

An Analysis of the Southeast Como Neighborhood Traffic Diverters

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SECIA Diverter Assessment Executive Summary

The traffic diverters were built to help slow down commuter traffic through the southeast Como neighborhood. As time has passed, the original plantings have either overgrown the areas or have been taken over by weeds and invasive species like buckthorn. The disarray of the diverters has raised safety concerns among community members as the overgrown plants and broken down fencing block sightlines of pedestrians and drivers alike. This deterioration is largely due to blurred lines of responsibility and lack of maintenance. Through the efforts of residential volunteers and donations from local organizations, the Southeast Como Improvement Association (SECIA) may be able to restore safety and beauty to these community spaces.

The methods used to craft these design recommendations include literature review, field testing, and the use of a survey to record public opinion. Data were collected on the SE Como tree canopy to measure the changes in tree canopy over time and to test the soil at each site for pH and compaction levels to determine what changes, if any, need to be made to the site to support plant growth. An assessment of plant species composition and plant health was done at each diverter to provide a baseline for current conditions at each location. A survey was sent by SECIA to the residents of Como to determine community preferences over redesign elements, willingness to volunteer to help maintain new plantings, and ability to volunteer with community efforts towards restoration. The responses from the surveys were taken into consideration with the results of site testing to provide SECIA with key elements to incorporate into redesign efforts:

- Remove the current plank-style barrier and replace with a bollard with chain system to increase sightline visibility
- Post additional signage for sharp curve warnings or reduced speed signs
- Maintain a planting height of no taller than 30 inches for small plants (roughly tabletop height) and a 7-foot clearance for the lowest hanging branches on trees
- Use reflectors on the bollard with chain fencing and/or the curb to highlight the directional shift in dark conditions
- Install curb cuts to allow stormwater runoff to flow directly into the soil at the diverters
- Remove the mounds at the diverters and level the ground surface to prevent soil erosion and support stormwater infiltration

All recommendations were made with consideration to budget limitations and lowest required maintenance. To combat both low financial support and low volunteer availability, fundraising opportunities and community engagement techniques were analyzed to find the most applicable options for the Como neighborhood. Strategies used should try to maximize participation among the younger residents. Integrating volunteers across generations will foster a greater feeling of community among residents and may help garner a feeling of safety among the older generation as the socialization will help dispel negative perception of the younger community. Fundraising and volunteer efforts that target both age groups and increase opportunities to intermingle include:

- Scheduling community happy hours at North Gate Brewery to raise cash donations

- Contact the University of Minnesota for in-kind donations towards planned events (including, but not limited to, Minnesota FC soccer game tickets to incentivize student volunteers)
- Schedule specific diverter maintenance day for neighboring residents to come out and clean-up their diverters while socialize with their neighbors
- Create and assign duties based on interests and abilities to maximize volunteer enthusiasm and participation

Other recommended fundraising opportunities include working with the Brewing a Better Forest organization to plant and maintain new trees and applying for grant funding through the Mississippi Watershed Management Organizations. These options must be coordinated by SECIA because they require cooperation with a community organization and, in the case of the watershed grant, are not offered to private citizens.

Introduction

Southeast Como (SE Como) is a residential neighborhood in southeast Minneapolis, Minnesota located in Hennepin County. Situated midway between the University of Minnesota's East Bank and St. Paul campuses, as well as halfway between the downtown areas of both Minneapolis and St. Paul, the quiet area attracts a range of residents. The population in SE Como can be described as a combination of college-aged student renters and long-time homeowners. About 81% of the total population is under 35 years old while only about 4% of the population is 65 years or older (Census). About 47% of the population is college-aged students (Census).

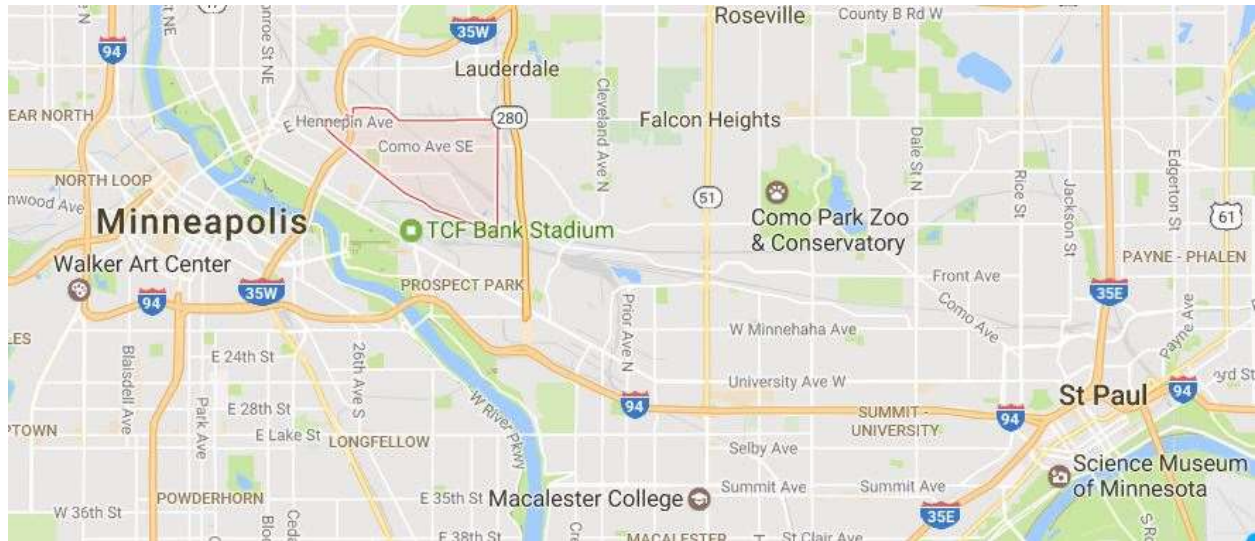


Figure 1. Map outlining the Como neighborhood (red area)

The neighborhood has formed a citizen group to address issues within the community. The Southeast Como Improvement Association (SECIA) aims to support and encourage the rights of the diverse groups of people within its community (SECIA). SECIA is sub-divided into two committees that focus on different areas of concern. The first is the Livability Committee, which serves “to improve housing and livability conditions” (SECIA). The Environment Committee leads community projects like rain barrel building and the creation of rain and community gardens, among other projects. Overall, SECIA aims to improve and maintain the social, physical, and economic climate in their neighborhood (SECIA).

Traffic Diverters

The neighborhood built what are known as “traffic diverters” along Talmage Avenue between 14th St and 17th St and one on Brook Ave and 17th St (Figure 1). The inclusion of traffic diverters is a street design strategy that prohibits motor vehicle traffic from entering or exiting a street. The Como diverters are known as “diagonal diverters” because they stretch from one corner of an intersection to the other, which forces drivers to turn right or left (Berkeley). The original purpose of the diverters was to slow down and moderate commuter traffic through the residential neighborhood. The additional benefit of this design feature is that it created a space to add more green plantings and extend the urban tree canopy.

