutions Refers to the mention of a potential action that could be taken to address stormwater issues in the community	*Management* -Refers to interview describing a environmental management practice to reduce or filter stormwater runoff (e.g. forest management) *Outreach* -Refers to interviewee mentioning that the local government and community organizations partake in educating the public on stormwater solutions and engage with other communities to identify best management practices *Infrastructure* -Refers to interviewee identifying a piece of green infrastructure they would like to see deployed in the community (e.g. rain garden)
Identification of Stormwater Barriers Refers to the mention of perceived community barriers to addressing stormwater problems and implementing solutions in the community	*Government* -Refers to local government being a barrier to stormwater management *Financial* -Refers to mentions of monetary constraints the community has to investing in stormwater management including difficulties raising money, difficulties competing for grant money, and lack of community development *Problem hierarchy* -Refers to reasons why other community problems have taken priority over stormwater issues *Attitudinal / cultural* -Refers to community members' indifference towards stormwater issues *Educational / knowledge* -Refers to community members' lack of understanding of stormwater issues
Identification of Stormwater Successes Refers to the mentions of past successes the community has had in addressing stormwater problems	*Government actions* -Refers to local government taking responsibility to address stormwater issues and educate community on the problem and potential solutions *Community organizational actions* -Refers to local organizations taking responsibility to address stormwater issues and educate community on the problem and potential solutions *Community culture* -Refers to a sense of growing community awareness and concern for water related issues

