City of Minnetonka:
Evaluating the Impact of Natural Resources Ordinances

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Abstract

This report serves as a summary of an evaluation of resident perceptions on the City of Minnetonka's natural resources ordinances. This report includes results of an online survey sent out to residents asking questions directed at gaining a better understanding of residence experiences on local regulation. Specifically, it focused on understanding perceptions before and after recent housing developments that needed to adhere to City of Minnetonka's tree and wetland ordinances. To ensure a comprehensive understanding of perceptions, residents were asked questions about benefits and challenges faced with preserving trees and replanting trees on their property, as well as installing a wetland buffer or enrolling property into the city's wetland conservation easement program. To enhance the meaning of resident responses, additional findings on evaluation ecosystem services were analyzed to give guidance on future communication with residents regarding the benefits of the city's natural resources and ecosystem services.

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1.0 Introduction

1.1 Background and Context

The City of Minnetonka is a west metro suburban community that has a long history of protecting natural resources, such as wetlands and trees, through enforcement of local ordinances during the development and redevelopment of land. When applied through the municipal zoning process, these regulatory mechanisms are generally intended to limit resource degradation over time.

We are a team of graduate students from the University of Minnesota's Humphrey School. Our team is composed of Kevin, a MS-Science Technology and Environmental Policy (MS-STEP) student who works in climate action and resilience; Rose, a MS-STEP student with a background in healthcare who is transitioning to a new career ; and Jennifer, is an MPA student who works for the State of Minnesota. Our collaboration with the City of Minnetonka involved developing a survey to residents in order to gain a better understanding of if residents' perspectives changed after the development or redevelopment of land that required the implementation of the city's natural resources ordinances. In addition, a literature review was conducted to coalesce guidance on valuing ecosystem services to aid in future communication with residents regarding the benefits of natural resources protection.

The city was interested in understanding resident perspectives of its natural resources ordinances after the development or redevelopment of land. Furthermore, the city wanted to determine if a resident's point of view or attitude changed after implementing these ordinances. The city had never explored changes in public perceptions after the ordinances and policies were implemented. Natural resources protections are in place to increase the quality and preservation of the community's resources. Wetlands and trees can bring several benefits to an urban area, including improved water quality, plant biodiversity and habitat preservation. However, are residents experiencing or understanding the benefits of the protections placed on their recent development? Do they value the wetland buffer requirements and understand the

value of this protected land after following the requirements? Do residents value the preserved or replanted trees on their property and do they now value these natural resource protections after they have been implemented?

We also aim to give recommendations on the city's communication strategies regarding natural resource education for residents. These recommendations come from survey results, literature review (of natural capital, ecosystem services, nature and wellness) and city materials.

1.2 Significance of community planning and natural resource management

The Minnetonka City Council has directed the city to work towards six strategic priorities (Public Dashboard, n.d.). The 2020 - 2024 Sustainability and Natural Environment strategic priority states that the city will work towards supporting short-term and long-term initiatives that lead to the protection and enhancement of our unique and natural environment while mitigating climate change impacts. One aspect of this strategic priority is to balance the city's growth and development with preservation efforts that protect the highly valued water and woodland resources.

Expanding woodland resources is a priority of the city and supported with its annual tree and shrub sale, among other activities (Tree and shrub sale | City of Minnetonka, MN., n.d.). Residents appreciate the annual sale that provides trees and shrubs at low costs. The City of Minnetonka boasts its large tree canopy due to supportive residents. Information for residents to plant and maintain their trees is provided on the city's tree and shrub sale website. However, in 2024 tree plantings were down significantly compared to tree sales from 2017 to 2023. Feedback from the community survey indicated a decrease in resident satisfaction from 2020 to 2024. In 2020, 95% of community respondents stated that the city is doing "excellent" or "good" in terms of protecting forested areas. By 2024, 86% of community respondents agreed that the city is doing excellent or good to protect woodland areas of the city.

Enhancing wetland restoration and protection is another priority for the city of Minnetonka. Since 2020, the city has expanded its conservation easement acreage. A conservation easement means that the city works with the landowner to protect the natural resources, protecting the natural habitat, plant communities and water resources. The community's survey response to the city's work on protecting its wetlands, ponds, and streams has remained stable with 88% of respondents rating the city as doing an "excellent" or "good" job in 2020. By 2024, community response was the same rating with 86% of respondents giving the city an "excellent" or "good" rating for protection of its water resources.

Overall, residents seemed satisfied with efforts to protect the community's natural resources in the City of Minnetonka. Residents who responded to the city's survey have remained optimistic from 2020 to 2024. Residents were asked annually if the city's efforts in protecting the environment is "about right," "too much," or "too little." A majority of residents rated the city at "about right." 84% to 91% of respondents rated the city at "about right," every year from 2020 to 2024.

1.3 Overview of Ordinances

Preserving natural resources is essential to maintaining a high quality of life, a priority shared by many cities and their residents. Communities like the city of Minnetonka rely on parks, recreation facilities, and natural resources not only for public enjoyment but to attract new residents and businesses. Understanding how Minnetonka protects its natural resources requires an overview of the environmental regulations that apply to the city, along with opportunities available to enhance and preserve these assets. While many environmental programs are mandated by state laws and rules, local governments can petition state agencies to amend or repeal specific regulations. Just as each state has its own laws, cities have the authority to create their own ordinances. These ordinances are assembled into a city code of ordinances. This means that the natural resource ordinances in Minnetonka are tailored to the unique needs and resources of the city (City of Minnetonka, n.d.).

"Minnetonka's trees and woodlands are an integral part of the city's identity, with ~58% of the City covered by tree canopy"(City of Minnetonka, n.d.). Minnetonka has a tree ordinance that limits tree removal during building projects and requires planting new trees to replace those lost. Protecting trees is beneficial because they improve air quality, reduce heat, prevent erosion, provide wildlife habitat, increase property values, and generally make the city a nicer place. The rules try to protect trees while still letting homeowners use their property as they wish. The purpose of the City of Minnetonka's Tree Protection Ordinance (Section 314.01, American Legal Publishing Corporation, n.d.) is to encourage tree preservation by reasonably limiting the removal of trees during construction, site work, and land development activities, as well as to mitigate for the loss of trees due to these activities while maintaining the rights of existing homeowners to use their private property. The provisions of this subdivision apply whenever construction, site work, development, or redevelopment activities occur on a property. A tree preservation plan is required as part of any application that involves construction, site work, or redevelopment activities. The Tree Preservation Plan means that if you're building or developing, you need a plan showing the trees on your property, which ones are important ("protected"), and how you'll protect them during construction. Mitigation,

or replacement means that if you remove a protected tree, you usually have to plant new ones to replace it. There are rules about the size and type of replacement trees.

Minnetonka's wetlands are vital natural features that provide numerous environmental and community benefits. The City has a Wetland Ordinance, detailed in Section 300.23 (American Legal Publishing Corporation, n.d.), which aims to protect these valuable areas. This ordinance often necessitates the establishment and upkeep of wetland buffers and sets limitations on land use in and around wetlands to preserve their ecological health, scenic value, and water-related functions. Wetlands, defined as areas saturated or covered by water for varying periods, especially during the growing season (U.S. Environmental Protection Agency, n.d.), encompass diverse soggy environments like marshes, swamps, and bogs. Importantly, the ordinance distinguishes these natural wetlands from constructed features such as stormwater ponds. To safeguard wetlands, a protected buffer zone consisting of trees, shrubs, and native grasses is often required. These buffers play a crucial role in preventing pollution runoff and soil erosion into the wetland ecosystem. The ordinance also categorizes wetlands into different types (1 through 8) based on their hydrology and vegetation characteristics, allowing for tailored protection strategies based on the specific ecological functions of each wetland type.

Minnetonka's wetland conservation easements program allows residents and the City of Minnetonka to enter into an agreement where wetland property is put to use for the benefit of the city. Under this agreement, no disturbances are allowed to the property while it remains under the easement contract without a permit. By definition, "conservation easements involve the acquisition of certain property rights for conservation purposes" (Minnesota Board of Water and Soil Resources, n.d.). Landowners who offer the state a conservation easement receive a payment or marketable wetland mitigation credits to permanently restore or preserve the land. In turn, the landowners establish conservation practices where necessary, such as native grass and forbs, trees, or wetland restorations. Conservation easements play an important role in our landscapes by providing important ecological functions, recreational uses, and a natural heritage to be passed onto future generations.

2.0 Methodology

2.1 Survey Methodology

A survey was developed in cooperation with city staff and sent out to residents. The survey was developed in Qualtrics, a free survey software available to University of Minnesota students.
Qualtrics helps survey builders choose from various question types, apply specific logic and ensure the survey meets survey compliance guidelines. Qualtrics also allows for the survey to be shared via direct links, or Quick Response (QR) codes, and then ensures

data security of participant responses. Qualtrics is widely used for scholarly research. Questions asked in this survey are included in Appendix A.

Questions were included to limit the sample to residents of Minnetonka who had constructed a single-family residential home in the past 5 years. Data quality was assessed with Recaptha scores, and completeness of responses.

2.2 Literature Review Methodology

A simple, narrative literature review focused on ecosystem services, nature's connection to human wellness. Much of the ecosystem services literature was collected by poring over the entirety of the Natural Capital Project's Zotero library, which contains trusted, current, empirical research on ecosystem systems and their valuation (*NatCapProject's Library*, n.d.). This could continue to be a resource for city staff, as it is updated continuously by qualified scientists with a wide range of new research on natural resources. The literature on nature's connection to human wellness was found through Dr. Jean Larson's work at the Minnesota Landscape Arboretum, and the various research articles and resources they have provided (*Nature Heals Initiative | Minnesota Landscape Arboretum*, n.d.).

2.3 Study Scope and Limitations

The study aimed to assess residents' understanding and experiences with the city's tree and wetland ordinances, particularly in relation to housing developments that adhered to these regulations. The online survey was designed to capture residents' perceptions before and after recent developments and explore their experiences with the preservation of trees, replanting efforts, and the installation of wetland buffers. Additionally, the study analyzed ecosystem services data to provide further context for future communication with residents about the value of the city's natural resources.

However, several limitations should be noted regarding the scope and methodology of this evaluation. Our survey was limited by our outreach to only residents who have developed properties in the last 5 years, which significantly limited our pool. In addition, due to the fact the survey had a limited number of respondents, it may not fully represent the diverse views of the entire Minnetonka population, even within the pool of those who have developed in the last 5 years. This constraint could affect the generalizability of the findings and limit the conclusions drawn about overall resident perceptions. Additionally, the study did not include a broad evaluation of the actual physical impacts of the city's natural resources ordinances, as it primarily relied on a literature review and resident self-reports to gauge perceptions. Without a more comprehensive assessment of environmental outcomes or comparative data before and after ordinance implementation, it is difficult to draw definitive conclusions on the

effectiveness of the ordinances in achieving their intended ecological and community benefits.

In addition, the focus on resident perceptions may not capture the full range of factors influencing ordinance effectiveness, such as the technical feasibility of implementing tree and wetland protections in different types of developments or the financial and regulatory challenges faced by property owners. Future studies could benefit from a more detailed, data-driven evaluation of both the environmental and economic impacts of the ordinances to better inform policy decisions.

3.0 Survey Results

We received 5 valid, complete responses from residents of the City of Minnetonka with a single-family residential home developed in the last five years. See Appendix C: Survey Graphics for survey results presented graphically.

3.1 Demographics and Property

Respondent ages ranged from 25 - 64 years, with a total average age of approximately 48 years +/- 13 years (i.e., about 35 - 60 years old). Most respondents had owned their property for 1-10 years, with 80% of respondents being new owners with 1-5 years of ownership in the city. The earliest development occurred in 2019. Survey respondents described themselves as 60% female and 40% male. The respondents identified as 80% White and 20% Black or African American.

3.2 Preserved Trees

All respondents strongly agreed that preserved trees provide meaningful benefits and that they would voluntarily preserve the trees. Overall, most respondents strongly agreed that they appreciated the trees being preserved and that they contributed positively to their quality of life. Most agreed that long-term benefits of the preserved trees outweigh any initial inconvenience or cost, though one respondent did disagree (while still overall appreciating their preservation). 1 respondent did agree that preserved trees presented a challenge, but they strongly agreed that they appreciated that the trees were preserved.

All respondents found that preserved trees provided the benefits of wildlife habitat and more privacy. Some found benefits in increased property value (20%), aesthetic improvement (40%), shade / temperature control (60%), flood mitigation (40%), neighbors liking them (20%), pride in contributing to community environmental goals (60%), and seeing positive changes in the community landscape (20%). None found

benefits in recreational value, and no respondent found that preserved trees provide no benefit.

40% of respondents felt that there were no significant challenges with preserved trees. The challenges identified by other respondents included: requirements being too restrictive (20%), difficulty landscaping (40%), and one respondent gave this challenge: “Many of my preserved trees are either diseased ash trees, or trees reaching their end of life. I haven't removed any trees yet, but neighbors have and I'm considering removal soon as well, which will be costly.”

3.3 Replanted Trees

All respondents strongly agreed that they appreciated the trees being replanted and that they provided meaningful benefits. There was contention on whether replanting trees was a waste of time, with 40% strongly or somewhat disagreeing, one neutral, and one somewhat agree. All agreed in some way that the replanted trees contributed positively to their quality of life, and that long term benefits outweighed any cost.

The benefits of replanted trees identified by respondents included: increased property value (40%), wildlife habitat (60%), more privacy (60%), aesthetic improvement (80%), shade / temperature control (40%), flood mitigation (40%), neighbors liking them (20%), recreational value (20%), pride in contributing to community environmental goals (60%), seeing positive changes in broader community landscape (40%).

40% of respondents felt that there were no significant challenges with replanted trees. None felt that it was too expensive. Some found that the requirements were restrictive (20%), difficulty with landscaping (40%), unclear requirements (20%), and one respondent gave this challenge: “Some of my newly replanted trees have not survived or thrived.”

3.4 Wetland Conservation Easements

80% of respondents had wetland conservation easements. Of those, all appreciated that the wetland was in a conservation easement. All strongly agreed that the easement contributes positively to the environment. There was contention about whether the wetland easement provided meaningful benefits: 75% strongly agreed while 1 respondent somewhat disagreed. All agreed in some way that the wetland easement’s long term benefits outweigh any initial costs.

All respondents found the wetland easements benefits to include wildlife habitat. Some found the benefits to include: increased property value (50%), water quality protection (50%), aesthetic improvement (25%), flood mitigation (75%), pride in

contributing to community environmental goals (75%), positive community change (50%). None found that there was groundwater replenishment or that the neighbors like it.