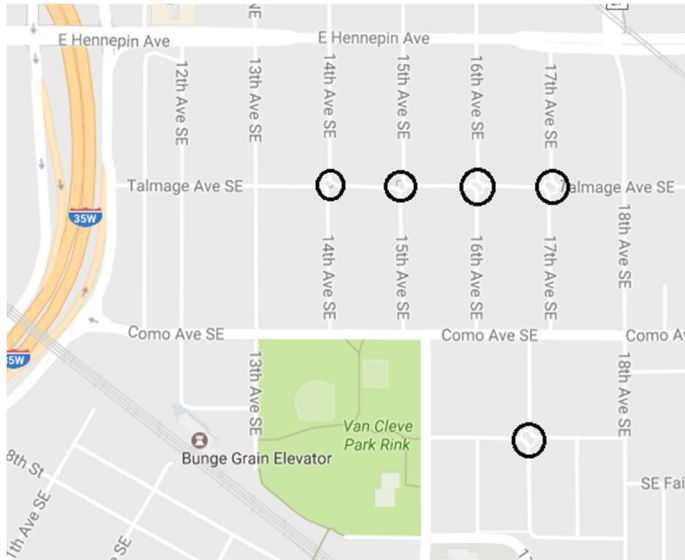
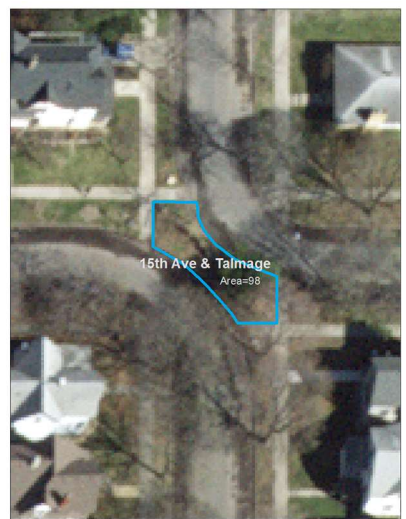


Figure 2 (left). Map of Como with traffic diverters circled

Figure 3 (below). Aerial views of each diverter (top row left to bottom right: 17th Ave and Brook Ave, 14th Ave and Talmage, 15th Ave and Talmage, 16th Ave and Talmage, and 17th Ave and Talmage)



However, as
passed, the

time has
original

plantings have declined, while weeds and invasive species like buckthorn have started to overtake the area. This is largely because the responsibility of maintenance is such a grey area. The diverter is neither a boulevard nor a park so the City of Minneapolis is not technically held responsible for maintaining it. Similarly, it is not a community garden or other such space, so the neighboring residents are not necessarily responsible. In addition to blurred lines of responsibility, there is no designated budget or source of funding for the maintenance of these diverters. Any and all maintenance performed has been almost exclusively through volunteer efforts and will likely continue in this way. The absence of a clear maintenance strategy and an authoritative voice for these diverters has contributed to their deterioration but they are not yet lost.

Urban Environmental Issues

Stormwater Management

Urban areas typically have a high overall surface area of impervious pavement, like the standard concrete used for streets and sidewalks. The increased areas of impervious surfaces prevent stormwater runoff from efficiently percolating into the soil below, causing pools, puddles, and flooding. The Minnesota Pollution Control Agency has created the *Minnesota Stormwater Manual* to provide citizens and natural resources managers with general stormwater principles and management procedures to best address these issues ([MN Stormwater](#)). Management techniques that maximize water infiltration into the soil and are most applicable to this project include the creation of:

- Bioretention, or “rain gardens” – the use of vegetation to store, filter, and infiltrate runoff
- Infiltration basins/trenches – shallow areas filled with permeable soil and native plant species (usually grasses) that can temporarily store excess runoff while the water infiltrates the soil
- Permeable pavement – porous ground cover that allows runoff to filter through the pavement into the soil
 - Pervious concrete/asphalt: similar to traditional cement/asphalt but made with larger material that creates space within the cement for water storage and infiltration
 - Concrete/brick grid pavers: concrete blocks or bricks that create space between pavers for runoff to infiltrate

These techniques help breakup the continuous tracks impervious pavement and provide a space for runoff to flow into. The creation of these vegetated spots will also prevent fertilizer runoff from residential lawns and gardens, which in turn helps keep neighboring bodies of water healthy.

Decreased Soil Quality

In addition to poor water infiltration, urban areas also generally have poor soil quality. Soil in urban areas, especially in Minnesota and the Midwest, can be found to be extremely alkaline due to excess salt application in the winter. The build-up of salt in the soil causes foliar deformity and discoloration, reduced leaf, flower, and fruit size, premature fall coloration and leaf fall, general stunting of the plant, and decline in health ([Johnson](#)).

Another factor that damages soil quality in urban areas is soil compaction. Heavy traffic from cars and pedestrians, on top of the concrete for our streets and sidewalks, weighs down on the soil, packing it

together. This compaction decreases soil pore space, which limits air and water availability to roots, preventing normal root development and limiting the growth of trees and plants (Compaction by James Urban).

Tree Canopy

Trees can help manage stormwater both efficiently and resourcefully. They infiltrate the first 30% of precipitation through their leaf systems and an additional 30% is taken in through their root systems after it infiltrates the soil. The tree canopy also helps reduce the quantity and slow down the rate at which precipitation hits the ground by intercepting it. The precipitation then either hits the ground below at a decreased velocity or trails down the branch of the tree, eventually travelling down the trunk and into the soil below. Trees are often a better vegetation choice for stormwater management efforts because of their high infiltration capacity (MN Stormwater).

In addition to stormwater benefits, urban forests have been known to have beneficial impacts on citizens. These benefits affect the safety and the health of the neighboring residents and infrastructure. The Michigan Department of Natural Resources has outlined the many benefits of a healthy urban canopy (Burden 2006):

- Reduced crashes- studies show that medians (or in this case, diverters) with trees have 50% fewer crashes than those without
- Increased air quality- urban trees reduce harmful emissions from traffic like carbon monoxide
- Increased physical and mental health- the presence of trees has been linked to both reduced blood pressure and reduced risk of asthma. Trees have also been shown to have a healing effect on surgical patients, adults and teens with ADHD, and senior citizens.
- Longer pavement life- shade created by the urban canopy can increase the lifespan of asphalt by 40-60% due to decreased expansion and contraction of pavement because of heating and cooling
- Decreased road rage- research shows that greener urban environments lower the frequency and intensity of motorist road rage because of the calming effect of trees
- Protects street features- tree canopies protect utility poles, light poles, and other street features
- Time in travel perception – studies have shown that urban trees make peoples' commutes feel shorter
- Increased property values- homes and businesses adjacent to large urban trees saw a \$15,000-\$25,000 increase in value

Climate Change

Climate change is becoming one of the most urgent long-term global issues of our time. It is important to take these expected changes into account when planning for the future. The specific effects for Minnesota result from a year-round increase in average, minimum, and maximum temperatures (Montgomery). This temperature increase will cause, and has been causing, record-breaking summer heat and frequent droughts. It will also lengthen autumns and bring earlier springs because of a shorter winter season (Montgomery). The higher average temperatures will bring about a higher frequency of severe storms, meaning that large precipitation events (rainfall greater than or equal to three inches) will become

increasingly more common (Montgomery). In addition to more rainfall, spring snowmelts are expected to be larger because of increased snow accumulation during winter (Montgomery).

In addition to changes in weather patterns, the distribution of native plant species is expected to change. As average temperatures are rising, some species will find it difficult to adjust to the increased warmth and are expected to start moving northward with their cooler, native temperatures (Iverson). While the native species are following those cooler temperatures, species that are adapted to the warmer temperatures will start to replace them. While averting all of these effects is improbable, we can protect ourselves from catastrophic destruction with informed preparation practices and pre-emptive adaptation.

Goals and Visions

To address the declining condition of these diverters, the Livability Committee of the Southeast Como Improvement Association (SECIA) has sought out the help of the students in the Urban Forest Management: Managing Greenspaces for People class at the University of Minnesota (FNRM 4501 and 5501). This combination capstone and graduate-level course in the department of Forest Resources focuses on how to utilize urban forest ecosystems in order to maximize the benefits they provide to people and improve community infrastructure. The class worked closely with SECIA members and officials from the City of Minneapolis Public Works Department to clearly define the status of problem and outline desired features in the redesign of these diverters. The goals of this project were to assess the existing condition of the diverters and redesign the spaces to accommodate the concerns and desires of the neighboring residents while working with the community and the Livability Committee to develop a plan that is sustainable, financially feasible, and easily maintainable.