J. Community Vibrancy Codes
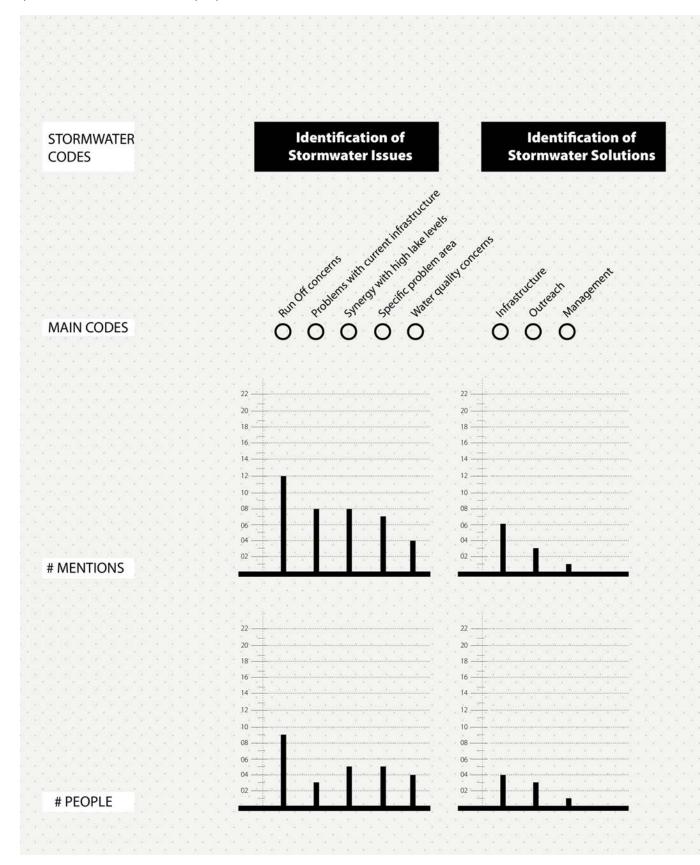
| Stormwater Code	Sub Code & Description
Governance Refers to aspects of governance that facilitate or constrain successful water resource projects	*Stakeholder collaboration and engagement* -Includes mentions of local government sponsored engagement forums, like Team Rogers City and examples of participatory planning *Resources and capacity* -Includes mentions of staffing, departments, and available funding. *Government leadership* -Includes mentions of city leadership and perception of their work *Future goals* -Includes mentions of planning documents and future planned initiatives *Enforcement* -Includes mentions of zoning laws and enforcement of zoning laws by local government in relation to managing stormwater runoff
Community Leadership Refers to qualities of leadership that contribute or detract from community vibrancy	*Local Champion* -Includes mentions of community members who are invested in improving Rogers City in general and it's stormwater management. *Local Buy-in* -Includes mentions of whether the community is interested in addressing water resources issues, with specific focus on stormwater although other issues are mentioned *Community Investment and Fundraising* -Includes mentions of examples when the community has fundraised for natural resource conservation and protection. Examples include the Marina and local conservation lands *Community Engagement Opportunities and Participation* -Includes mentions of broad community engagement opportunities outside of local government
Access to Water Resources Refers to attributes or outcome of access to water resources that influences one's perceptions and participation	*Water Quality* -Includes mentions of access issues related to beach warnings and water quality. *Use of Public Lakefront* -Includes mentions of uses of the lakefront throughout different seasons of the year and rough estimates of how many visitors come to Rogers City's lake from from interview participant perspectives. *Publicity* -Includes mentions of how Rogers City may not be widely known for its access to water resources. *Public/Private Ownership* -Includes mentions of the amount of public lakefront property and where there are homeowners or businesses near the lake. *Community Participation in Planning* -Includes mentions of examples where community members have been involved in water resources and community planning activities. An example includes work being done for the Michigan Main Street Program.
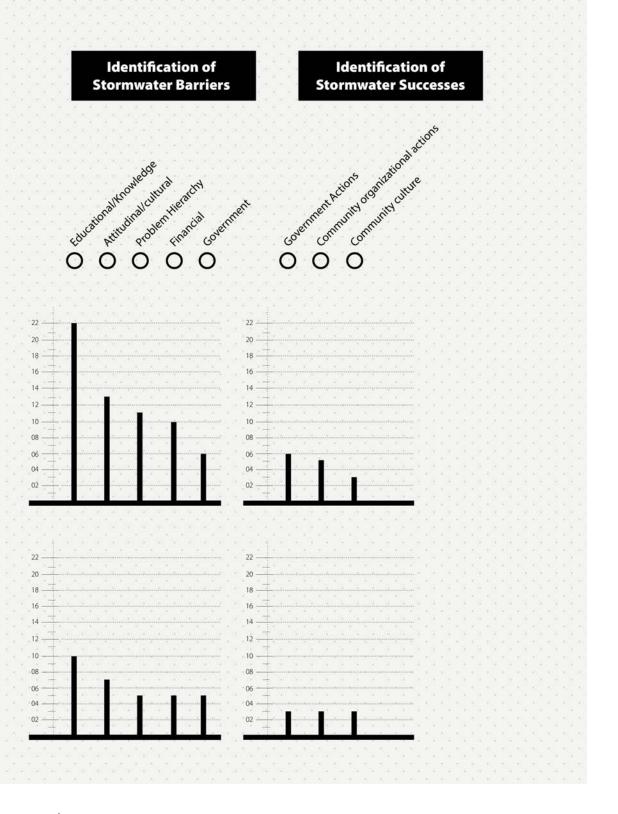
Stormwater Code	Sub Code & Description
Relationship with Water Refers to the range of individual and collective relationships with water and how these impact one's perceptions and participation	*Resource Abundance and Management* -Includes mentions of the amount of natural and water resources available in Rogers City. Also mentions how management of these resources may be impacting some resident's relationship with water. Examples include high lake levels damaging lakefront properties and stormwater ponding impacting use. *Recreation* -Includes mentions of how many residents feel connected to water through lifelong recreation hobbies. *Professional Connection* -Includes mentions of how people have been connected to water through their professional roles. *Education Programming* -Includes mention of a local school initiative or lack of educational programming
Socioeconomic and Environmental Opportunities Refers to attributes or outcomes of socioeconomic and environmental opportunities and how these impact one's perceptions and participation and the community's overall vibrancy	*Tourism* -Includes mentions of tourism activity and trends. *Recreation Opportunities* -Includes mentions of recreational opportunities in Rogers City and the surrounding area. *Local Employment* -Includes mentions of trends in local employment in the past decades and how this has shifted community demographics. *Investing in Place and Community* -Includes mentions of community motivations for, or examples of, investing in Rogers City's assets in general. *Community Vision* -Includes mentions of future visions and hopes for Rogers City. *Business Development* -Includes mentions of businesses in Rogers City and goals for future business development. Also mentions barriers to business development. *Attraction of Residents* -Includes mentions of why people were attracted to move to Rogers City, hope of attracting more residents, and ways the community can publicize to attract more residents.