50% of respondents found that there were no challenges with the wetland easement. Some found it too restrictive (50%), or that it has unclear requirements (50%).

3.5 Wetland Buffers

Of those with a wetland buffer, 50% of respondents did not know the size of their wetland buffer, while one respondent had a 16.5 foot buffer and another had a 50 foot buffer. All agreed that they appreciated the wetland buffer being maintained. Most disagreed that the wetland buffer was not a waste of time, with one respondent answering neutrally. Interestingly, the two respondents who did not know their wetland buffer size agreed somewhat and strongly that they understood how to properly maintain the buffer, while the two respondents who knew their buffer size both responded neutrally. Most respondents agreed that the wetland buffer contributes positively to their quality of life (75%), and one neutral response. Most respondents agreed that the buffer's long-term benefits outweighed any initial costs (75%) and the same respondent replied neutrally to all wetland buffer items. Most respondents would maintain a wetland buffer voluntarily (75%).

Of those with a wetland buffer, respondents found wetland buffer benefits in: increase property value (25%), Wildlife habitat (75%), water quality protection (50%), aesthetic improvement (25%), flood mitigation (50%), groundwater replenishing (25%), pride in contributing to community environmental goals (50%), seeing positive change in broader community landscape (25%). One respondent found no benefits to wetland buffers.

Of those with a wetland buffer, two respondents found no challenges with wetland buffers (50%). Of those who did find challenges, both found them to be too restrictive, and their requirements to be unclear, and one found difficulty with landscaping.

3.6 Changed Perceptions of Natural Resources

As for preserved trees, 60% experienced no change in perceptions compared to before property development, while 40% respondents experienced a positive change. For replanted trees, respondents answered the exact same way.

As for wetland conservation easements, 60% experienced a positive change and 20% experienced no change, with one non-response. For the buffers, 40% experienced a positive change with 40% no change and one non-response.

The reasons given for a positive change were: observing tangible benefits on their property (40%), learning more about the ecological importance of these protections (60%), Conversations with neighbors or community members (20%), Increased property value (20%), Educational materials or programs provided by the city (20%), Pride in contributing to community environmental goals (60%), Seeing positive changes in the broader community landscape (20%), and one resident offering “Perspective from my builder on how important tree conservation is, specifically to the city of Minnetonka.”

Reasons given for a negative or lack of change include: Unexpected costs associated with compliance (40%), Issues with vegetation management (e.g., invasive species) (40%), Drainage or water-related problems (20%) - the same respondent who felt neutrally about wetlands, Insufficient guidance or support from the city (20%), and one resident offered: “We planted native species, but the city required that we removed some of them and there was no clarity on that. The city also held onto our very significant escrow for a long time I believe two years.”

3.7 Survey Summary

Trees are straightforwardly appreciated, with wildlife habitat and privacy being popular benefits of older preserved trees. Replanted trees are not as wholly popular as preserved trees, with aesthetics being the most commonly listed benefit. Many did not experience challenges with the trees, though there were some issues on surviving newly planted trees and pests for older preserved trees.

Wetlands easements are generally appreciated, and buffers also, though one respondent felt tepidly about them. Flood mitigation, wildlife habitat, and contributing to community environmental goals were commonly given benefits to the wetland easements and buffers. Half found no challenge with the easements or buffers, and half usually found them restrictive and unclear. For both trees and wetlands, the pride in contributing to community environmental goals was always a more frequently listed benefit than actually seeing the positive change in the community.

Views regarding trees mostly did not change compared to before development, but the change was positive when it was expressed. On the other hand, views regarding wetlands did mostly change compared to before their project, and it was all positive, with easements eliciting more change than buffers. The most common reasons for the positive changes were learning about ecological importance and pride in their contributions to community environmental goals, with one perspective being changed positively by a developer. Not many respondents had been influenced by city educational materials or programs. The most frequent reasons given for negative changes were unexpected costs and issues with vegetation management, such as invasive species.

Lack of clarity and insufficient support from the city were also significant reasons for negative changes in attitudes.

4.0 Analysis and Discussion

The collaborative survey between Humphrey graduate students and the City of Minnetonka yielded insight into resident's attitudes after implementation of the city's natural resources ordinances. The city has limited resources, but with this collaboration, city staff were able to explore changes in public perceptions. If more resources were available to the City of Minnetonka, future efforts could be put towards developing some of the frameworks and evaluation methods outlined below.

4.1 Valuing Ecological Services

4.1.1 Scientifically Assessing Wetland and Forest Protection

The City of Minnetonka's capacity to assess the benefits of natural resources and the environmental stewardship thereof can be significantly enhanced by integrating frameworks from contemporary ecological research. Studies like Yang et al. (2018) "Assessing the Landscape Ecological Health of Wetlands" provide significant metrics for evaluating the effectiveness of Minnetonka's ordinances, particularly in managing wetlands and urban forests. By analyzing habitat integrity, water quality, and biodiversity, the city can scientifically assess the impact of its protective measures and address challenges like habitat fragmentation and invasive species. The city's natural resource ordinances play a crucial role in guiding these efforts, aiming to balance development with environmental protection. By utilizing scientific methods, such as those described in the provided literature, the city can better evaluate the impact of its ordinances, and adjust them accordingly.

Van Zanten et al.'s (2022) guideline, *Assessing the Benefits and Costs of Nature-Based Solutions for Climate Resilience*, provides a framework for demonstrating the economic, social, and ecological advantages of Minnetonka's conservation initiatives in the face of climate change. This approach would allow the city to quantify the value of ecosystem services, such as flood regulation and urban heat mitigation, thereby strengthening its climate resilience strategies. Following Van Zanten's (2022) framework, this guideline emphasizes the role of Nature-Based Solutions (NBS) in mitigating climate change impacts like flooding, heatwaves, and water scarcity. Minnetonka's ordinances, which protect and enhance wetlands, forests, and other natural areas, directly align with NBS principles. The guideline advocates for a comprehensive evaluation of NBS, considering both economic and ecological benefits. Minnetonka's ordinances that protect wetlands can be evaluated for their contribution to flood resilience while the

city's urban forestry initiatives can be assessed for their role in mitigating the urban heat island effect. Evaluating the value of reduced energy consumption for cooling and improved public health can demonstrate the economic and social benefits of these ordinances. The guideline provides a structure for evaluating the effectiveness of the ordinances in achieving climate resilience goals. This includes monitoring key indicators, such as water quality, tree canopy cover, and biodiversity, to track the impact of the ordinances over time. The city can use this methodology to provide data to show stakeholders the benefits of the natural resource ordinances.

4.1.2 The Ecosystem Services Framework

Applying an ecosystem services lens, as advocated by Remme et al. (2021) in *Aligning Nature-Based Solutions with Ecosystem Services in the Urban Century*, would enable Minnetonka to recognize and quantify the diverse benefits of its natural resources. This includes provisioning, regulating, cultural, and supporting services, ensuring that urban planning aligns with the provision of maximum community benefit. Minnetonka's wetland ordinances can be analyzed for their role in maintaining regulating services, such as flood control and water purification. Applying Remme's framework, the city can quantify the economic value of these services, demonstrating the benefits of wetland preservation. The city's urban forestry initiatives contribute to supporting services (e.g., habitat provision) and regulating services (e.g., air purification, temperature regulation). By assessing the impact of tree canopy cover on these services, Minnetonka can demonstrate the ecological and societal benefits of its ordinances. Remme's work provides a methodology for the city to evaluate how well their ordinances are actually protecting and enhancing ecosystem services. By using this framework, Minnetonka can show the direct benefits of their ordinances, and provide data for future ordinance creation and modification. This will allow the city to ensure that future development projects align with the goal of maintaining and enhancing the city's natural capital.

4.1.3 Economic Value of Wetlands

Wetlands provide many ecological services such as wildlife habitat, flood mitigation, groundwater recharge, improved water quality and vegetation diversity. However, estimating the monetary value of wetlands within a community is difficult since the services provided do not have market value. In order to estimate the value of ecological services of wetlands, several methods have been proposed. One such method was evaluated in the research paper *Valuing Urban Wetlands: A Property Price Approach* by Mahan, Polasky and Adams (2000) which analyzed urban property values and wetland data in Portland, Oregon. According to the research, urban residential property

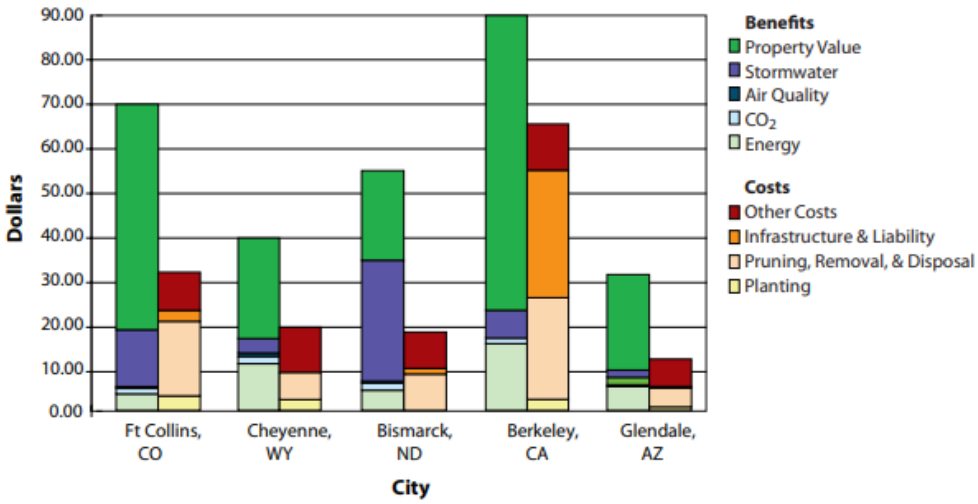
values increased in correlation to wetland size and proximity of residence to a wetland. Wetland type was not a factor in home values. If the home was close to a wetland or was near a larger wetland, the urban residential home increased. To break it down further, if the wetland increased by 1 acre, it would drive home values up by $24, and if the residence was within 1,000 feet of a wetland, residential values increased by $436. It was noted that values in home prices were significantly higher for lakes ($1644) compared to wetlands. Therefore, it was determined that wetlands do increase residential house values and communities that implement wetland conservation ordinances are supporting increased home values for residents.

4.1.4 Benefits of Urban Trees

Trees provide multiple benefits. Trees in urban settings lower energy use, reduce air pollution, reduce greenhouse gas emissions, protect from harmful exposure to UV rays, and decrease stormwater runoff. In urban areas, trees provide economic benefits such as shading to reduce cooling costs or windbreaks to protect against impacts from wind or extreme winter events. In an article published by the Environmental Protection Agency (U.S. Environmental Protection Agency, 2008) trees can reduce urban heat, studies showed that suburban areas with mature trees were 4 to 6 degrees F cooler than suburbs without trees. Peak air temperatures in tree groves were 9 deg F cooler than open fields. Evapotranspiration is the process through which trees absorb water through their roots and move it up through their leaves releasing water vapors and cooling the air.

According to the Minnesota Department of Natural Resources (DNR, n.d.), research has shown that trees can provide up to $7 in benefits each year for every $1 invested in caring for them. According to the MN DNR's Forest Division, trees provide several ecological benefits such as provide food and shelter for wildlife, provide a pleasant environment for recreation, help protect streams and lakes by reducing runoff, reduce noise pollution by absorbing sound and increase property values.

Researchers with the EPA (2008) conducted a study in South Carolina on carbon dioxide reduction by trees in an urban study. Results showed that the reduction of carbon dioxide was worth about $1.50 per tree, based on current carbon credit prices. Additional research included in the EPA report conducted a cost versus benefit analysis of trees in five cities across the country. Results showed that net benefits of planting trees were positive for all five cities and the benefits range from $21 to $38 dollars per tree.



Net benefits were positive for all five cities, ranging from $21 per tree in Cheyenne to $38 per tree in Ft. Collins. Blue and green categories indicate benefits; red, orange, and yellow indicate costs.

Figure 1. (U.S. Environmental Protection Agency, 2008).

4.2 People and Nature Meets Wellness

The connection between nature, or someone's exposure to it, and that a person's health has been well-documented and studied since at least the 1980s (Ulrich, 1984). This includes both mental and physical health. This body of research gives evidence to the instincts that we express anecdotally, that spent time in nature is restorative. Americans even jokingly direct the most frustrated among us to go "touch grass" yet there is indeed significant empirical evidence to support this facetious suggestion. Nature mainly heals through the activation of the parasympathetic nervous system ("rest and digest" as opposed to sympathetic nervous system: "fight, flight, or freeze"), as well as the restoration of attention and focus (i.e., "getting away from it all" to think or reflect). This is to say nothing of the air quality benefits of trees, or the water quality benefits of wetland - both of which clearly impact human health. This body of research goes beyond those important biophysical conclusions, to include mental health and broader human well-being, which can reveal further strategies for Minnetonka's natural resource management and communications.

4.2.1 The Science of Nature's Healing Powers

A scoping review by Nejade et al. (2022) offers valuable analysis of the literature landscape surrounding nature and mental health, as well as a summary of findings in the field. The comprehensive review consisted of 39 studies from 952 initially identified sources. Researchers found that there were consistent improvements in health outcomes when people spent time in natural outdoor settings. Specifically, there were positive effects on mental health outcomes in 98% of studies, physical/physiological health in 83%, and cognitive health in 75% of the studies. They also identified 153 factors affecting people's engagement with nature, 78% of which facilitated engagement while 22%

reduced it. The factors that facilitated engagement included wilderness qualities, good accessibility, opportunities for physical activity, and absence of noise/air pollution.

A comprehensive review by Jimenez et al. (2021) suggests associations between someone's exposure to nature and their improved cognitive function, mental health, physical activity, blood pressure, or sleep quality. The researchers posit that perhaps the restoration of directed attention capacity and the activation of parasympathetic nervous system responses are the processes most responsible for this positive association. Their work suggests that frequency, quality, and accessibility of nature experiences can significantly impact the health outcomes of all ages, though there are particularly notable benefits during childhood development. Someone who spends 5-8 hours per week in natural settings might show reduced risk of depression and children with regular nature access demonstrate improved health-related quality of life. In general, exposure to nature also appears to provide greater benefits to socioeconomically disadvantaged populations.

A brand-new study from April 2025 (Martin et al.) studied the health impacts from progress towards urban nature targets. The study found that increasing urban greenspace by 1% yielded a median of 1.77 fewer annual premature deaths per 100,000 population, with the greatest benefits occurring when greenspace is added near population centers rather than uniformly distributed.