Current Condition

Initial Observations

One of the first assessments was the current status of the diverters. They were examined to identify plants are presently growing there and evaluated for relative health. Similarly, soil samples from each location were taken and the University of Minnesota Soil Department tested the individual properties of each one.

For soil conditions, a pH level of 7, neutral, is ideal. Levels above a pH of 7 are considered alkaline and a pH below 7 is labelled acidic. Plants receive the most nutrients within a pH of 6-7 (Bell). While a neutral pH is preferred by plants, they can also grow well in partially acidic soils. When the soil is highly acidic or alkaline, however, the plants will not thrive. Our results indicate that the pH level of the soil at this location should not be a limiting factor for plant growth.

Soil compaction was tested by using a penetrometer at three locations (left, center, and right, while facing north) within the diverter. A penetrometer measures the resistance of the soil to penetration due to soil compaction (James Urban). The results demonstrate the amount of pressure needed for roots to penetrate the soil below and can be used to determine whether a plant will be able to develop a healthy root system in a given area. Generally, a penetrometer reading of 300 pounds per square inch (psi) or greater means that root growth will start to be limited (Duiker). While a reading of more than 300 psi does

not explicitly mean that roots definitely will not grow in these spaces, the chances of root development decrease as the psi of the soil increases (Duiker).

Every diverter has overgrown plants except for one. Additionally, some litter was found in a few of the diverters. The wooden plank barriers running through the center of most of the diverters were either vandalized or covered by the overgrown plants. There are different municipal utility lines (such as water and gas) running through or along the diverters as well. The individual conditions of the diverters are as follows:

14th Ave and Talmage: This diverter was the only one that was not overgrown with plants. This is largely due to a neighboring resident who voluntarily weeds and prunes the plants here. The wooden plank barrier was visible as were the reflectors on it. The yew plants are regularly clipped to form hedges on both sides of the barrier. Pine and oak trees in the diverter seemed to be well maintained and had ample room for root growth. The west side of this diverter is home to daylilies, asters, lily of the valley, various ornamental grasses, and a few perennial herbs such as chives and mint.

The soil test showed that the pH level was 5.8, which indicates that the soil is slightly acidic but still within a normal pH range for soils. The compaction test results at the diverter located at 14th Ave and Talmage were 420, 180, and 160 psi (left to right). These psi levels show that plants on the center and right side of this diverter should have ample soil space to grow and develop while the plants to the left side might be somewhat limited.



Figure 4. East side of the diverter at 14th Ave and Talmage



Figure 5. West side of the diverter at 14th Ave and Talmage

15th Ave and Talmage: The plant overgrowth at this location was spilling over the curb and out onto the nearby sidewalks. The wooden plank barriers were barely noticeable through the overgrowth and the left side of the barrier was broken. There were a few smaller ash trees that will be in danger of EAB if left untreated. One Scots pine is leaning inward and could be hazardous if not properly pruned to reduce the weight on the slanted side. There is a single yew tree and several buckthorn thickets. There are some daylilies on the east side of the diverter. The herbaceous ground cover throughout the space includes vinca, woods poppy, and campanula, among other species of weeds.

The soil test showed a pH of 7.7, meaning the soil is more alkaline but still within a livable pH level. We tested the compaction of the soil, again on the left, center, and right sides facing north. The compaction results for this diverter from left to right are 260, 400, and 200 psi. Plants can be expected to develop healthy root systems here.



Figure 6. East side of the diverter at 15th Ave and Talmage



Figure 7. West side of the diverter at 15th Ave and Talmage

16th Ave and Talmage: This diverter was extremely overgrown with plants throughout the space. This area was the most in need of maintenance because of extensive weed cover. The wooden blank barrier was not at all noticeable because it was covered by untrimmed yews. Additionally, there is a disfigured Norway pine at this diverter but the deformation does not seem to be immediately hazardous. There are several boxelder and buckthorn seedlings beginning to grow in the space. The herbaceous ground cover includes daylilies on the east side along with weeds such as motherwort, pigweed, and creeping Charlie.

The soil test indicated that the soil pH was 6.3, indicating that the soil is slightly acidic but still within the ideal range for plant growth. Our soil compaction results (from left to right) were 260, 460, and 460 psi indicating that plants in this diverter may struggle a bit to find space to grow their roots.



Figure 8. East side of the diverter at 16th Ave and Talmage



Figure 9. West side of the diverters at 16th Ave and Talmage

17th Ave and Talmage: This diverter may have had some maintenance done previously because we noticed that on one side, the small plants that line the curb seem to be cared for. On the other side, however, there was a large overgrowth of the same small plants hanging over the curb. Most of the yews are in need of pruning. There is a Scots pine that leans at the top that may be hazardous during heavy wind or

snowfall. The remaining stumps from previous boxelder and elm trees are starting to sprout suckers. The Norway pine here has a sparse crown and might be declining. The herbaceous ground cover at this diverter is made up primarily of weeds like creeping Charlie, ragweed, and there are some cockleburs present. Additionally, there are many boxelder seedlings growing throughout the space. On the west side of the barrier there are clusters of hostas, sedum, and iris. There was an exposed water control line box at this diverter and a gas utility line running down the middle.

The soil test resulted in a pH of 7.4, indicating a more alkaline soil but still within a reasonable degree to support plant growth. The compaction results (left to right) were 400, 440, and 400 psi suggesting that roots may encounter difficulties in development.



Figure 10. East side of the diverter at 17th Ave and Talmage



Figure 11. West side of the diverter at 17th Ave and Talmage

17th Ave and Brook Ave: While this diverter was not as heavily occupied with weeds, it still requires maintenance. The presence of three dead and one partly live yew plant makes this diverter seem bare in comparison to the wild overgrowth present at the other four. There are several boxelder and mulberry trees currently growing and a few boxelder seedlings on the way. The herbaceous ground cover includes daylilies and campanula in addition to three large, weedy shrubs. The wooden barrier is visible but too widely spaced out and lacks reflectors to alert drivers to the change in directional flow. This wooden barrier is also notably shorter (by roughly half a foot) than the barriers at the other locations. There is some infrastructure here in the form of a power utility pole and a lamp post.

The soil test showed a pH level of 5.9, indicating a more acidic soil but very close to the ideal pH. The compaction results, from left to right: 120, 120, and 180 psi showing that roots will have ample space to develop.



Figure 12. East side of the diverter at 17th Ave and Brook Ave



Figure 13. West side of the diverter at 17th Ave and Brook Ave

Community Perception: Survey Results

Earlier this year, a survey was sent to the residents of SE Como through a monthly SECIA newsletter. The survey focused on four things: residents' opinions on the current state of the diverters, whether they would be willing to volunteer to help maintain the diverters, to what degree they would be able to volunteer, and what design elements they would like to see restored or added to any redesign efforts. Forty-nine (49) responses from residents ages 18-55+ were received. Of those 49, the majority of residents are homeowners (78%) and have been in the community for 25+ years (50%). Residents were also asked

which diverter was closest to their home so that we could associate their replies with the corresponding diverter.

[Note: This section of the report will discuss the residents' opinions on the conditions of the diverters. The other parts of the survey will be covered later in the report, when the results are more applicable to discussion. Otherwise, graphic representation of the results to each question can be found together in the appendix.]