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K. Stormwater Coding Results
This table summarizes the main stormwater codes with
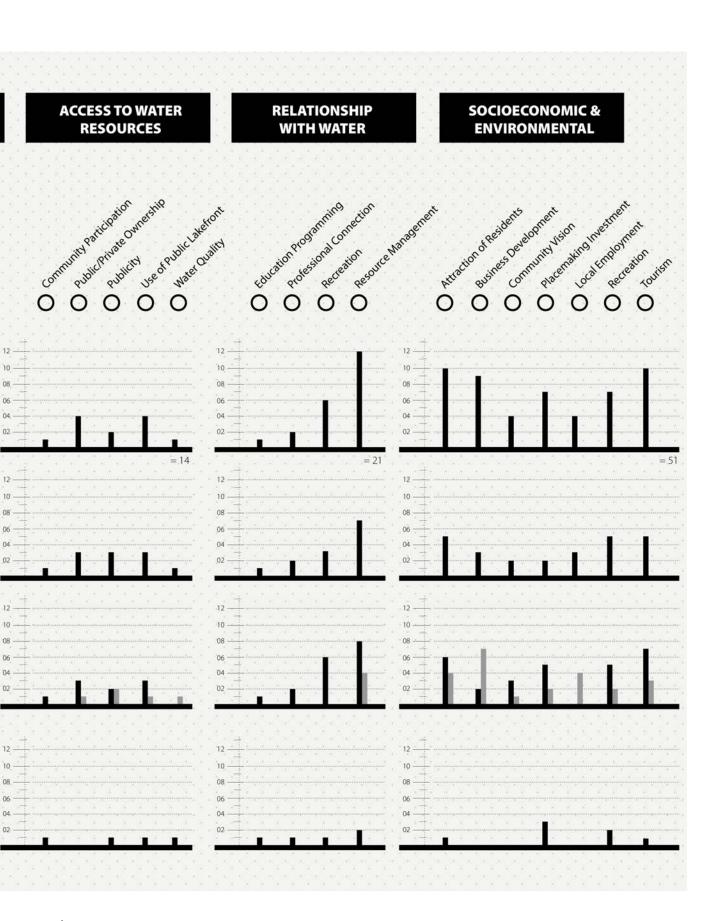*quantification of mentions and people*
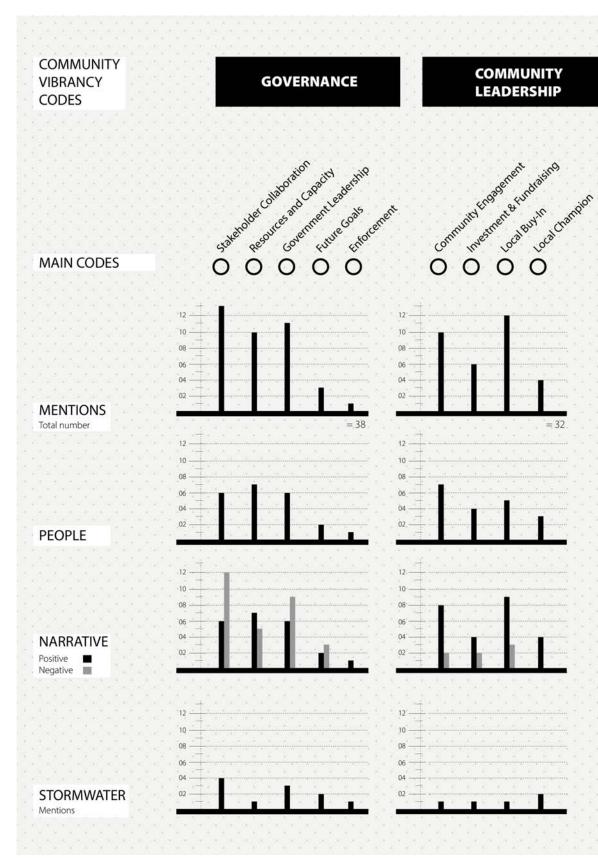
STORMWATER
CODES