4.2.2 Evidence from Mental Health Studies

A study from 2024 (Chang et al.) examined how the magnitude of someone's connection to nature influences the degree of mental health benefits that they receive from their exposure to nature. They found that people with stronger connections to nature would then experience greater reductions in stress and anxiety when they visit public green spaces, but those with weaker nature connections showed less pronounced benefits from similar nature exposure. People with stronger nature connections were more likely to mention nature-related elements (trees, birds, etc.) as their primary reason for visiting greenspaces, suggesting they interact with nature more intentionally. Individuals with weaker nature connections tended to view natural setting merely as a substrate for other activities (exercise, socializing) rather than focusing on nature itself. In terms of residential natural resource ordinances, as opposed to public greenspaces, this evidence supports the preservation of trees and wetlands closer to home, to build connection and see nature as more than a substrate, a backdrop for other activities.

Another study, from 2019 (Pritchard et al.), examined the relationship between someone's connection to nature and their eudaimonic well-being (i.e., "functioning well" – as opposed to hedonic well-being: "feeling good"). The study found a small but significant correlation ($r = 0.24$) between nature connectedness and eudaimonic well-being. Notably, the aspect of well-being that had the strongest relationship with nature connectedness was personal growth, but there were also links to vitality, meaning, and purpose in life.

The evidence shown in the research supports a variety of potential city strategies including: targeted nature programming for mental health promotion; quality-focused design and maintenance of green spaces; biodiversity enhancement; equitable distribution of natural resources; and structured engagement initiatives like community science projects and healthcare partnerships. The city can facilitate this nature-based healing and restoration by keeping its residential natural resource ordinances and facilitating genuine connection to those elements of nature that residents live with and spend the most time with.

4.3 Everyone's Efforts Matter

One invaluable resource available to any city are the residents. Minnetonka's natural resources investments include protecting local parks, trails and public lands. The city also invests time and money towards residential land. *Resilient Minnetonka* (Minnetonka Matters, n.d.) offers education and assistance to residents who are interested in improving the natural environment in their backyards. Educational workshops, financial support and engagement through volunteerism are some examples of how the city engages with residents. Developing volunteer opportunities in local parks, offering the annual tree sale, and creating family birding walking events are other ways that the city engages with residents to protect natural resources.

Metro cities in Minnesota are not alone in implementing sustainable solutions and protecting natural resources for residents. Many cities are interested in improving resources and incentivizing residents, especially to mitigate climate change impacts. Prioritizing the City of Minnetonka's resources to connect with other cities in the metro, who have similar natural resources goals, could enhance efforts around Minnetonka. There are several resources for cities to use to address environmental concerns as well as engage with residents.

1. Minnesota GreenStep Cities

GreenStep Cities is an initiative to support local governments in developing environmental goals, such as sustainability development and reducing greenhouse gases. This program is coordinated by the Minnesota Pollution Control Agency (MPCA) but is a cooperative cross-sector initiative that includes local governments, state agencies, non-profits, University of Minnesota and private sector partnerships. It is a voluntary program that cities across Minnesota can use to help track their environmental achievements and impacts to their communities.

The City of Minnetonka has been working with the GreenStep Cities program and has completed steps 1 through 5. The city earned it's Step 5 GreenStep City status in June of 2024.

2. Metro Conservation Network

The Minnesota Department of Natural Resources developed a program to connect Twin Cities metro area residents to their natural environment. The group's mission is to engage natural resource planners and managers to facilitate collaboration in protecting connectivity, biodiversity and resilience throughout the metro. One goal of this program is to develop information platforms for natural resource professionals to communicate with the public and land owners.

3. Resilient Communities Programs

The University of Minnesota's Center for Urban and Regional Affairs (CURA) has a Resilient Communities Program to help communities in challenging times such as adapting to changing environmental conditions. Local government agencies can work with University students and faculty on projects.

The State of Minnesota's Climate Action Framework includes a goal called Resilient Communities where local governments have resources available to take initiatives toward climate resilience. Resources include funding towards projects such as restoring lost habitat for flood control, through wetland protection and infrastructure, plus combating heat islands through revamping natural areas from concrete parking lots.

5.0 Recommendations

Residents of the City of Minnetonka value their natural resources, this is shown in their responses to the city's strategic plan questions and the results of this survey. Residents expressed positive attitudes towards trees before and after development or redevelopment. Perspectives towards wetlands were more positive after implementing the natural resource ordinances. Reasons for the positive change in perspectives were highest for *Learning more about the ecological importance of these protections* and *Pride in contributing to community environmental goals*. Additional communication and community engagement could continue to expand resident satisfaction in natural resource ordinance implementation. by tapping into the enthusiasm of residential landowners eagerness to learn and pride in their community.

The following recommendations are meant to be used as potential strategies for the City of Minnetonka to engage with local residents on the value of natural resources, and the ordinances meant to protect them. One or all of the following recommendations could be implemented, but combined together could create deep connections with residents and develop powerful community partnerships to increase natural resource protections on private land.

1. **Provide natural resources educational supplements to residents targeted on trees and wetlands.**

    According to survey results, city residents who recently worked with the natural resources ordinances found some requirements difficult to understand or implement. The city could benefit by addressing natural resource ordinance implementation with FAQ sheets presented with permits informing permittees of the benefits of natural resource protections and resources, or a list of contacts, who are able to address questions or concerns during the process.

    The Minnetonka Memo is a monthly newsletter sent to residents offering updates on city news and events. The Natural Resources Division could develop a section that includes more targeted educational information to address common questions heard from residents during ordinance implementation. These monthly updates could include tips, educational information, personal stories and reflections from residents on how they value natural resources on their property, within their neighborhood or throughout the city. A great way to connect with Minnetonka youth is to work with schools for these reflections or post on social media asking recent high school graduates to share their stories, experiences or memories.

2. **Engage with residents directly in facilitated conversations on improving natural resource ordinance implementation.**

    The survey sent out to residents with this capstone project was poorly received and only a handful of residents completed the survey. No interviews with residents were conducted. In order for City of Minnetonka staff to engage further with residents on changes in the perspectives before and after implementation of the natural resource ordinances, a facilitated discussion could be held with volunteers at a community event. This could be an evening event targeting residents who are willing to listen and discuss issues related to the city's natural resources ordinances. A series of four questions would be asked, residents can openly share their perspectives on the questions, or write a note on paper or email to privately share concerns. A city staff member trained in group facilitation or a hired facilitator would be needed to host this event. An example of a facilitated conversation, and the four questions can be found in the Appendix B of this report.

3. **Develop a community speaker series held monthly or bi-monthly to engage residents in natural resource learning opportunities, targeted at various age groups.**

The City of Minnetonka Natural Resources Department staff could request local volunteers to help develop a community engagement speaking series with events to be held at the Minnetonka Community Center. The City of Shoreview, a city in the northeast metro, developed a community group called the Environmental Quality Committee that put together monthly or bi-monthly speakers to talk on local natural resources concerns. Speakers included staff from the local watershed district, University professors, writers and city officials. Events were held in the city council chambers and included minimal refreshments for residents who were able to attend. City of Minnetonka staff could benefit in their connection to residents by implementing an environmental speaker similar to the City of Shoreview's resident volunteer committee.

Almost none of the residents who reported a perspective shift from their learning of the resources' importance were influenced by city educational materials. Partnerships, general support, or coordination for popular third party sources of this education and communication may be useful in addition to the city's own materials.

4. **Develop a broader community centered volunteer and outreach program targeted at residential properties and community events**

Gardening is a favorite pastime of many Minnesota residents. By tapping into the love of gardening, City of Minnetonka staff could create a volunteer program that supports residents who want to maintain natural resources on their properties but are limited by restraints such as physical limitations, financial means or plant identification knowledge. The program could send out a request in the monthly Minnetonka Memo asking for residents who need gardening help. After assessing residents' needs, city staff could then coordinate with volunteers on dates and times to show up for activities such as invasive species removal, tree trimming or wetland health assessments.

Another outreach opportunity would be to create a volunteer program attracting recent graduates from local high schools, who are interested in studying natural resources or environmental sciences, to table local events educating residents on the value of natural resources preservation in their backyards. Volunteers or interns could be briefed by

City of Minnetonka's Natural Resource Department staff in the spring to clarify the message to be delivered to residents, then they would be asked to sign-up as volunteers at various events throughout the summer months. Volunteers could be paid through donated gift cards or knowledge of natural resources career opportunities. The annual city tree sale is a great example of an event that should be staffed by this volunteer cohort.

Minnesota Water Stewards are volunteers that work with cities, watershed districts and environmental groups on projects with the goal of improving water quality. It is offered through Freshwater, a non-profit group that facilitates the training of volunteers to do community outreach, educational events and restoration projects such as rain gardens, and native shoreline plantings. Tapping into the Minnesota Water Stewards for outreach would be an additional tool to broaden community centered volunteer based initiatives that educate City of Minnetonka residents on natural resources.

Pride in contributing to community environmental goals was one of the most frequently listed benefits of residents' natural resource activity. Community-centered environmental programs could also facilitate and enhance the growth of residents' networks around natural resources. From these networks, the organic transmission of positive perspectives may follow.

5. **Support the transmission of knowledge in interactions between developers and residents**

Developers are the main point of contact for a resident in their development project, as opposed to the city and its ordinance materials. The city could support, partner, or coordinate with developers to ensure that good information is being shared in an effective way. To this end, the city could host training workshops, develop communication toolkits, or offer technical assistance. There could also be standardized protocols for how a developer hands over the product to the customer. Certifications could recognize developers who excel at environmental stewardship and communication.

Support, partnerships, or coordination with developers may also provide an efficient point of contact for residents who are developing their property. One survey response text indicated that this resident's developer played a significant role in changing their perspective positively.

6.0 Conclusion

This report serves as an evaluation of resident perceptions on the City of Minnetonka's natural resources ordinances through a collaborative survey. The City of Minnetonka has a long history of protecting natural resources, such as wetlands and trees, through enforcement of local ordinances during the development and redevelopment of land. Results identified that residents value their natural resources, and this was also shown by their responses to data collected as part of the Sustainability and Natural Environment strategic priority section of the city's strategic plan.

City of Minnetonka residents have positive attitudes towards trees, especially preserved trees that provide more privacy protections and serve as wildlife habitat. Replanted trees were valued as aesthetically pleasing. Challenges with tree ordinance implementation included survival rates of replanted trees and preserved trees becoming infested by pests.

Residents also valued wetland easements and buffers, however they found the ordinances around wetlands to be more restrictive and unclear. One identified challenge with wetland ordinances was in planting native species. The greatest benefits with wetland easement and buffer ordinances was wildlife habitat, flood mitigation and pride in contributing to community environmental goals.

A positive change in resident's perspectives was found. Attitudes especially changed towards wetland protections. In general, views regarding following ordinances for tree protection did not change but were overall positive. The most common reasons for the positive changes were l*earning more about ecological importance of these protections* and *pride in their contributions to community environmental goals*. In fact, more respondents found value in the pride and contributing to community environmental goals rather than quality improvements on the landscape for both trees and weltand.

Additional outreach to residents could be beneficial to future city efforts, especially since survey results showed that residents value learning more about their natural resources and appreciate contributing to the city's environmental goals. By tapping into the learning aspect and local pride of residential landowners, additional communication and community engagement could enhance implementation of future natural resource ordinances. The body of research on ecosystem services and nature-based wellness provides Minnetonka with scientific evidence to craft strategies for communication and education. This evidence allows the city to more accurately measure and discuss the dollar value, the ecological benefits, the impact on health outcomes, and the intangible benefits of nature for residents.

The recommendations provided here, combined with local pride of environmental resources could serve as a launching point for bolstering the city's planning process for additional engagement around natural resource protections on residential land.

One comment received was, “Perspective from my builder on how important tree conservation is, specifically to the city of Minnetonka.” Future research suggestions include studying the interactions between residents and developers to implement natural resource ordinances within the City of Minnetonka.

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8.0 Appendices

8.1 Appendix A: Survey Questions

Deployment: Postcard (QR code). City will help by word and mail. Email follow-up from city.

Pre-mailer: Postcard. City will help word and mail. Email follow-up from city. Need marketing language on postcard to draw them in and get them to scan the code.

[Survey begin]

Welcome Text: Thank you for taking the time to participate in this University of Minnesota graduate school project survey through the Humphrey School of Public Affairs. Your insights and experiences are incredibly valuable to us and the City of Minnetonka. We appreciate your time and willingness to participate in this survey.

Results of this survey will help us better understand **changes in attitudes and perceptions about trees and wetlands as a result of city natural resource protection requirements**. You don't need to be knowledgeable about trees or wetlands to complete the survey. **You only need to be an adult, living on your owned single family home property in Minnetonka that was newly developed in the last 5 years**.

We expect it will only take 10-12 minutes. You may close and re-enter the survey for one week. Only one response per person is allowed, but multiple responses per household is encouraged.

Contact info: Kevin Krantz, UMN graduate student; krant074@umn.edu

The information you provide in this questionnaire will be treated with strict confidentiality. Your responses will be used solely for the stated purposes, personal identifiers will be removed during analysis, and results will be presented in aggregate

form only. Individual responses will not be shared with third parties without your explicit consent, except as required by law. Data will be stored securely with access limited to authorized personnel. You retain rights to access, correct, or request deletion of your information, subject to legal limitations.

[screener]

Screener text: First, we have a few questions to see if you qualify for this project. All the information you provide will be kept confidential. You only need to be an adult, living on your owned single family home property in Minnetonka that was newly developed in the last 5 years.

What is your age in years?
(Choose only one)

- ☐ Under 18
- ☐ 18-24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55-64
- ☐ 65-74
- ☐ 75+

Are you a resident of the City of Minnetonka?
(number entry)

Have you built or rebuilt a new home in the City of Minnetonka in the last 5 years?

- ☐ Yes
- ☐ No [screened out]

[If <18 years old, or not a Minnetonka resident, end survey and screen-out text]
Screen-out text: Thank you for your time. Unfortunately, you do not meet the requirements of this survey.

[Questionnaire begin]

Property Background Text: To help us understand the context of your experience with Minnetonka's natural resource ordinances, please provide some basic information about your property and development project.