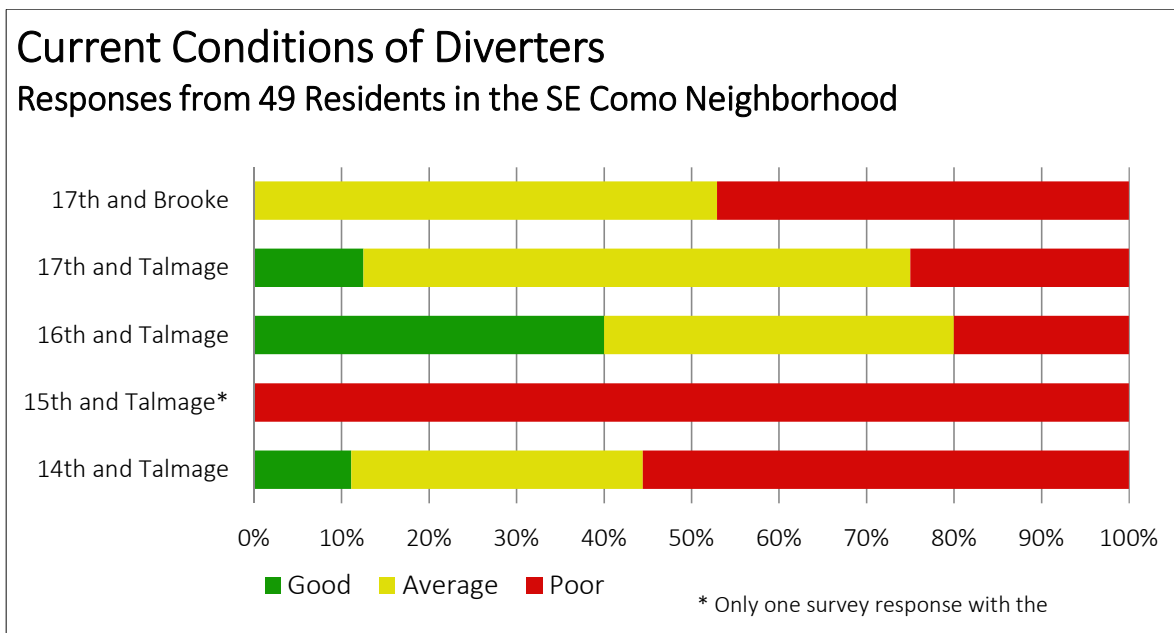


Figure 14 (above). Condition responses classified by responders' proximity to diverter location

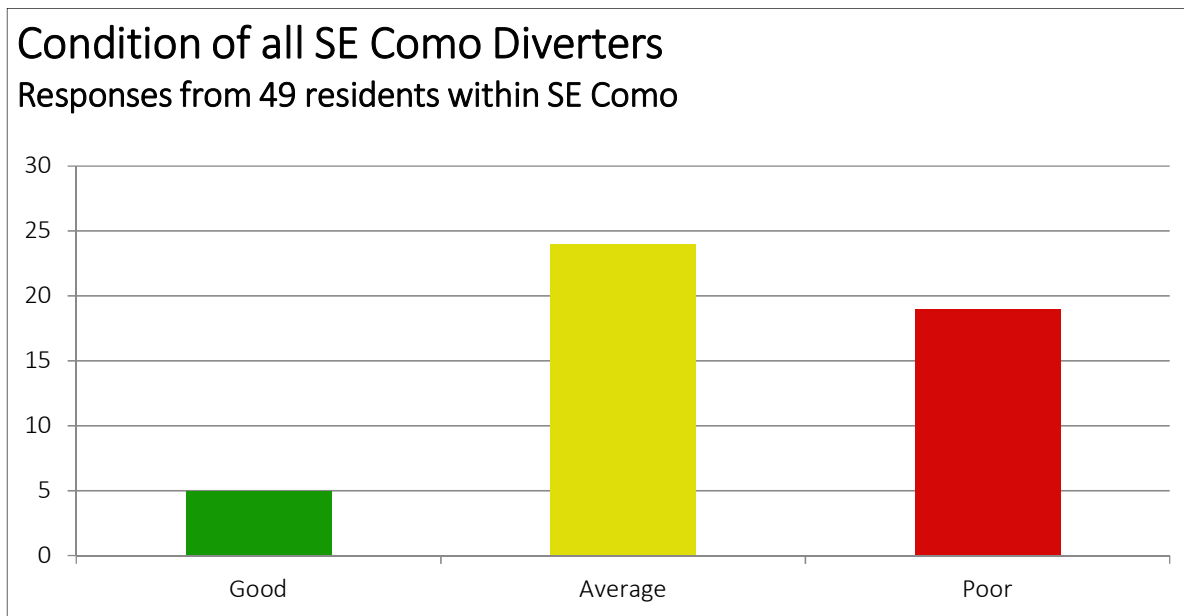


Figure 15. Residents' perceptions of the condition of the diverters.

Discussion: The majority of responders displayed an overall dissatisfaction with the current condition of the traffic diverters. Only 10% of responses indicated that the diverters were in good condition. 15th Ave and Talmage and 17th Ave and Brook Ave received no “good” evaluations. Given the overall community responses toward the current condition of the diverters, this is an area in the neighborhood that requires improvement. [Note: Only one resident responded for the 15th Ave and Talmage location so results for that specific diverter are skewed]

Tree Canopy Cover Changes

Changes to overall tree canopy cover were assessed throughout the Como area for the past few years. The urban tree canopy is constantly changing which makes locating and quantifying the tree canopy a difficult task. Tree surveys must be completed regularly because of the rapidly changing nature of the urban environment. This work is especially important when considering the threat that Emerald Ash Borer (EAB) and other invasive species pose to our street tree populations. In 2009, an Urban Tree Cover (UTC) assessment was completed for the city of Minneapolis and in 2015, an updated UTC assessment was made. We clipped the results of the assessment to the Como boundary and generated statistics for land cover and tree canopy change between 2009 and 2015.

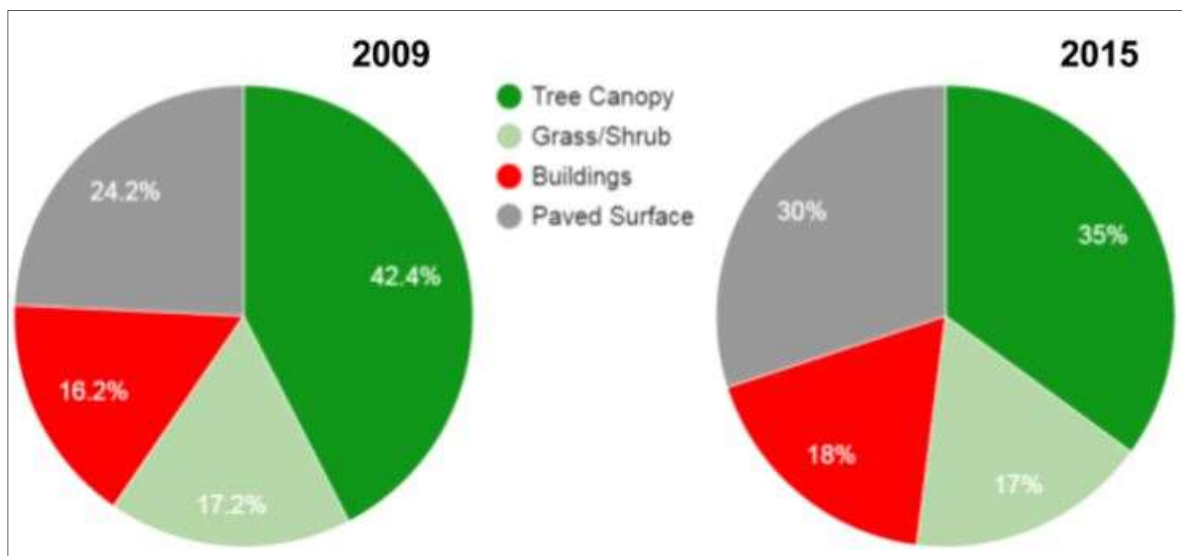


Figure 16. Land cover percentage for SE Como neighborhood in 2009 (left) and 2015 (right)

As evidenced by the updated UTC assessment, the SE Como neighborhood has experienced a net loss of roughly 7% of its tree canopy. In 2009, the entire city of Minneapolis was reported to have a total tree canopy proportion of 31.5% (Knight 2017). Comparatively, the SE Como neighborhood was shown to have more overall tree canopy at 42.4%. Despite the loss of canopy, SE Como was still shown to have a greater amount of tree canopy cover in 2015. Compared to the city's 28% tree canopy cover, SE Como reportedly had 35% canopy cover.