Identification of Stormwater Issues

Identification of Stormwater Solutions

MAIN CODES

Run Off concerns · Problems with current infrastructure · Synergy with high lake levels · Specific problem area · Water quality concerns

Infrastructure · Outreach · Management

MENTIONS

PEOPLE

Identification of Stormwater Barriers

Identification of Stormwater Successes

Educational/Knowledge
Attitudinal/cultural
Problem Hierarchy
Financial
Government

Government Actions
Community organizational actions
Community culture

L. Quantification of Community Vibrancy Indicator Codes

This table summarizes the community vibrancy codes with quantification of mentions, people, narrative and stormwater mentions

ACCESS TO WATER RESOURCES

- Community Participation
- Public/Private Ownership
- Publicity
- Use of Public Lakefront
- Water Quality

= 14

RELATIONSHIP WITH WATER

- Education Programming
- Professional Connection
- Recreation
- Resource Management

= 21

SOCIOECONOMIC & ENVIRONMENTAL

- Attraction of Residents
- Business Development
- Community Vision
- Placemaking Investment
- Local Employment
- Recreation
- Tourism

= 51

M. Community Vibrancy Dashboard Results

Overall Dashboard Score:
Out of the total 600 points available, Rogers City's average score from 13 responses was 339. The breakdown of the score can be seen in the table below:

Indicators	Total Points Available	Rogers City Average
Access to Water Resources	126	91.2
Governance	126	61.6
Community Development	100	47.6
Community Engagement	81	1.3
Relationships with Water	67	49.8
Connectedness	100	75.6
Total	**600**	**339**

Table 2. Breakdown of Rogers City Community Vibrancy Dashboard score by indicator category. Note: The "Connectedness" indicator score is a bonus category.