1. **How long have you owned your property in Minnetonka?**
   (Choose only one)
   - ☐ Less than 1 year
   - ☐ 1-5 years
   - ☐ 5-10 years
   - ☐ 10-20 years
   - ☐ More than 20 years

2. **What year did you complete your new home development project?**
   - ☐ (number entry, ex: 2000)

Tree Protection Experience text: Minnetonka's trees and woodlands are an integral part of the city's identity, with ~53% of the City covered by tree canopy. Minnetonka has a tree ordinance that limits tree removal during building projects (preserved trees) and requires planting new trees to replace those lost (replanted trees). The rules try to protect trees while still letting homeowners use their property as they wish. We'd like to ask you some questions about your perceptions of city tree protection efforts.

3. **To what extent do you agree with the following statements about the trees that were preserved throughout the development on your property?**
   (5-point scale w/ Don't Know; 1 = "Strongly Disagree" to 5 = "Strongly Agree")
   - ☐ Overall, I appreciate that the trees were preserved
   - ☐ The preserved trees provide meaningful benefits (shade, wildlife habitat, etc.)
   - ☐ The preserved trees contribute positively to my quality of life.
   - ☐ The long-term benefits of the preserved trees outweigh any initial inconvenience or cost.
   - ☐ I would voluntarily preserve mature trees even if not required by ordinance

4. **What benefits have you observed from the preserved trees on your property?**
   (choose all that apply)
   - ☐ Increased property value
   - ☐ Wildlife habitat
   - ☐ More privacy
   - ☐ Aesthetic improvement

- ☐ Shade/temperature control
- ☐ Flood mitigation or management
- ☐ Neighbors like them
- ☐ Recreational value (bird watching, tire swing, etc.)
- ☐ Pride in contributing to community environmental goals
- ☐ Seeing positive changes in the broader community landscape
- ☐ No benefits
- ☐ Other (please specify) _____

5. **What challenges, if any, did you face in maintaining the preserved trees on your property?**
   (choose all that apply)
   - ☐ No significant challenges
   - ☐ Too expensive
   - ☐ Requirements are too restrictive
   - ☐ Difficulty with landscaping
   - ☐ Unclear requirements
   - ☐ Other {text}

[New page]

Tree replanting text: To preserve and enhance Minnetonka's natural resources, the tree preservation ordinance establishes requirements for tree replanting following removal from property development. This ordinance addresses the need to maintain tree canopy cover and protect biodiversity. We want to understand how residents feel about the city's efforts to protect trees while respecting homeowner property rights.

6. **To what extent do you agree with the following statements about the trees that were replanted throughout the development on your property?**
   (5-point scale w/ Don't Know; 1 = "Strongly Disagree" to 5 = "Strongly Agree")
   - ☐ Overall, I appreciate that the trees were replanted
   - ☐ The replanted trees provide meaningful benefits (shade, wildlife habitat, etc.)
   - ☐ Replanting the trees was a waste of resources (time, money, etc.)
   - ☐ The replanted trees contribute positively to my quality of life.

- ☐ The long-term benefits of the replanted trees outweigh any initial inconvenience or cost.
- ☐ I would voluntarily replant trees even if not required by ordinance

7. **What benefits have you observed from the replanted trees on your property?** *(choose all that apply)*
   - ☐ Increased property value
   - ☐ Wildlife habitat
   - ☐ More privacy
   - ☐ Aesthetic improvement
   - ☐ Shade/temperature control
   - ☐ Flood mitigation or management
   - ☐ Neighbors like them
   - ☐ Recreational value (bird watching, tire swing, etc.)
   - ☐ Pride in contributing to community environmental goals
   - ☐ Seeing positive changes in the broader community landscape
   - ☐ No benefits
   - ☐ Other (please specify)

8. **What challenges, if any, did you face in maintaining the replanted trees?** *(choose all that apply)*
   - ☐ No significant challenges
   - ☐ Too expensive
   - ☐ Requirements are too restrictive
   - ☐ Difficulty with landscaping
   - ☐ Unclear requirements
   - ☐ Other (please specify)

Wetland conservation easement text: Minnetonka's wetland conservation easements program allows residents and the City of Minnetonka to enter into an agreement where wetland property is put to use for the benefit of the city. Under this agreement, no disturbances are allowed to the property while it remains under the easement contract without a permit. We'd like to ask you some questions about your experiences regarding wetland conservation easements on your property.

9. **Have you put a wetland on your property into a protective conservation easement?**
   - ☐ Yes [proceed to question 10]
   - ☐ No [skip to question 13]

10. **To what extent do you agree with the following statements about the wetland conservation easement on your property?**
(5-point scale w/ Don't Know; 1 = "Strongly Disagree" to 5 = "Strongly Agree")
    - ☐ Overall, I appreciate that the wetland is in a wetland conservation easement
    - The wetland conservation easement provides meaningful benefits (wildlife habitat, etc.)
    - ☐ The wetland conservation easement contributes positively to the environment.
    - ☐ The long-term benefits of the wetland conservation easement outweigh any inconvenience.

11. **What benefits have you observed from the wetland conservation easement on your property?**
(choose all that apply)
    - ☐ Increased property value
    - ☐ Wildlife habitat
    - ☐ Water quality protection
    - ☐ Aesthetic improvement
    - ☐ Flood mitigation or management
    - ☐ Groundwater replenishing
    - ☐ Neighbors like it
    - ☐ Pride in contributing to community environmental goals
    - ☐ Seeing positive changes in the broader community landscape
    - ☐ No benefits
    - ☐ Other (please specify)

12. **What challenges, if any, did you face in meeting the requirements of the wetland conservation easement on your property?**
(choose all that apply)
    - ☐ No significant challenges
    - ☐ Too restrictive
    - ☐ Neighbors do not like it
    - ☐ Unclear requirements
    - ☐ Other (please specify)

[new page]

Wetland Buffer Experience text: Minnetonka's wetland ordinance often requires installation or maintenance of a wetland buffer, and limits how people can use wetlands

and nearby areas to protect their environmental, visual, and water-related benefits. We'd like to ask you some questions about your experiences regarding wetland buffers and wetland protection on your property.

13. **Does your property include a required wetland buffer?**
(choose only one)
    - ☐ Yes
    - ☐ No [skip section]

14. **What width of wetland buffer does your property have?**
(choose only one)
    - ☐ 16.5 feet
    - ☐ 25 feet
    - ☐ 50 feet
    - ☐ Don't know

15. **To what extent do you agree with the following statements about the wetland buffer on your property?**
(5-point scale w/ Don't Know; 1 = "Strongly Disagree" to 5 = "Strongly Agree")
    - ☐ Overall, I appreciate that the wetland buffer is maintained
    - ☐ Installing and maintaining the wetland buffer is a waste of resources (time, money, etc.)
    - ☐ I understand how to properly maintain the buffer area
    - ☐ The wetland buffer contributes positively to my quality of life.
    - ☐ The long-term benefits of the wetland buffer outweigh any initial inconvenience or cost.
    - ☐ I would voluntarily maintain a wetland buffer even if not required by ordinance.

16. **What benefits have you observed from the wetland buffer on your property?**
(choose all that apply)
    - ☐ Increased property value
    - ☐ Wildlife habitat
    - ☐ Water quality protection
    - ☐ Aesthetic improvement
    - ☐ Flood mitigation or management
    - ☐ Groundwater replenishing
    - ☐ Neighbors like it
    - ☐ Pride in contributing to community environmental goals
    - ☐ Seeing positive changes in the broader community landscape

- ☐ No benefits
- ☐ Other (please specify)

17. What challenges, if any, did you face in maintaining the wetland buffer?
(choose all that apply)

- ☐ No significant challenges
- ☐ Too expensive
- ☐ Decreased property value
- ☐ Too restrictive
- ☐ Neighbors do not like it
- ☐ Difficulty with landscaping
- ☐ Unclear requirements
- ☐ Other (please specify)

Changed Attitudes text: The city of Minnetonka has a long history of protecting its natural resources, such as wetlands and trees, through enforcement of local ordinances during the development and redevelopment of land. These regulatory requirements are generally intended to limit impacts to natural resources over time. We are interested in any changed attitudes regarding the protection of natural resources on your property.

18. Compared to before your property development, how has your view changed regarding the value of:
(5-point scale 1 = "Much More Negative" to 5 = "Much More Positive" scale)

- Tree preservation
- Tree replanting
- Wetland conservation easements [show if Q9 = Yes]
- Wetland buffer installation and maintenance [show if Q14 = Yes]

19. What factors contributed to this positive change in attitude? [if Q18 selected positive change]
(Choose all that apply)

- ☐ Observing tangible benefits on my property (e.g., aesthetics, wildlife)
- ☐ Learning more about the ecological importance of these protections
- ☐ Conversations with neighbors or community members
- ☐ Increased property value
- ☐ Educational materials or programs provided by the city
- ☐ Pride in contributing to community environmental goals
- ☐ Seeing positive changes in the broader community landscape
- ☐ Noticing improvements in local water quality or habitat
- ☐ Other (please specify)

20. **What factors contributed to this negative change in attitude?** [if Q18 selected negative change]

(Choose all that apply)

- ☐ Maintenance requirements are too demanding
- ☐ Unexpected costs associated with compliance
- ☐ Restrictions on property use or development
- ☐ Lack of visible benefits despite the requirements
- ☐ Issues with vegetation management (e.g., invasive species)
- ☐ Drainage or water-related problems
- ☐ Insufficient guidance or support from the city
- ☐ Conflicts with neighbors related to natural resource areas
- ☐ Other (please specify)

About You / Demographics text: Please take a moment to answer the following demographic questions to ensure we accurately represent the diverse views of residents.

[new page]

21. Which category best describes you?

(choose all that apply)

- ☐ **American Indian or Alaska Native** (For example, Minnesota Chippewa Tribe, Shakopee Mdewakanton Sioux, Navajo Nation, Mayan, Aztec, Nome Eskimo Community, etc.)
- ☐ **Asian** (For example, Chinese, Filipino, Asian Indian, Vietnamese, Korean, Hmong, Japanese, etc.)
- ☐ **Black or African American** (For example, African American, Jamaican, Haitian, Nigerian, Ethiopian, Somali, etc.)
- ☐ **Hispanic, Latino, or Spanish** (For example, Mexican or Mexican American, Puerto Rican, Cuban, Salvadoran, Dominican, Colombian, etc.)
- ☐ **Middle Eastern or North African** (For example, Lebanese, Iranian, Egyptian, Syrian, Moroccan, Algerian, etc.)
- ☐ **Native Hawaiian or Other Pacific Islander** (For example, Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, Marshallese, etc.)
- ☐ **White** (For example, German, Irish, English, Italian, Polish, French, Swedish, Norwegian, etc.)
- ☐ **Race, ethnicity, or heritage not listed here** (*Please specify*: _____)

[new page]

22. **How would you describe yourself?**

(choose only one)

- ☐ Man
- ☐ Woman
- ☐ Non-binary / gender non-conforming
- ☐ Other (*Please specify*)

Optional Follow-up text: Thank you for completing our survey! Your input is invaluable to our research and helps make meaningful progress. As a token of our appreciation, we invite you to a brief follow-up survey to dig deeper into your feedback. Your continued participation will enhance the quality and impact of our project.

We will be conducting follow-up conversations (30-45 minute) with survey respondents via online Zoom meetings who have indicated willingness to participate in more in-depth discussions. These interviews will help Humphrey graduate students gather richer, narrative-based information about how natural resource ordinances have affected properties and property owners' perceptions over time.

23. **Would you be willing to participate in a brief follow-up conversation to share more about your experience?**

(choose only one)

- ☐ Yes [go to Q24]
- ☐ No [end]

24. **Please provide your contact information** (form fills)

- ☐ First name
- ☐ Last Name
- ☐ Address (mail?)
- ☐ Email [w/ retype verify]

25. **Would you like to receive a brief report with the results of this survey?**

- ☐ Yes
- ☐ No

Survey End Text: Thank you for your valuable insights! Your response has been recorded. You may now exit this survey.

[End]

8.2 Appendix B: Suggested Group Facilitated Meeting Agenda

Introduction:
Following survey results from the collaboration between the City of Minnetonka and graduate students from the Humphrey School of Public Affairs, a facilitated conversation may be needed between the city's Natural Resources Department and residents or developers.

The purpose of this discussion is to gather feedback from residents or developers who have worked through the city's natural resource ordinances to protect trees or wetlands. Specifically, we are seeking feedback on their experience working with the natural resource ordinances, what benefits they saw after the ordinances were implemented, what challenges they experienced and what support would residents, or developers, need to make implementation easier in the future. This feedback will be shared with city leadership to advocate for ideas to facilitate additions to how natural resource ordinances are supported.