Comparison	2009 (acres)	2015 (acres)	Change
Tree Canopy	149	127	-22
Grass/Shrub	62	59	-3
Bare Soil	1	1	0
Water	0	0	0
Buildings	58	63	5
Paved Surface	87	107	20

Figure 17. Land cover type (in acres) between 2009-2015 and calculated acres of change

The 7% decrease in tree canopy discussed above translated to a loss of 22 acres of land cover. In addition to loss of canopy cover, the assessment showed a 5.8%, or 20 acres, increase in impervious surface cover (shown under “paved surface”). This transition could lead to stormwater management issues if the pattern continues. When the surface area of an impenetrable material increases, the probability of runoff issues rises with it. These problems will only increase in severity as the climate continues to change and the frequency and intensity of rain events grows. Additionally, removing portions of the canopy that extends over paved surfaces threatens the longevity of the infrastructure below. Tree canopy cover has been shown to protect infrastructure (such as streets and sidewalks) from sun exposure and precipitation which in turn lengthens its lifespan (**Burden**). By maintaining the current amount of tree canopy cover, and perhaps increasing its spread, the residents of Como will limit the possibility of flooding due to stormwater runoff and can lessen the need to repair or replace pavement.

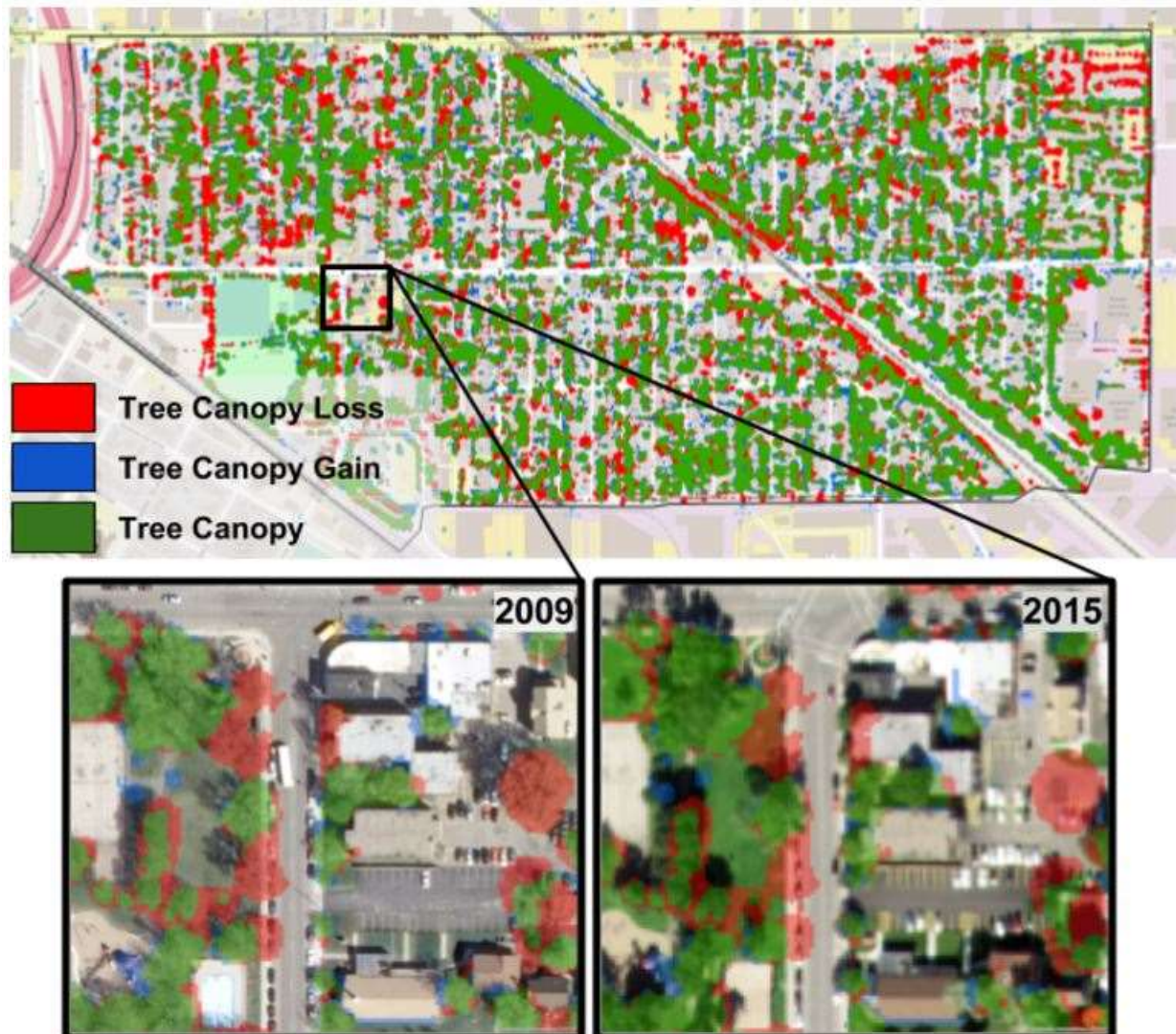


Figure 18. Map comparing tree canopy losses (red) and gains (blue) throughout the SE Como neighborhood between 2009 and 2015 (unchanged tree canopy in green)

Monitoring the location of the current tree canopy is imperative when considering potential health and economic benefits of urban tree canopy. Net canopy changes can be a useful metric for measuring tree canopy over time but fails to quantify gains and losses in the tree canopy in specific areas. The change detection map in Figure 19 illustrates where and how the Como canopy cover changed between 2009 and 2015 (Knight 2017). Tracking both the changes to the canopy cover and the species composition of that canopy can provide extremely significant information for future management efforts. For example, the devastation caused by the EAB epidemic can be limited through vigilant monitoring of ash tree health. Up-to-date tree survey information can show where high densities of ash trees are located and management efforts can be focused in these areas, whether those efforts be removal and replanting of a different tree species or EAB injections to help the existing ash tree resist the infestation of the insect,

knowing where and how the tree canopy could be most affected can create the opportunity for a more adaptive management strategy as opposed to a reactive strategy.

Guidelines for Change

As your city continues to age, deteriorating infrastructure demands increasing attention. With any redesign, there exists an ever-pressing need to address a multitude of factors such as utilities, stormwater management, aesthetic quality, and community input. Many of the recommendations made below are derived from best management practices to implement for increased safety, reduced environmental degradation, and a general improvement in the quality of life for the residents of Como.

Preferred Design Elements

Residents of Como indicated in the survey the elements they considered were the most important to the diverters. The list included native plant species, pollinator habitats, creative art installations, lighting, educational signage, fences or other barriers, trees, and an “other” category that allowed participants to write-in their own suggestions. The results are represented graphically in figure 19.