The current Community Vibrancy Dashboard score for Rogers City is calculated incorrectly on the MSU Community Vibrancy Dashboard website. The current scores incorporate null responses in the averages for each indicator category. The current and cleaned scores are compared in **Figure 1**. The cleaned total score for Rogers City is 339 out of 600 possible points. The current total score, as shown on the MSU Community Vibrancy website, is 294 out of 600 possible points.
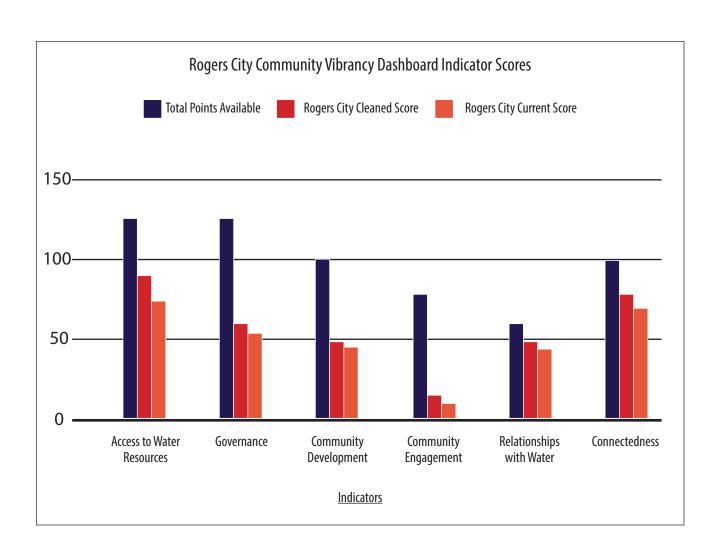
Figure 3. Current and cleaned indicator category scores for the Rogers City Community Vibrancy Dashboard score.
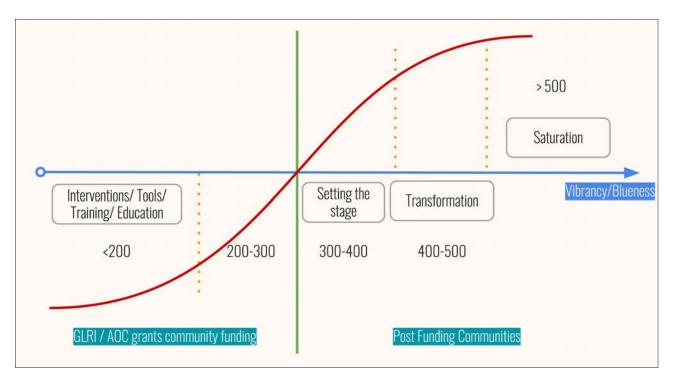
Figure 4. Community Vibrancy Score Vibrancy, Wellbeing, and Blueness curve and corresponding stages. The score reflected in this figure is the incorrectly calculated current Rogers City score of 294 as shown on the MSU Community Vibrancy website

Based on a score of 339, Rogers City is in the "Setting the Stage" phase along the Dashboard's Vibrancy, Wellbeing, and Blueness scale. The Dashboard does not currently provide definition for the different stages along the curve provided on the website.

Community	Overall Vibrancy Score
Rogers City	263
Port Huron	281
Sault Ste. Marie	214
Alpena	342
Manistee	329

Table 3. Community Vibrancy Scores of Rogers City and original communities.

Comparison with Other MI Communities:
Compared with the four other Michigan communities that were surveyed and studied to create the Community Vibrancy Dashboard tool, Rogers City's Overall Indicator Score (excluding the "Connectedness" Indicator) out of 500 points is 263 **(Table 3).**
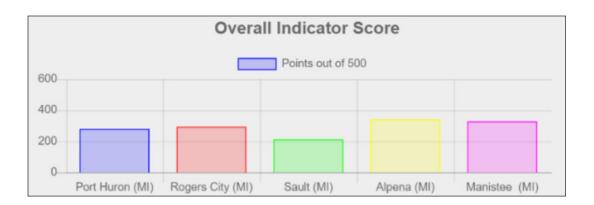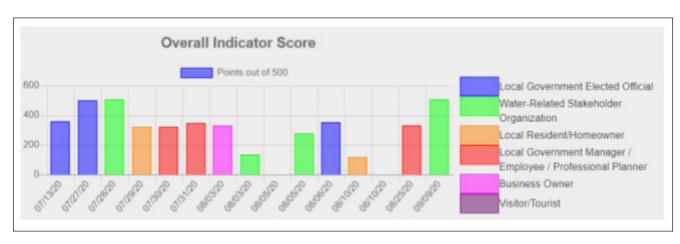
Figure 5. Sample comparison figure from Dashboard's website. Rogers City is compared with the original 4 towns used in the creation of this Dashboard (Alpena, Sault Ste. Marie, Manistee, and Port Huron). Note: The values used in this bar graph are incorrect at the moment. We are speaking with the MSU team to have them update these values.
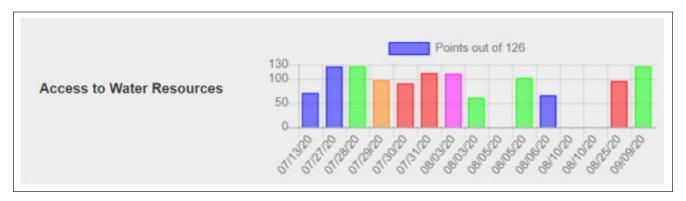
Stakeholder Breakdowns:
The following figures show Rogers City's results broken down by stakeholder groups. We have included the average scores and ranges within each indicator category. In the following graphs the 08/05/20 and 08/10/20 responses are blank responses. These have been removed from the calculations for average scores and ranges for each indicator category. If there are additional "0" responses within the graphs these are from response scoring for the Dashboard's questions.
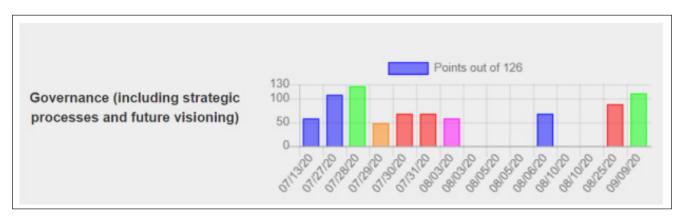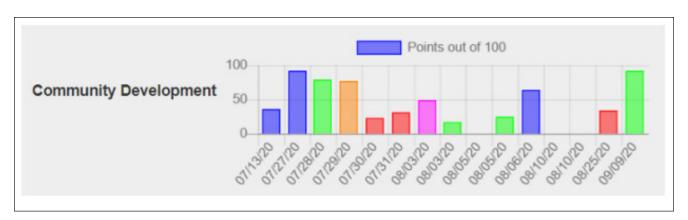