Agenda:
Time - 60 minutes
Location - TBD
Attendees - City of Minnetonka staff and residents/developers

0:00 pm	**Introductory Comments and Topic Context (3 min):** *Goal: Situate conversation and set expectations*	Facilitator

0:03 pm	<u>Introductory Comments and Topic Context (3 min):</u> -Hello everyone, we are from the city of Minnetonka and we are here to have conversations about your experience with our natural resources ordinances. - *Team member introductions (each person introduces themselves)* -"We understand you are all experienced in the implementation of the city's natural resource ordinances and I'm sure you have some initial reactions to this change. -"Our job here is to talk with you, as city employees, to collect feedback on your experiences and how the city may make implementation easier. -"We are hoping to understand your experiences working with the natural resources ordinances, and how it affected your lives. In doing so, we are planning to offer recommendations to city leadership and the natural resources department on ways to support residents or developers going forward. - "We understand this may be a difficult subject to discuss in a group. Please feel free to share only to the degree that feels safe and comfortable for you. If there's something you'd prefer to talk about one-on-one, just flag us for questions, and we'll make sure to connect with you before our conversation wraps up. There is also the option to write a note or email us directly after this discussion." <u>Logistical note:</u> 4 large pieces of paper in front of the classroom. Markers. Also post-it notes for each student and pens.	Facilitator
	<u>Discussion Questions (40 min Total)</u> *Goal: To understand residents and/or developers' experiences, concerns, and hopes around implementing natural resources ordinances, and to foster open, supportive dialogue that informs future decisions.*	

0:03 - 0:13 pm	**“Objective” Question (10 min):** - <u>Transitional Language (Intro):</u> We’re going to spend the next 10 minutes talking about your feelings, experiences, related to implementation or natural resources ordinances Our first question is: - **<u>Question:</u>** What were some experiences you recall when implementing the city’s natural resources ordinances? ****The floor is open and we want to hear from you, also there are post-it notes in front of you if you are more comfortable writing your thoughts. We will gather those.* Logistical note: Write on one large sheet of paper with markers. Facilitator watches the time and signals time. OK - thanks for your thoughtful comments so far	Facilitator Scribe

0:13 - 0:23 pm	**“Reflective” Question (10 min):** Transitional Language (Intro): “Thank you so much for your thoughts on this topic so far.” Question Introduction:“Now, we’d like to get a deeper understanding of the experiences and emotions you may associate with when implementing the natural resources ordinances. This is a chance to reflect on how this change might impact you personally and professionally. We have around 10 minutes for this question.” Question: **“Thinking about these experiences, what has stood out to you—both in terms of was difficult (negative) and what went well (positive)?”** **Rephrase as needed* **Logistical note:** Scribe: New sheet with line down the middle header positive and negative. Scribe notes time. Transitional Language (Outro): “Thank you for your comments and reflections. We appreciate everyone’s willingness to share. In the interest of time, we’ll wrap up this part of the discussion and move onto the next question.”	Facilitator Scribe

0:23 - 0:33 pm	**“Interpretive” Question #1 (10 min):** - Transitional Language (Intro): “Thank you for your responses to our questions so far. We’re going to pivot just a bit to gather your feedback about which of these positives and negatives you value the most or least. - **Question: What is/was the most valuable aspect of working with the city’s natural resource ordinances?** - Alternative Questions: ■ Alternative 1: “What was the most beneficial result?” ■ Alternative 2: “What was a surprise result?” - Transitional Language (Outro): Thank you for sharing your experiences working from home. We’re going to switch it up a bit and talk about the value of working from the office. Logistical note: new piece of paper and marker. Scribe notes time.	Facilitator Scribe
0:33 - 0:43 pm	**“Interpretive” Question #2 (10 min):** - **Question: What was the most challenging aspect of implementing the natural resource ordinances?** - Alternative Questions: ■ Alternative 1: “What was the biggest challenge?” ■ Alternative 2: “What was a surprising challenge?” . - Transitional Language (Outro): “Thank you again for your valuable feedback. We have one last question for you.”	Facilitator Scribe

0:43 - 0:53 pm	**2:53pm - "Decisional" Question (10 min):** - Transitional Language (Intro): "Thank you all for sharing. We have one last question and since you all know best, I will need you to help me out. We've talked so far about the benefits and challenges of implementing the city's natural resource ordinances, but now I want to hear what the city can do better…" - **Question: What support would you need to make implementing the natural resource ordinances easier?** - "Two minute warning everyone - any last great ideas?" - Transition language (Outro): "And that's time!" Move on to conclusion Logistical note: a new sticky sheet and marker. Scribe notes time.	Facilitator Scribe
0:55 pm	**Concluding Comments (2 min):** *Goal: Thank participants and share next steps*	Facilitator
0:55 - 0:59 pm	**Concluding Comments (4 min):** "Thank you all for the valuable insights you shared today. We know that talking about your experiences can feel personal, and we deeply appreciate your openness and trust in this space." "If other thoughts or questions surface in the coming days, please don't hesitate to reach out by email or phone. We also	Facilitator

	understand that speaking up in a group isn't comfortable for everyone, and that's completely okay." "With that, we'll wrap up today's session. The perspectives you shared will help us better understand how to support future residents or developers who will work with our natural resource ordinances. Thank you again, and we hope you have a great afternoon."	
	Final thoughts or questions	
	Conclude	

Table 1

Appendix C: Survey Graphics

Preserved Trees Graphics

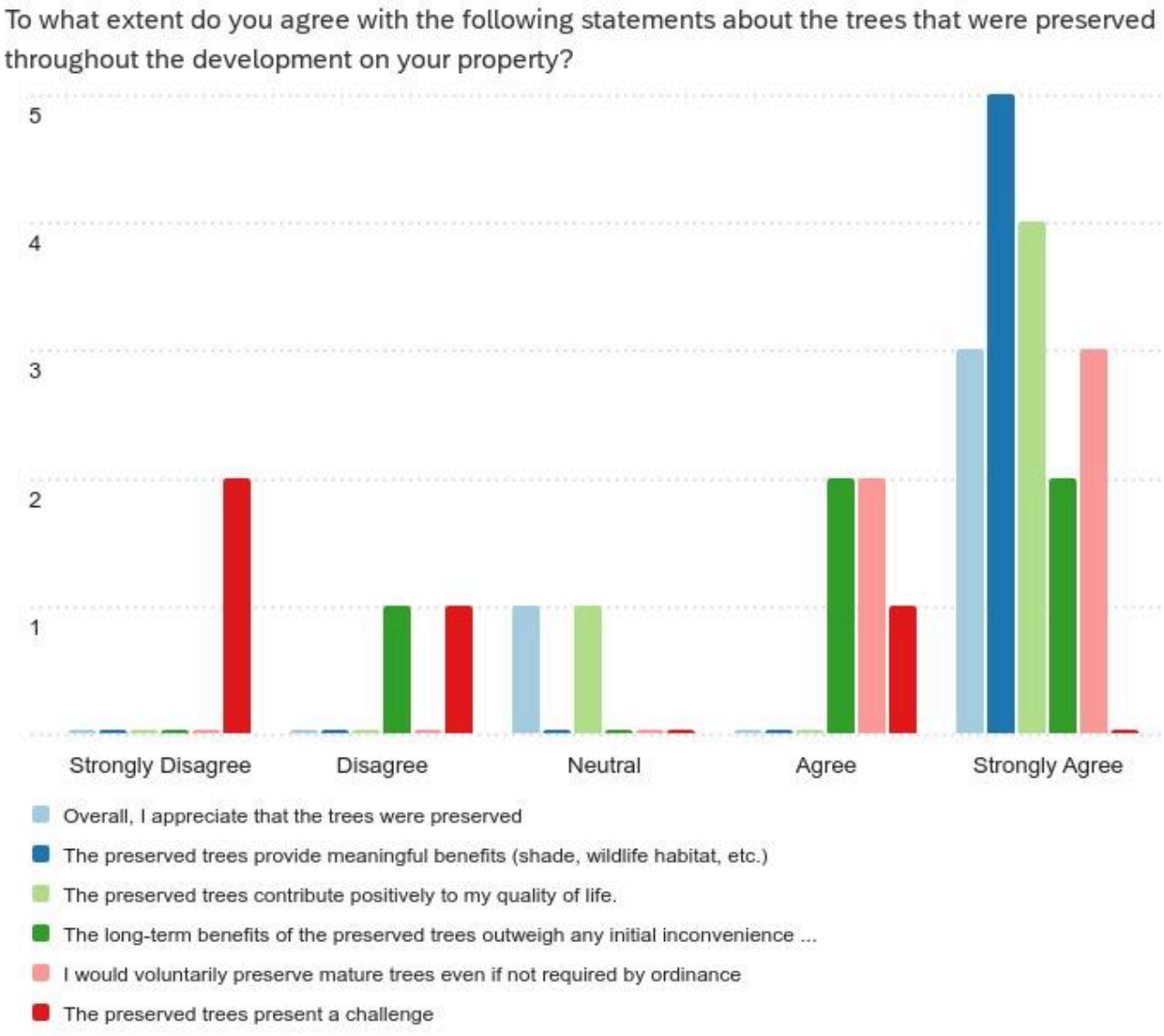


Figure 2

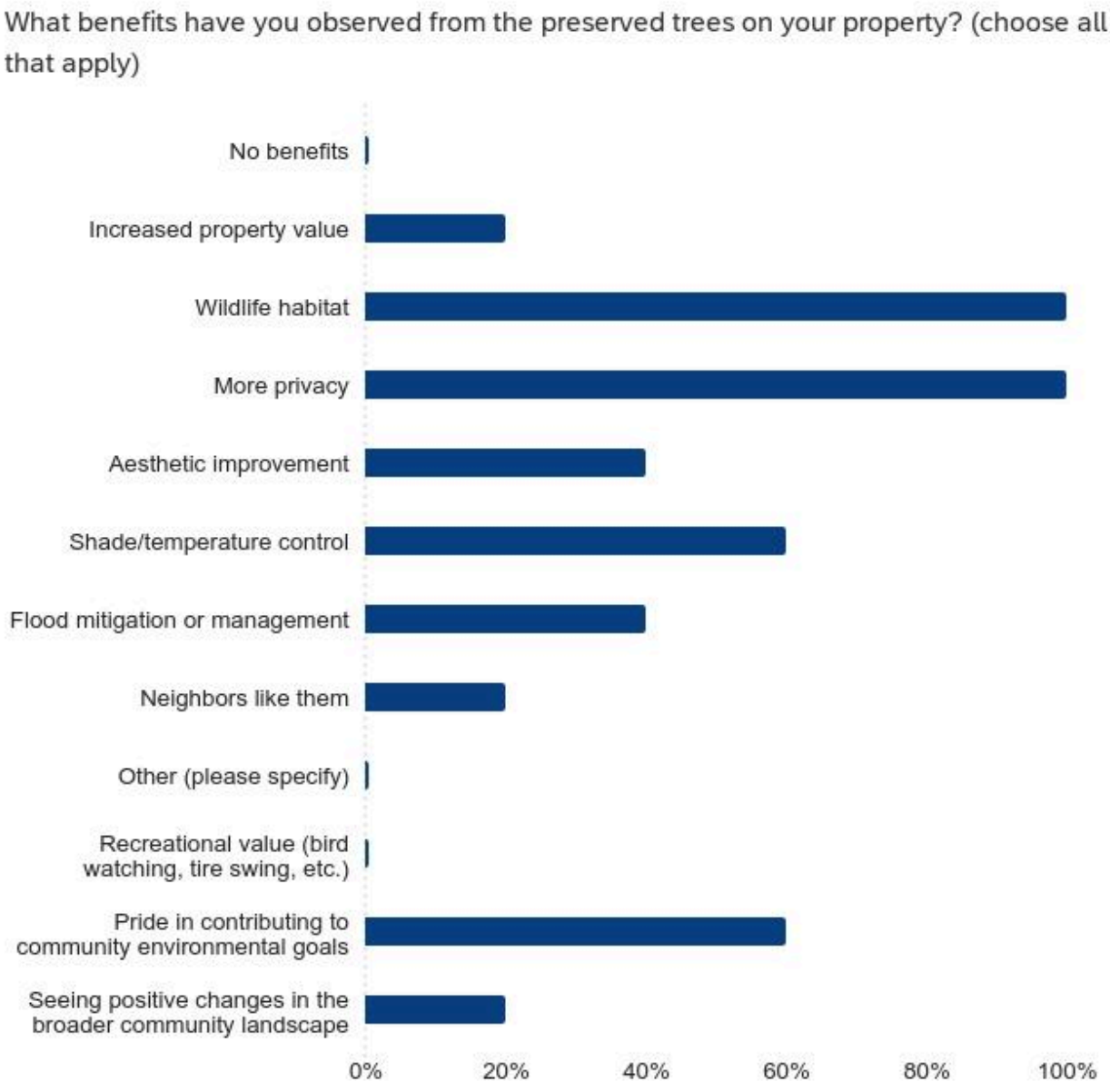

What benefits have you observed from the preserved trees on your property? (choose all that apply)
No benefits
Increased property value
Wildlife habitat
More privacy
Aesthetic improvement
Shade/temperature control
Flood mitigation or management
Neighbors like them
Other (please specify)
Recreational value (bird watching, tire swing, etc.)
Pride in contributing to community environmental goals
Seeing positive changes in the broader community landscape
0%
20%
40%
60%
80%
100%

Figure 3

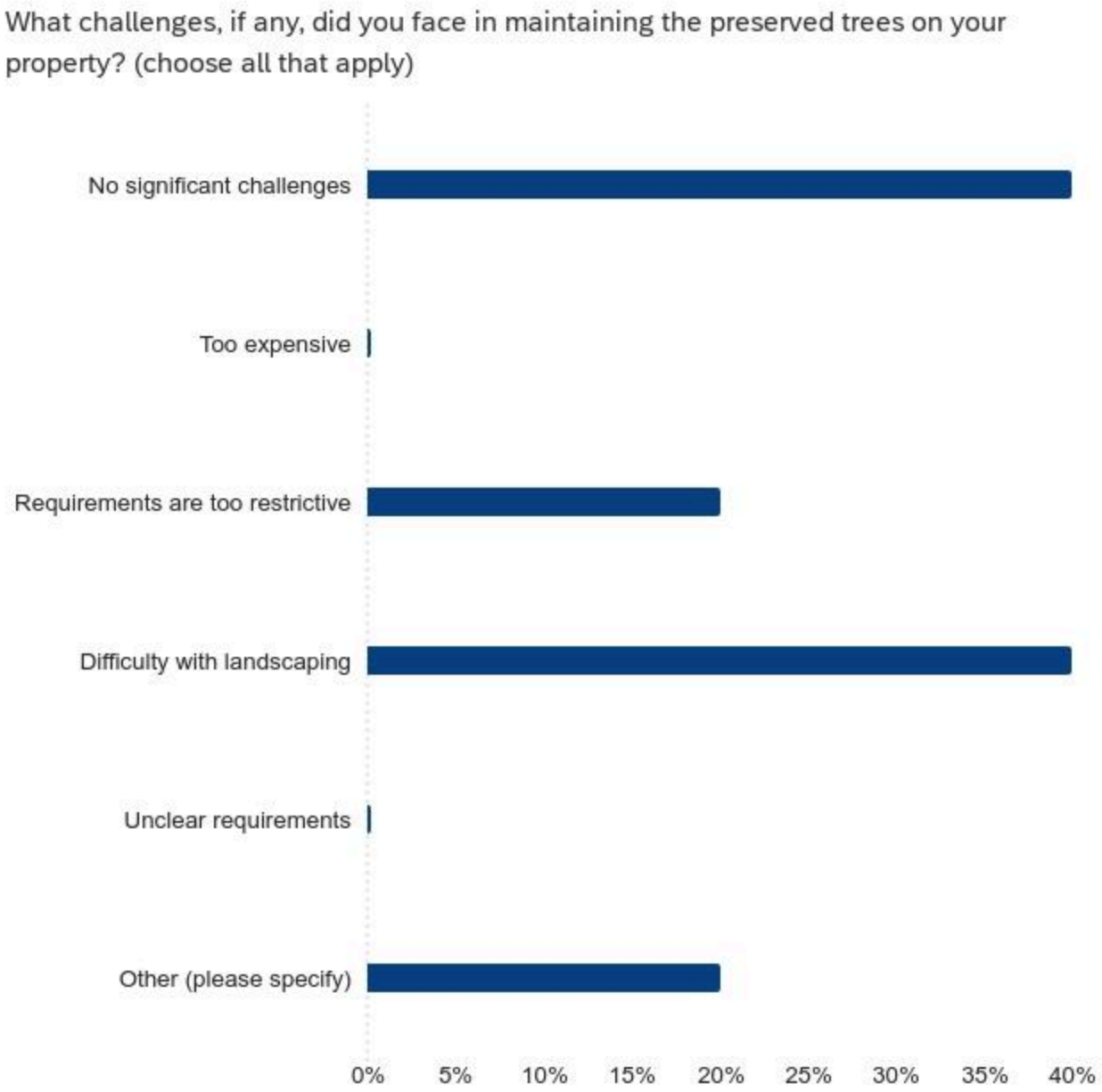

What challenges, if any, did you face in maintaining the preserved trees on your property? (choose all that apply)
No significant challenges
Too expensive
Requirements are too restrictive
Difficulty with landscaping
Unclear requirements
Other (please specify)
0%
5%
10%
15%
20%
25%
30%
35%
40%