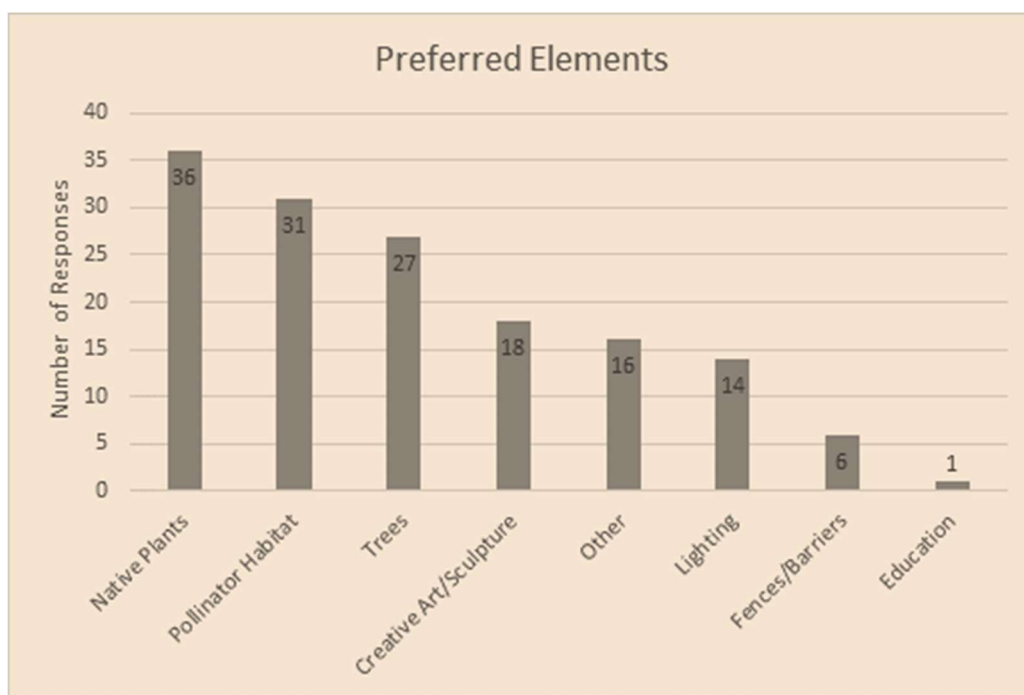


Figure 19. Survey results illustrating the design elements desired by responders

The most commonly written-in suggestions in the “other” category included: increased safety via clear sightlines, low maintenance plant species, and infrastructure that is not easily vandalized. Another design factor that was commonly requested was some sort of path through the diverter, which would allow bikers to cut through and eliminate the need for them to ride up on the sidewalk. Residents complained that the combination of blocked sightlines and bikers on the sidewalks is dangerous for pedestrians who cannot see the bikers until it is too late. In response to those concerns, we propose the following changes:

Safety Changes

- Additional sharp curve signs or reduced suggested speed signs
- Replace the current wooden plank barriers with a bollard with chain-style fence (Fig. 21)
- Reflectors on bollards and/or curbs
- Bike/pedestrian paved passageway through the middle of the diverter (preferably with permeable pavers or another pervious pavement)
- Planting height of no more than 30 inches for small plants and 7 feet or higher for the lowest reaching branches on trees



Figure 20. Bollard with chain-style fencing

Environmental Changes

- Curb cuts to allow stormwater to runoff the street and directly into the soil and vegetation in the diverter
- Flattened soil area and four inches below curb height inside the diverter to reduce soil erosion
- Use of permeable pavement if constructing a pathway to allow stormwater runoff to penetrate down into the soil below
- Restore native plant species currently present through removal of weeds and invasive species and replanting species from the suggested list (Fig. 22)
 - Some of the suggested species are not *necessarily* Minnesota natives but are still native to the Midwest region. It is important to consider the planting of these species as a pre-emptive adjustment to the changing climate. As temperatures increase, the distribution ranges of various plants species are going to shift northward to follow the cooler

temperatures they are adapted to. By initiating that species shift yourselves, you can prevent sudden catastrophic losses of tree canopy in the future.

<u>Trees:</u>	<u>Shrubs:</u>
<i>Black Cherry bc</i>	<i>Currants</i>
<i>Yellow Birch bc</i>	Forsythia 'bronxensis'
<i>Sweet Birch bc</i>	Korean Mountain Ash
<i>Sweetgum bc</i>	Serviceberry 'Autumn Brilliance'
<i>Tamarack (Only for the most open site) ab</i>	<i>Witch Hazel</i>
<i>Amur Cherry ac</i>	Smokebush (Cultivated variety)
<i>Katsura Tree ac</i>	<i>Winterberry</i> (Low growing cultivar)
<i>Amur Maackia ac</i>	Ninebark (dwarf)
<i>Ironwood ac</i>	<i>Blueberries</i>
<i>Yellowwood a/ab</i>	<i>Red Osier Dogwood 'Cardinal' ab</i>
<i>Mugo Pine (dwarf/compact)</i>	<i>False Indigo</i>
<i>Turkish Filbert a</i>	Russian Almond (Dwarf)
<i>Mongolia Oak</i>	<i>Highbush Cranberry ab</i>
<i>Magnolia 'Merrill' ac</i>	Rhododendrons <i>ab</i>
<i>Osage Orange (thornless, male)</i>	Azalea <i>ab</i>
<i>Crabapple 'Sugar Tyme' ac</i>	Black Chokeberry <i>bc</i>
<i>Musclewood ac</i>	<i>Snowberry</i>
<i>Eastern Redbud 'MN Strain' ac</i>	New Jersey Tea
<i>Staghorn or Smooth Sumac ab</i>	<i>Flowering Raspberry</i>
All names that are <i>italicized</i> are native.	
<i>a -- upland plant for outside ring in sunken diverter or for flat diverter</i>	
<i>b -- lowland plant for centre of diverter</i>	
<i>ab -- midland, slightly water tolerant, middle row or multiple uses</i>	
<i>ac -- upland plant for flat diverter</i>	
<i>bc -- mixed-use</i>	

Figure 21. Suggested species list for replanting

Aesthetic Changes

- Bollard with chain fencing should be brightly painted as a way to alert drivers to the presence of the diverter and add character to the diverters through community art
- “Clean-up maintenance” such as weeding, trimming back overgrowth, picking up litter, etc.
- Removal of current plank-style barrier and imposing a maximum height for plants will open sightlines for pedestrians and drivers alike while also severely limiting the possibility for vandalism

Design Examples

The following sketches were drawn with the requests of the survey participants in mind. These sketches serve as examples to what a redesign could potentially look like and are by no means the only way to incorporate the previously recommended design elements. The benefits and downfalls to each will be discussed below. It should be noted that the city of Minneapolis will be held responsible for any site preparations, ground leveling, and utility redesign before any planting or infrastructure installation occurs but that all installation and maintenance beyond that will be dependent upon SECIA and volunteers.

With Bike Path



Figure 22. Possible diverter redesign that incorporates a path for bikers



Figure 23. Aerial view of potential diverter design (with a bike path) with respect to topography

While the desire to include a path for bikers is understandable, it creates an opportunity for motorists to drive over the diverter. A large amount of the student population in Como has mopeds and could easily cut through these spaces, ultimately defeating their purpose. On the other hand, removing the need for bikers to ride on the sidewalks increases safety for pedestrians.