Average Score: 339, Range: 117-507
N.B. scores above 500 include bonus scoring from the "Connectedness" indicator category. Average and range values have been cleaned to remove 8/05/20 and 8/10/20 blank responses.
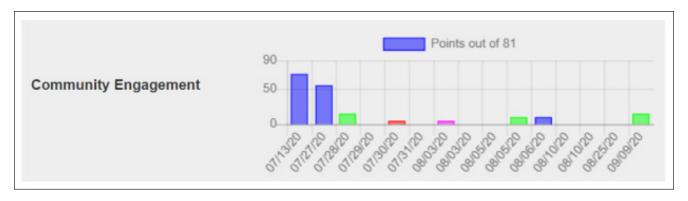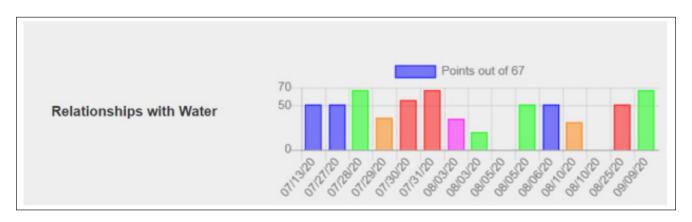
Access to Water Resources

Average Score: 91, Range: 0-126

Governance (including strategic processes and future visioning)

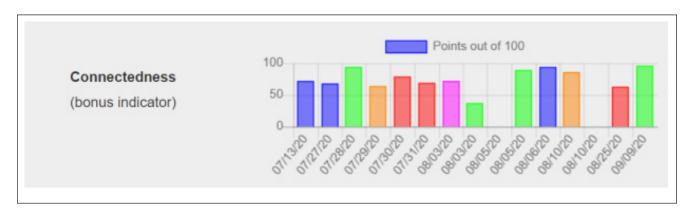Average Score: 62, Range: 0-126

Community Development

Average Score: 48, Range: 0-92

Average Score: 14, Range: 0-71

Average Score: 49, Range: 20-67

Average Score: 77, Range: 37-96

Figure 6. Rogers City Community Vibrancy Dashboard results by indicator category and stakeholder group as reported on the MSU Community Vibrancy Dashboard website.

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