Figure 4

Replanted Trees Graphics

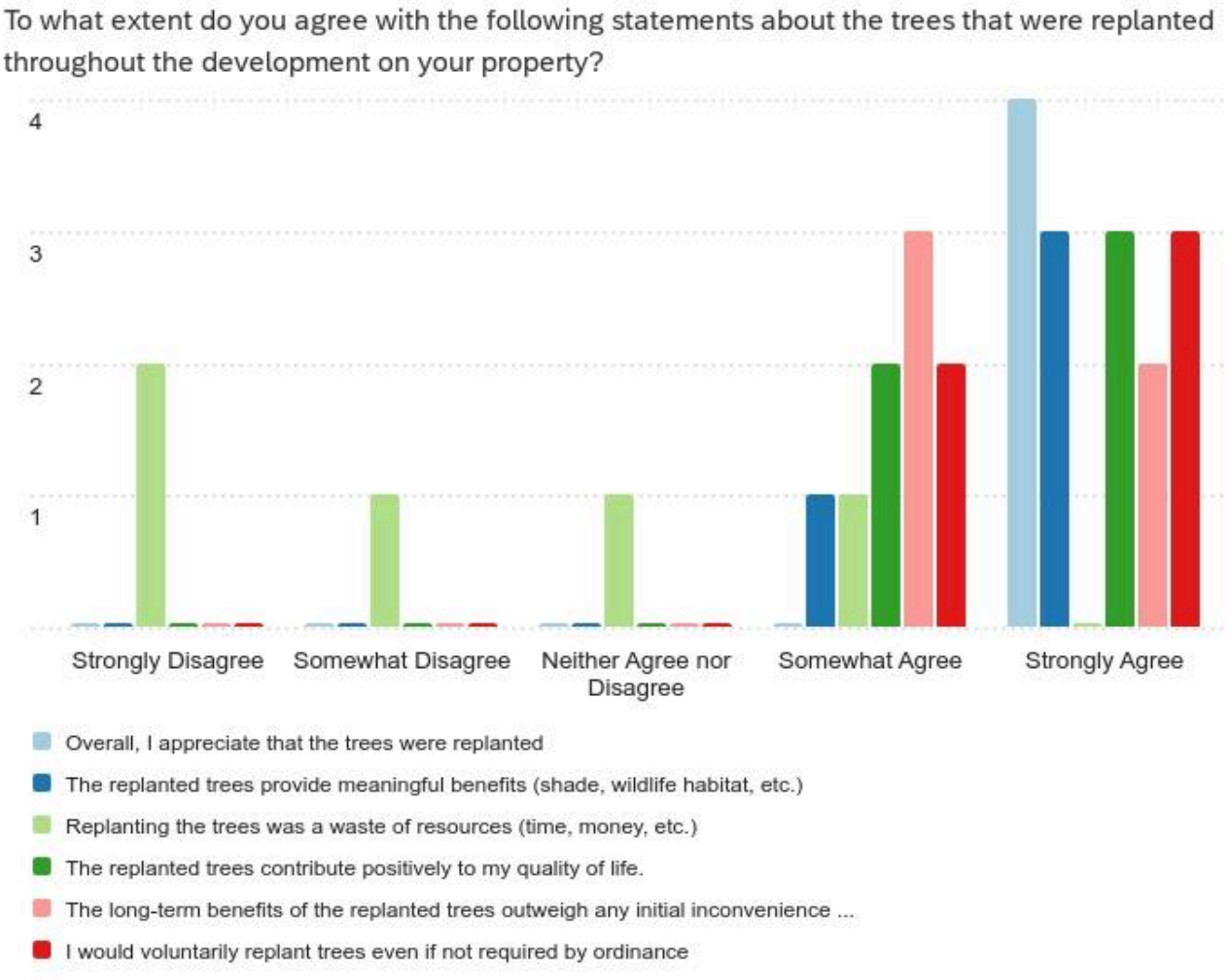


Figure 5

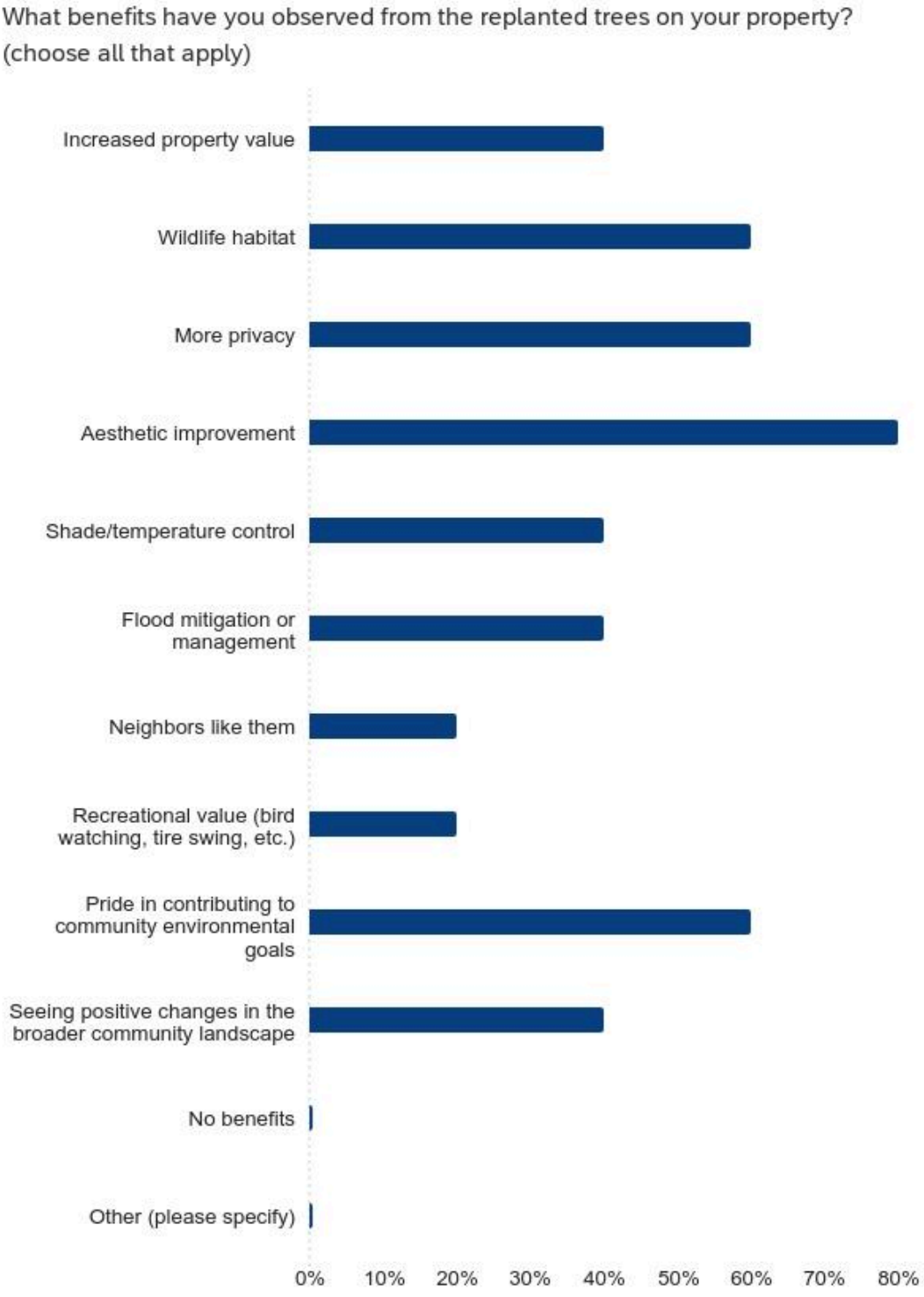

What benefits have you observed from the replanted trees on your property? (choose all that apply)
Increased property value
Wildlife habitat
More privacy
Aesthetic improvement
Shade/temperature control
Flood mitigation or management
Neighbors like them
Recreational value (bird watching, tire swing, etc.)
Pride in contributing to community environmental goals
Seeing positive changes in the broader community landscape
No benefits
Other (please specify)
0%
10%
20%
30%
40%
50%
60%
70%
80%

Figure 6

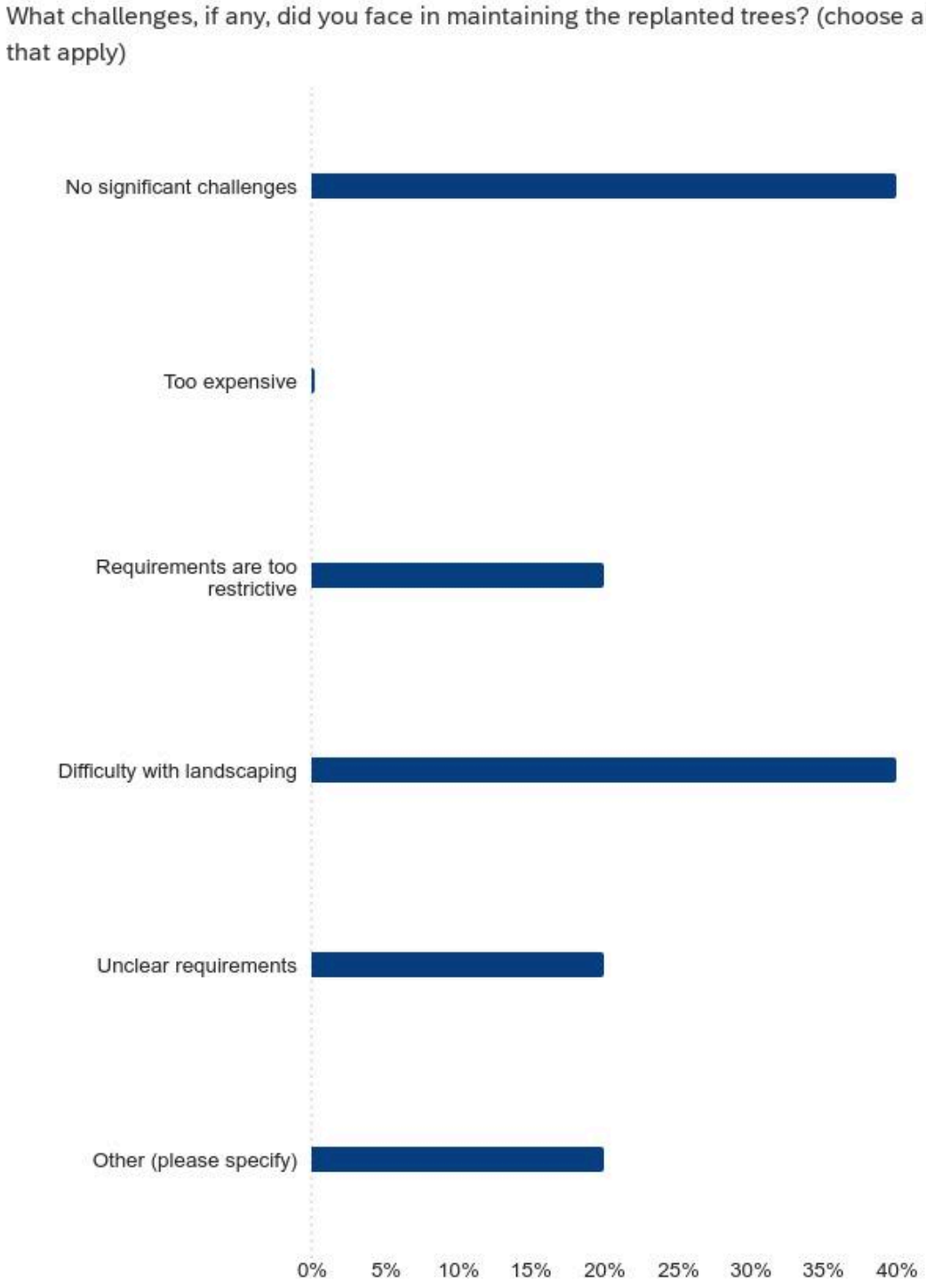

What challenges, if any, did you face in maintaining the replanted trees? (choose all that apply)
No significant challenges
Too expensive
Requirements are too restrictive
Difficulty with landscaping
Unclear requirements
Other (please specify)
0%
5%
10%
15%
20%
25%
30%
35%
40%