Without Bike Path



Figure 24. Possible diverter redesign without a bike path

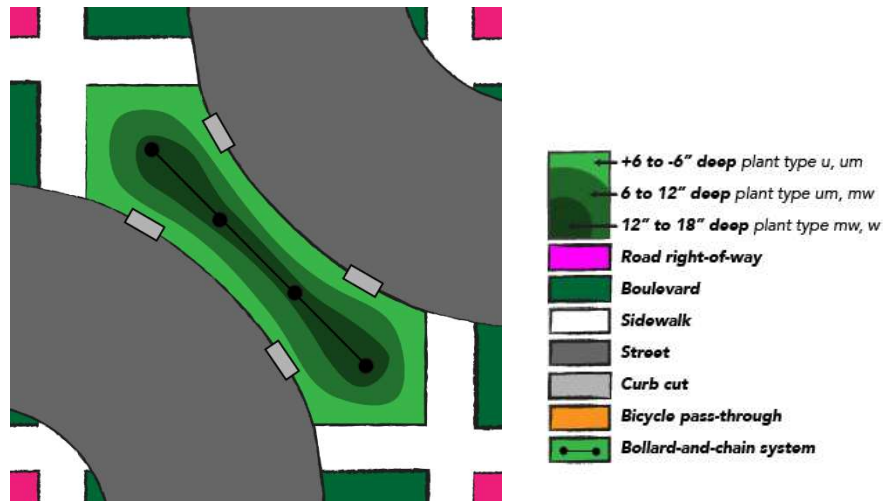


Figure 25. Aerial view of potential diverter (without a bike path) with respect to topography

Eliminating a path for bikers helps display the original purpose of the diverters. The presence of the bollards with chains and vegetation will indicate to drivers that these spaces are not to be driven over while still maintaining clear sightlines. However, bikers will still be cutting across the sidewalk to cross through. The removal of the current plank barriers and removal of overgrown vegetation is expected to clear sightlines through the diverters, which should in turn make the spaces safer for pedestrians by increasing their awareness of oncoming riders.

Bare Minimum Action



Figure 26. Aerial view of potential diverter design (with bare minimum action taken) with respect to topography

Because there is no currently allotted budget for this project, some of the previously mentioned recommendations may not be possible. In the continued absence of funding, any actions aimed at

redesign and restoration will be solely through volunteer efforts. Activities such as weeding, trimming back the overgrown areas, and other general “clean-up maintenance” actions can be easily done by motivated residents at no cost to the community and will drastically improve the aesthetic quality of these areas. Completing these activities will result in a diverter state similar to the one at 14th Ave and Talmage as it is the only diverter that currently has regularly provided maintenance from a volunteer resident. The problem with doing only these bare-minimum level actions is that it fails to address almost every issue voiced by the participants of the survey. While completing these activities will make the diverters look nicer, not much will be done to increase safety through greater sightline visibility, incorporate low maintenance and native plant species, or remove the potential for vandalism.

Community Maintenance

Due to the combination of no budget and lack of clear responsibility, we highly recommend developing a community maintenance plan. While the city of Minneapolis will help with initial site preparations, SECIA can expect to be responsible for the maintenance after that point. The actions needed for the upkeep of these spaces are by no means difficult, they just need to be clearly and explicitly communicated with the volunteers.

Volunteering

The survey responses indicate that each diverter has at least one resident that is willing and able to help maintain it (Fig. 25). The results also show that nearly half of the positively responding residents are ages 55+ (Fig. 26). While the neighborhood is comprised of about 47% college-aged residents, only two responders fell in this age category. SECIA needs to find a way to engage the younger residents in this project and similar projects in the future. By getting more of the younger residents involved, SECIA will not only increase their number of able-bodied volunteers but it would also provide greater opportunities for the older and younger residents to co-mingle and socialize. This inter-generational cooperation will help dispel some of the negative perceptions either group may have about the other and strengthen the sense of community among neighbors.

Participation by Diverter Location

Total "Yes" responses from 49 residents in SE Como

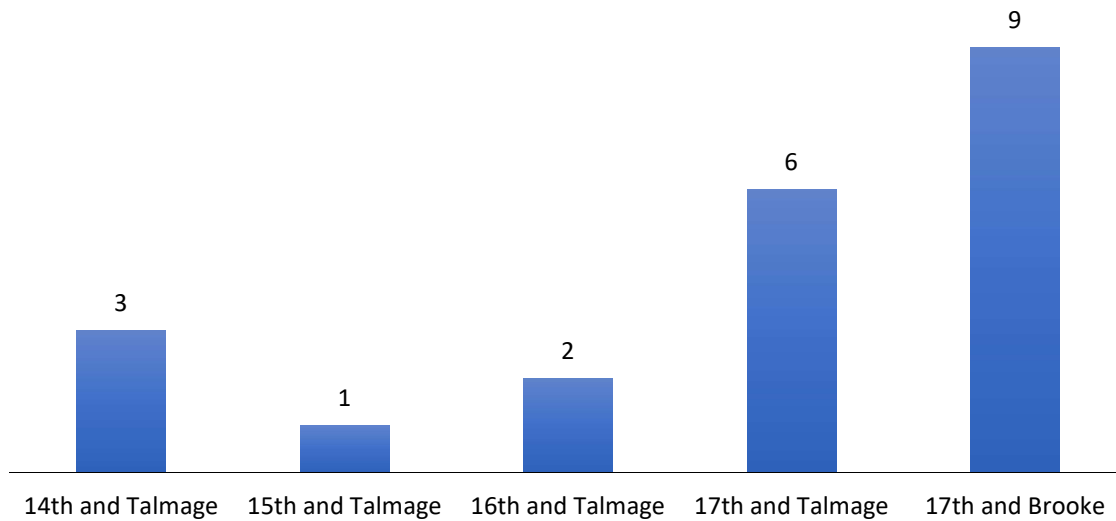


Figure 27. Survey responders who would volunteer to help maintain the diverters divided by proximity to nearest diverter

Volunteer Age with Yes Response

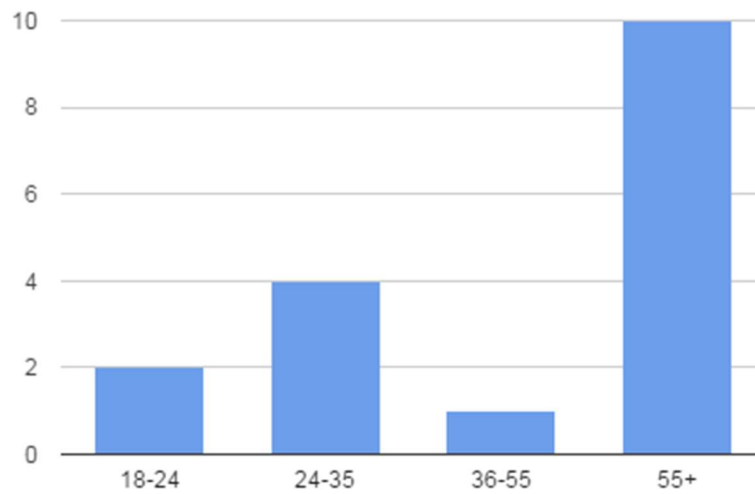


Figure 28. Survey responders who would volunteer to help maintain the diverters divided by age

Block Party and Clean-up Day

One way for the diverse residents to get to know one another would be to plan a sort of “diverter block party” day. Like the SE Como neighborhood party that is held at Van Cleve Park every year, neighbors would come out for a few hours of the day to socialize with their neighbors and have a little fun. In addition to getting to know one another, the residents would weed and trim the plants in the diverter closest to their home. They could also come together to paint the bollards with chains, providing an opportunity to work together to create a sort of community art piece. This is the kind of planned event that the University could provide in-kind services. SECIA could arrange to have technical support on site to help with proper pruning and/or planting or free hats or t-shirts for participants. That sort of community and creative work outlet would serve to strengthen a sense of pride in their diverters which in turn would fuel their desire to keep up with the maintenance. The key principles to all of these maintenance recommendations is to instill a sense of pride, or a sense of belonging, between the residents and their neighboring diverters and to try and engage members of the community that have otherwise been largely absent.