Figure 7

Wetland Conservation Easement Graphics

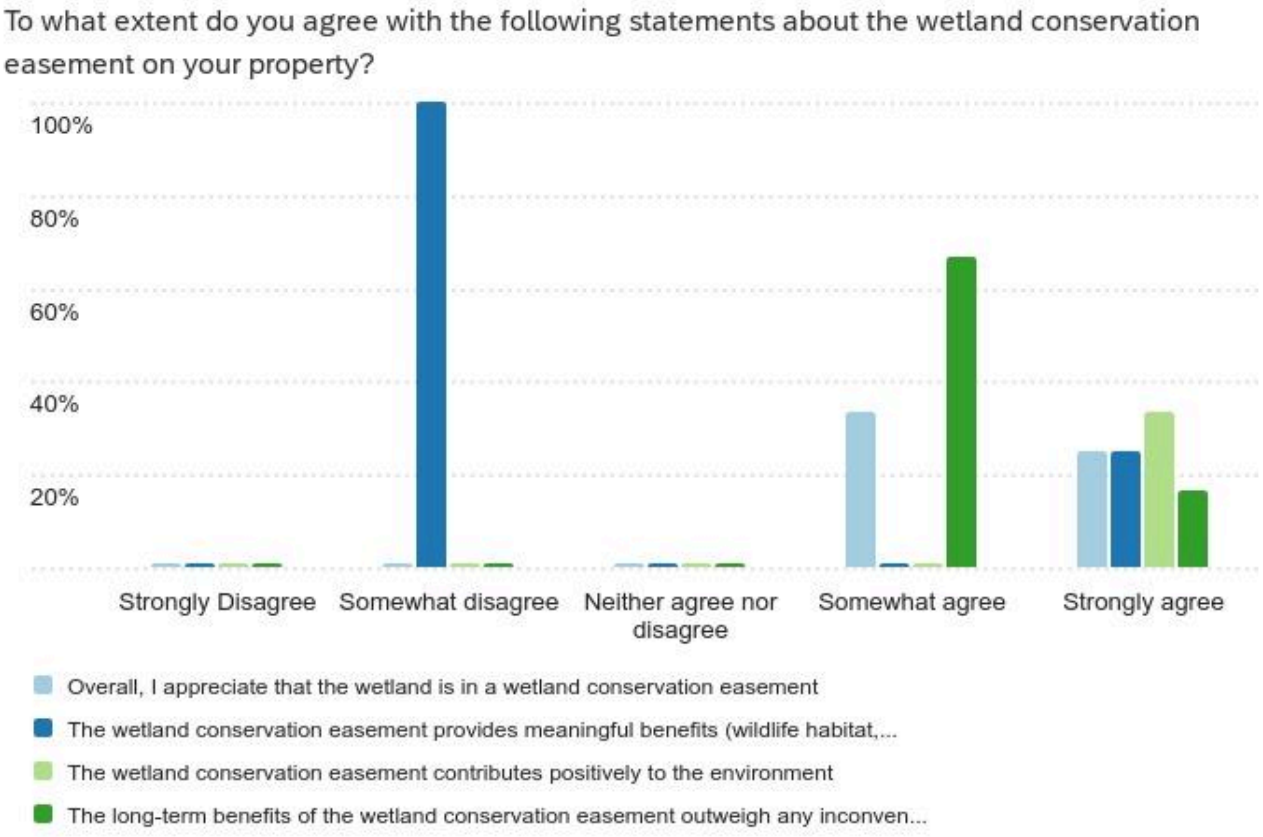


Figure 9

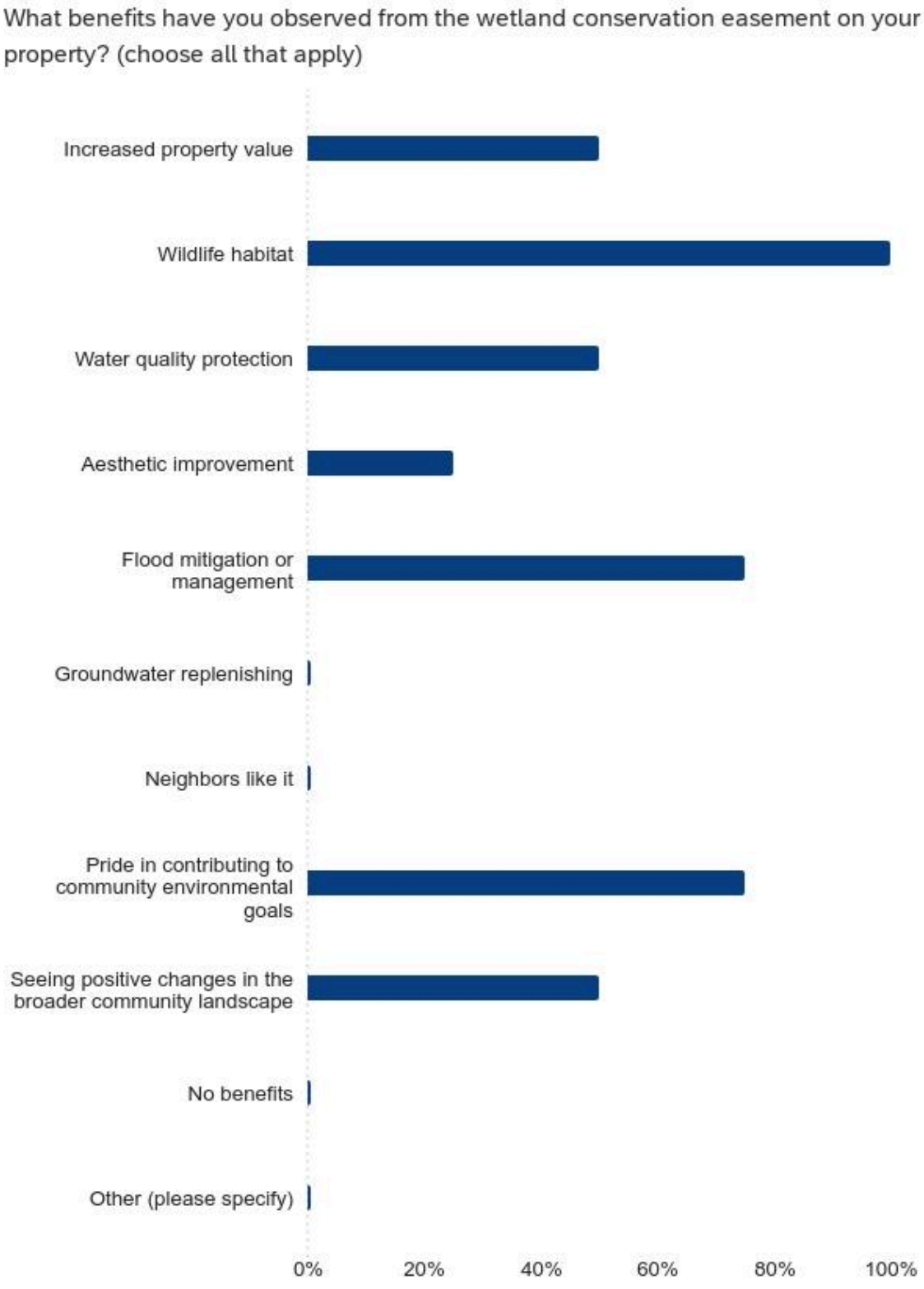

What benefits have you observed from the wetland conservation easement on your property? (choose all that apply)
Increased property value
Wildlife habitat
Water quality protection
Aesthetic improvement
Flood mitigation or management
Groundwater replenishing
Neighbors like it
Pride in contributing to community environmental goals
Seeing positive changes in the broader community landscape
No benefits
Other (please specify)
0%
20%
40%
60%
80%
100%

Figure 10

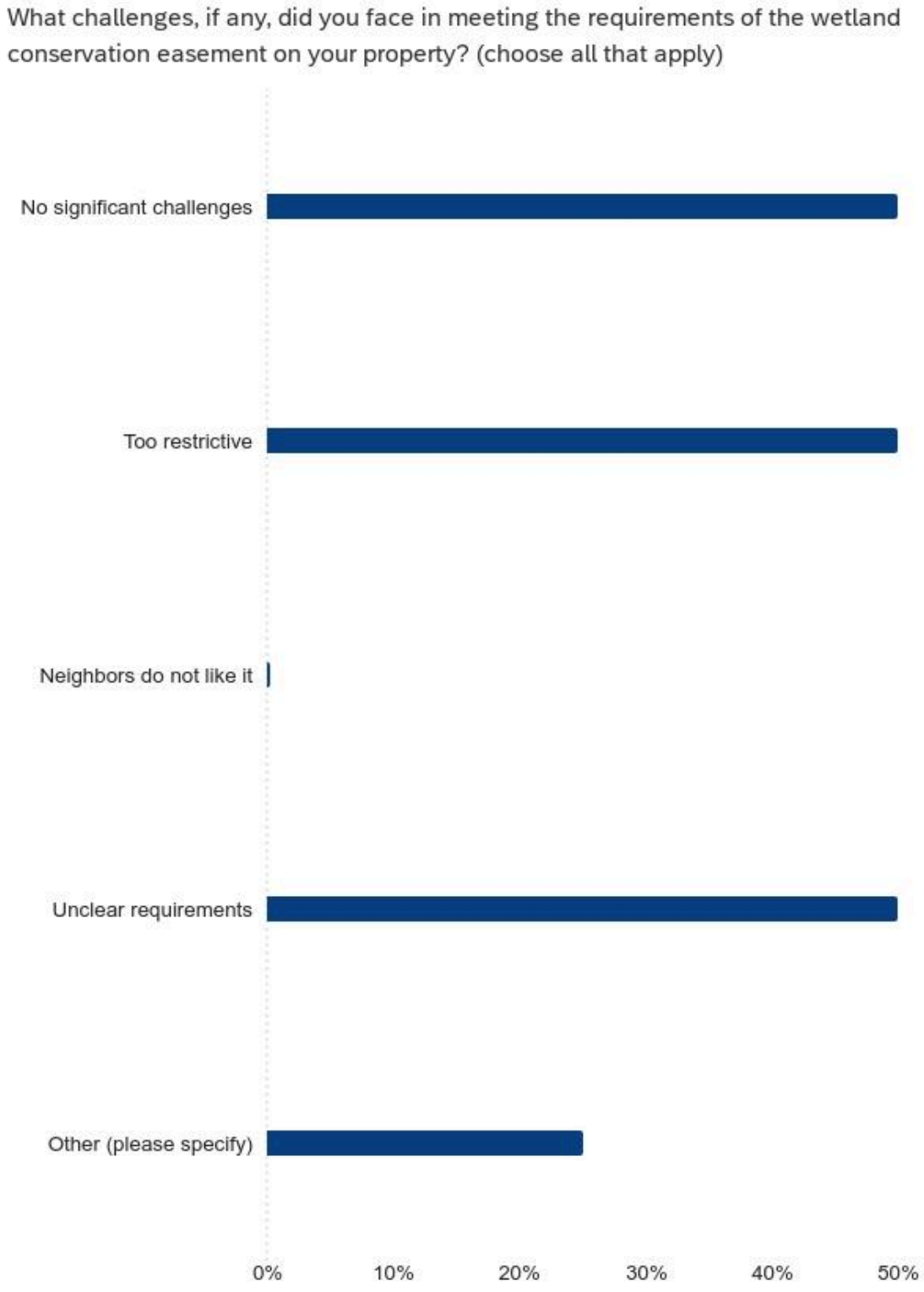

What challenges, if any, did you face in meeting the requirements of the wetland conservation easement on your property? (choose all that apply)
No significant challenges
Too restrictive
Neighbors do not like it
Unclear requirements
Other (please specify)
0%
10%
20%
30%
40%
50%

Figure 11

Wetland Buffer Graphics

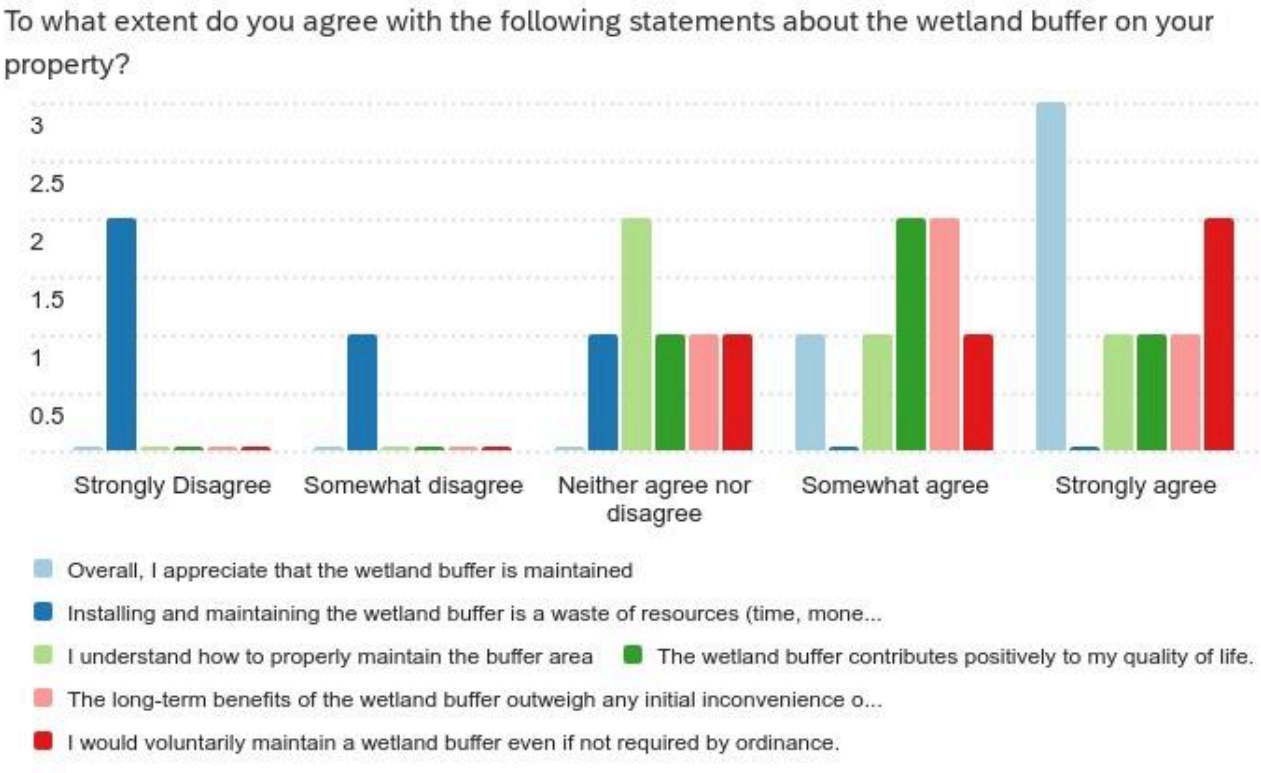


Figure 12

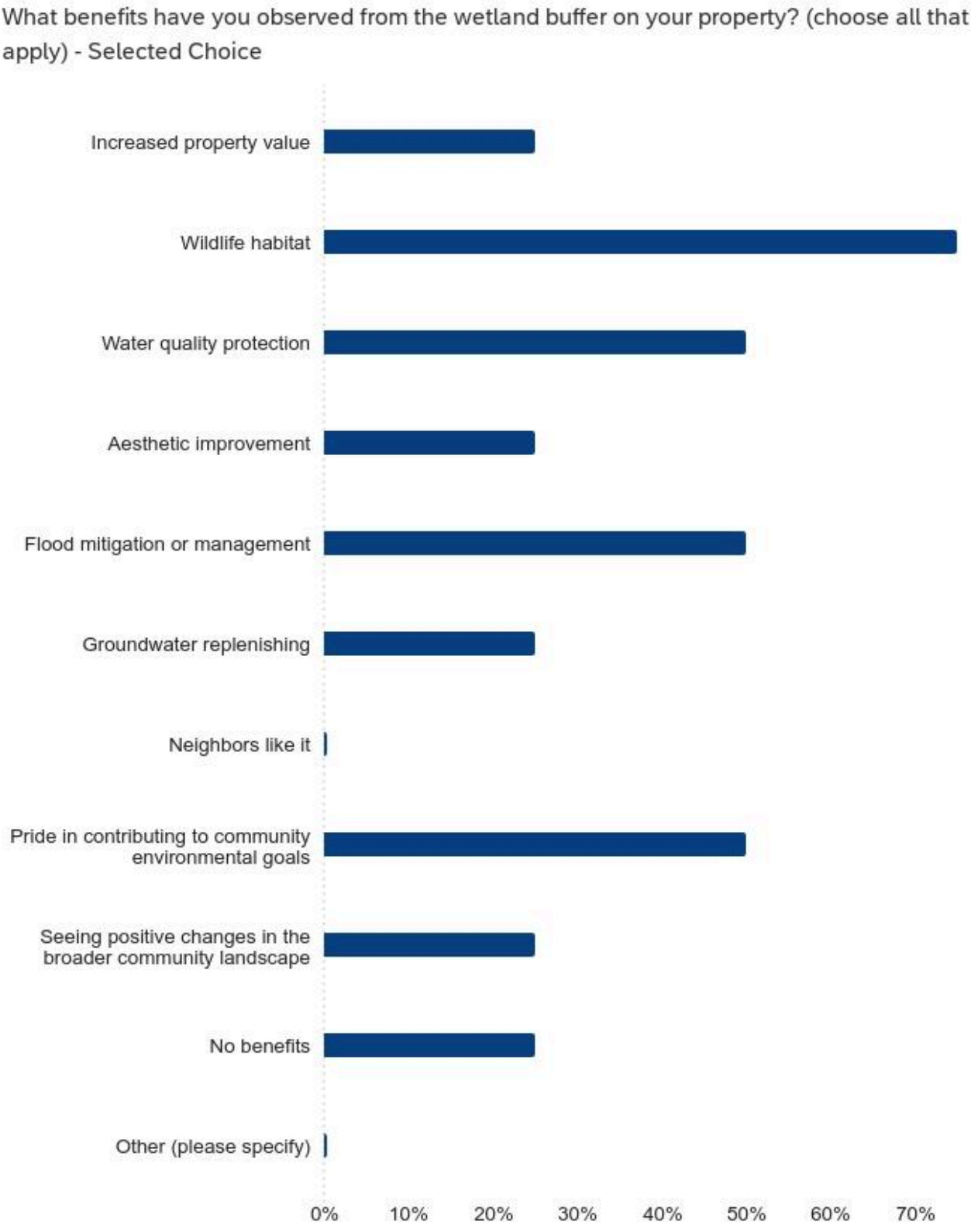

What benefits have you observed from the wetland buffer on your property? (choose all that apply) - Selected Choice
Increased property value
Wildlife habitat
Water quality protection
Aesthetic improvement
Flood mitigation or management
Groundwater replenishing
Neighbors like it
Pride in contributing to community environmental goals
Seeing positive changes in the broader community landscape
No benefits
Other (please specify)
0%
10%
20%
30%
40%
50%
60%
70%

Figure 13

Changed Perception of Natural Resources Graphics

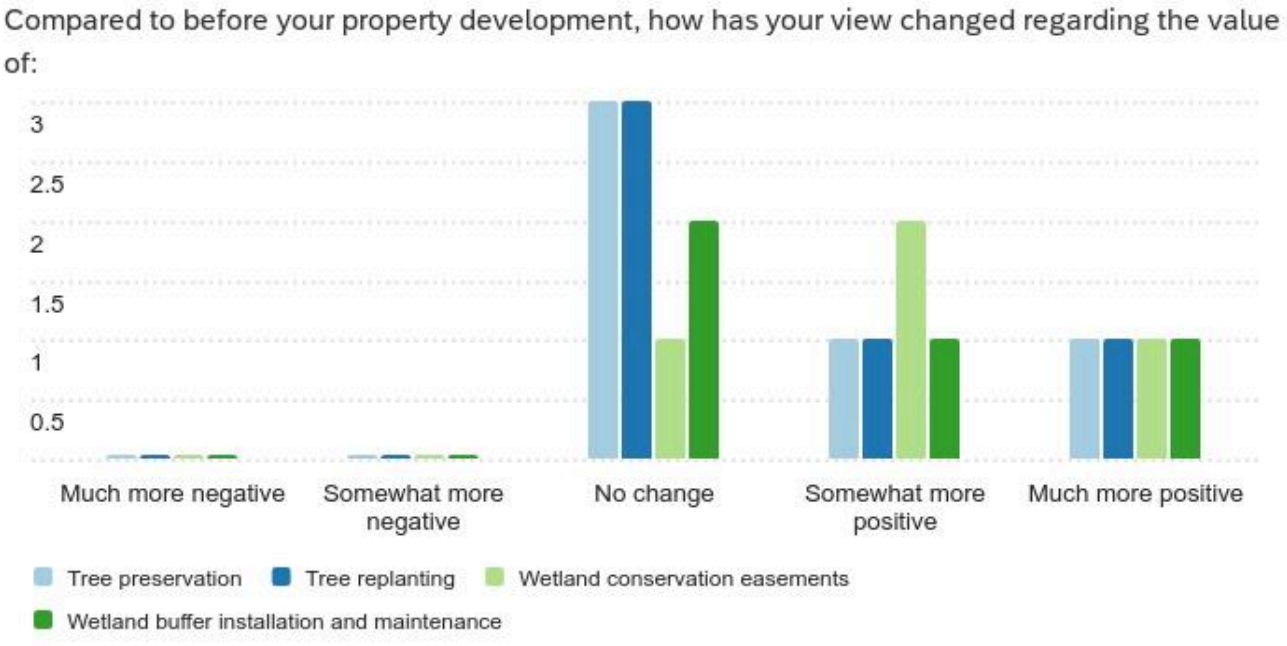


Figure 14

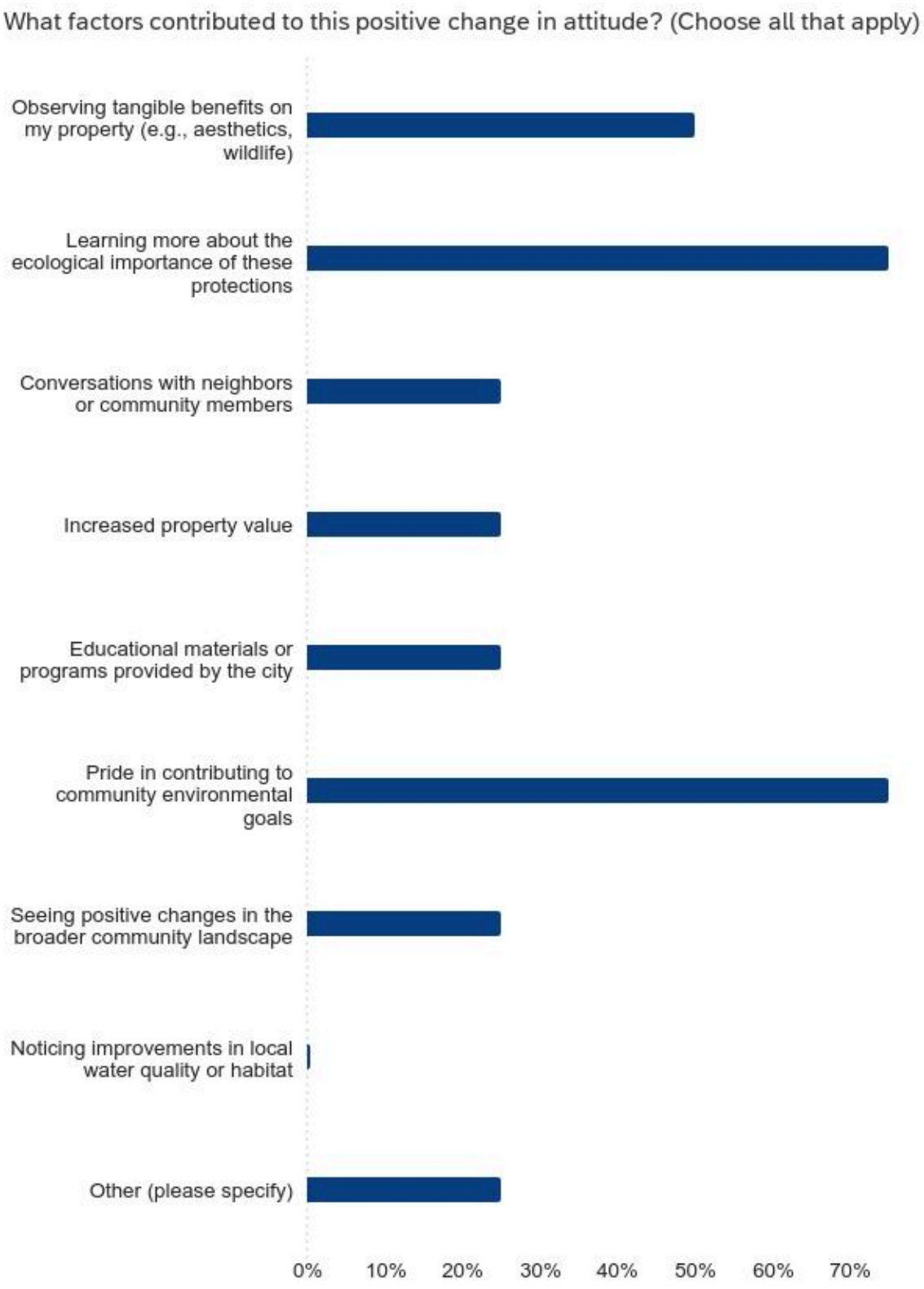

What factors contributed to this positive change in attitude? (Choose all that apply)
Observing tangible benefits on my property (e.g., aesthetics, wildlife)
Learning more about the ecological importance of these protections
Conversations with neighbors or community members
Increased property value
Educational materials or programs provided by the city
Pride in contributing to community environmental goals
Seeing positive changes in the broader community landscape
Noticing improvements in local water quality or habitat
Other (please specify)
0%
10%
20%
30%
40%
50%
60%
70%

Figure 15

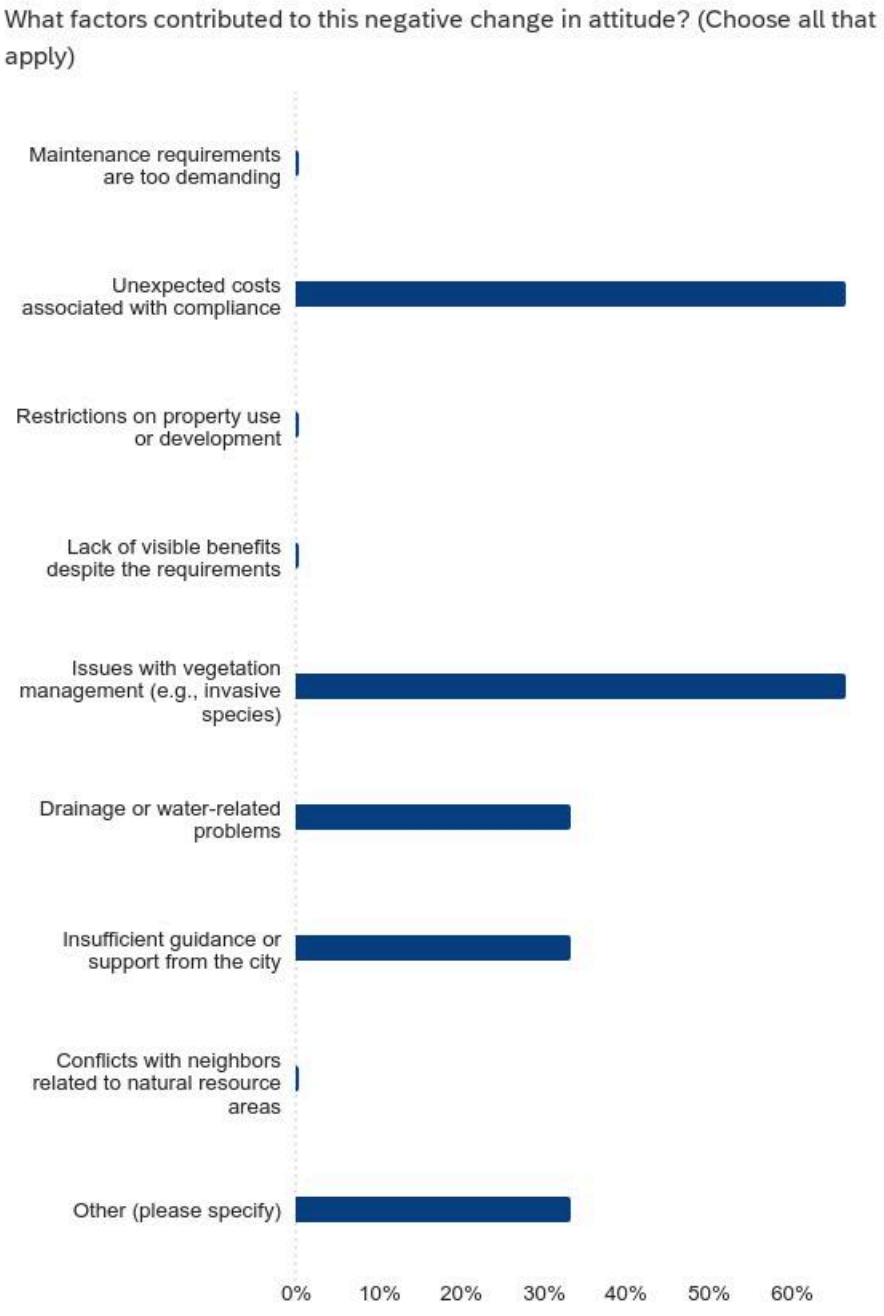

What factors contributed to this negative change in attitude? (Choose all that apply)
Maintenance requirements are too demanding
Unexpected costs associated with compliance
Restrictions on property use or development
Lack of visible benefits despite the requirements
Issues with vegetation management (e.g., invasive species)
Drainage or water-related problems
Insufficient guidance or support from the city
Conflicts with neighbors related to natural resource areas
Other (please specify)
0%
10%
20%
30%
40%
50%
60%

Figure 16