Citizen Science

The creation and assignment of volunteer duties must be made based on both ability and interest. Because almost half of the residents willing to volunteer are senior citizens, not all of them are going to be able to participate in the more physical volunteer work like weeding and watering. For these individuals, it is important to allow them to help in other ways rather than limiting them to a sort of “all-or-nothing” list of duties. One way to keep them engaged is to charge them with the task of monitoring the tree canopy in their area. That can be as easy as going out every few days and taking pictures of the trees and plants. This simple activity will provide SECIA with visual representation of how and why the canopy is changing over time that they would not otherwise have access to without spending time and resources collecting themselves. This sort of “citizen science” will provide interested residents the opportunity to engage with the community and assist in the project in a way they genuinely want to without disregarding their physical limitations.

“Piggy Backing”

SECIA already has several events on their event calendar that are aimed at community improvement. For example, in 2011 they created “Como Earth Month” where for 30 days starting on April 15th, they encourage different environmental stewardship activities for each day on the calendar ([SECIA Events](#)). One of the major events that month is “Community Greening” day where volunteers from the neighborhood meet as a group to clean-up litter, weed, and mulch. Traffic diverter maintenance could certainly be scheduled alongside other Como Earth Month activities. Similarly, there are already several “Como Corner Gardening” days scheduled for the summer that could incorporate diverter maintenance in their efforts. By “piggy backing” on already scheduled community events that focus on similar environmental restoration efforts SECIA reduces the amount of planning involved with coordination and limits the need for an entirely new volunteer base.

Fundraising Opportunities

Brewing a Better Forest

The Brewing a Better Forest organization is a non-profit collection of arborists that works with local craft breweries to help communities and residents water newly-planted trees. They encourage residents to “adopt a tree” in their neighborhood. By adopting a tree, the resident commits to watering the tree weekly. The organization provides incentive to adopt by providing free beer or brewed coffee coupons to local businesses to anyone who volunteers (provided they are of the legal drinking age). Volunteers will receive a welcome packet that contains instructions for proper watering and their free beer token (**Brew**). They also help by sending reminders to adopters so they do not miss a watering. Working with Brewing a Better Forest can help SECIA provide both technical assistance and incentives to volunteers in the neighborhood. It could also attract the interest of the college-aged residents in the neighborhood with the prospect of free beer. By giving the responsibility of watering to the younger volunteers, it reduces the need for the older generation to take part in a more physical activity and allows them the freedom to volunteer for activities that better suit their abilities.

Drink for a Cause at North Gate Brewery

While Brewing a Better Forest is an excellent option, only one of the sponsors, 612Brew, is particularly “local” to the Como neighborhood. Fundraising events held at the participating breweries may be farther than the residents may be willing to travel (for example, Northbound Brewery is near Lake Nokomis). North Gate Brewery is located at the intersection of Broadway St NE and Harding St NE, about two blocks east of Stinson Blvd. They have events on Wednesdays called “Drink for a Cause” where they host fundraising happy hours for local non-profits where \$1 from each pint and \$.50 from each half pint sold during the event goes directly to the organization involved (**North Gate**). While there is a minimum requirement of 100 beers sold, there is no maximum limit to the potential donations received. This option is strongly recommended as not only a fundraising opportunity but also a chance for the senior residents and college students to interact with one another. Sharing a beer with your neighbor would serve as the perfect opportunity to break down the perceived social barriers between age classes and foster a friendlier relationship.

Watershed Grants

The Como neighborhood falls under the jurisdiction of the Mississippi Watershed Management Organization (MWMO). The MWMO offers several different Stewardship Fund Grants to community organizations that want to undertake projects aimed at improving stormwater management, improving water quality, and controlling pollution (**MWMO**). SECIA could apply for the Mini Grants and/or Planning Grants for 2018. The Mini Grant is for smaller-scale projects and would provide SECIA with up to \$3,000 without the need to match any of the funding. This option may be more appealing if other fundraising efforts are not fruitful because SECIA would not be expected to pay back MWMO. The Planning Grant is for larger projects, which the combination of all diverters would seem to be, and can provide up to \$10,000 for SECIA but they would then be required to match some of the funding. In addition to grants,

the MWMO can provide SECIA with professional landscape designers to work with to design the new diverter spaces.

University of Minnesota “Good Neighbor Fund”

The University of Minnesota prides itself in having good relationships with the communities around it. The SECIA traffic diverter project creates a unique opportunity to strengthen the relationship between their community and the University. SECIA has already been awarded this grant thirteen times between 2008 and 2014 for projects like the SE Como Food Gardens, sports clinics at Van Cleve Park, Como Corner Fences, and the SECIA Community Building Committee to name a few (Good Neighbor). The grant is given to organizations of the Stadium Area Advisory Group, of which SECIA is already a member. The funds provided by the Good Neighbor Fund grant are to be used “to promote the beauty, stability, vitality, and security of the communities adjacent to the University of Minnesota- Twin Cities campus” (Good Neighbor). Based on recipients of past grants, the diverter restoration project should qualify because it engages people from the neighborhood and adheres to the overall mission statement of the fund. On top of a monetary grant award, the Good Neighbor Fund is also allotted a certain amount of tickets to Minnesota United soccer games at TCF Bank Stadium. SECIA could seek to acquire some of these tickets to further incentivize college students in the neighborhood to help volunteer for some of the more physically rigorous maintenance tasks like weeding and planting.

In addition to the Good Neighbor Fund, the University may provide “in-kind services” to the community. “In-kind services” are a type of donation that would not directly fund or coordinate on-going volunteer efforts for SECIA. Instead of donating money to purchase goods and services, the University could be approached to help with things like providing free “swag” (i.e. t-shirts, hats, etc.) for the participants of planned community events, recruiting students to come help with planned events, and providing technical support for volunteer events like the installment of plant materials and/or

Recommendations

Redesign

- Remove the current plank-style barrier and replace with a bollard with chain system to increase sightline visibility
- Post additional signage for sharp curve warnings or reduced speed signs
- Maintain a planting height of no taller than 36 inches for small plants (roughly tabletop height) and a 7-foot clearance for the lowest hanging branches on trees
- Use reflectors on the bollard with chain fencing and/or the curb to highlight the directional shift in dark conditions
- Install curb cuts to allow stormwater runoff to flow directly into the soil at the diverters
- Remove the mounds at the diverters and level the ground surface to prevent soil erosion and support stormwater infiltration

Maintenance and Community Engagement

- Create and assign duties based on interests and abilities to maximize volunteer enthusiasm and participation
- Incorporate diverter maintenance into already scheduled community improvement events such as Community Greening days and/or Como Corner Gardening
- Schedule a specific diverter maintenance day for neighboring residents to come out and clean-up the diverters and socialize with their neighbors

Fundraising

- Work with Brewing a Better Forest to plant and maintain new trees
- Schedule community happy hours at North Gate Brewery to raise cash donations and promote socialization between residents
- Contact the University of Minnesota for in-kind donations towards planned events
- Apply for grant funding through the Mississippi Watershed Management Organization

Conclusion

The level of partnerships and community engagement that this project has brought forth for SECIA increases its feasibility, despite facing challenges with funding and long-term maintenance. The SECIA traffic diverter restoration project provides the residents of Como with a unique opportunity to work as a community to enhance their environment. By bringing together residents from older and younger generations with different areas of interest and skillsets, SECIA has the chance to demonstrate that a cooperative community is a healthy and happy community.

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APPENDICES

1. Aerial diverter pictures
2. Photos of current states of the individual diverters
3. All survey results
4. Tree canopy changes over time
5. Potential redesign sketches and aerial renditions with topography
6. Suggested species list

1. Aerial Diverter Pictures (Figure 3)

Top left to bottom right: 14th Ave and Talmage, 15th Ave and Talmage, 16th Ave and Talmage, 17th Ave and Talmage, and 17th Ave and Brook Ave.





2. Current State of Individual Diverters (Figures 4-13)

14th Ave and Talmage (top: east, bottom: west)



15th Ave and Talmage (top: east, bottom: west)



16th Ave and Talmage (top: east, bottom: west)



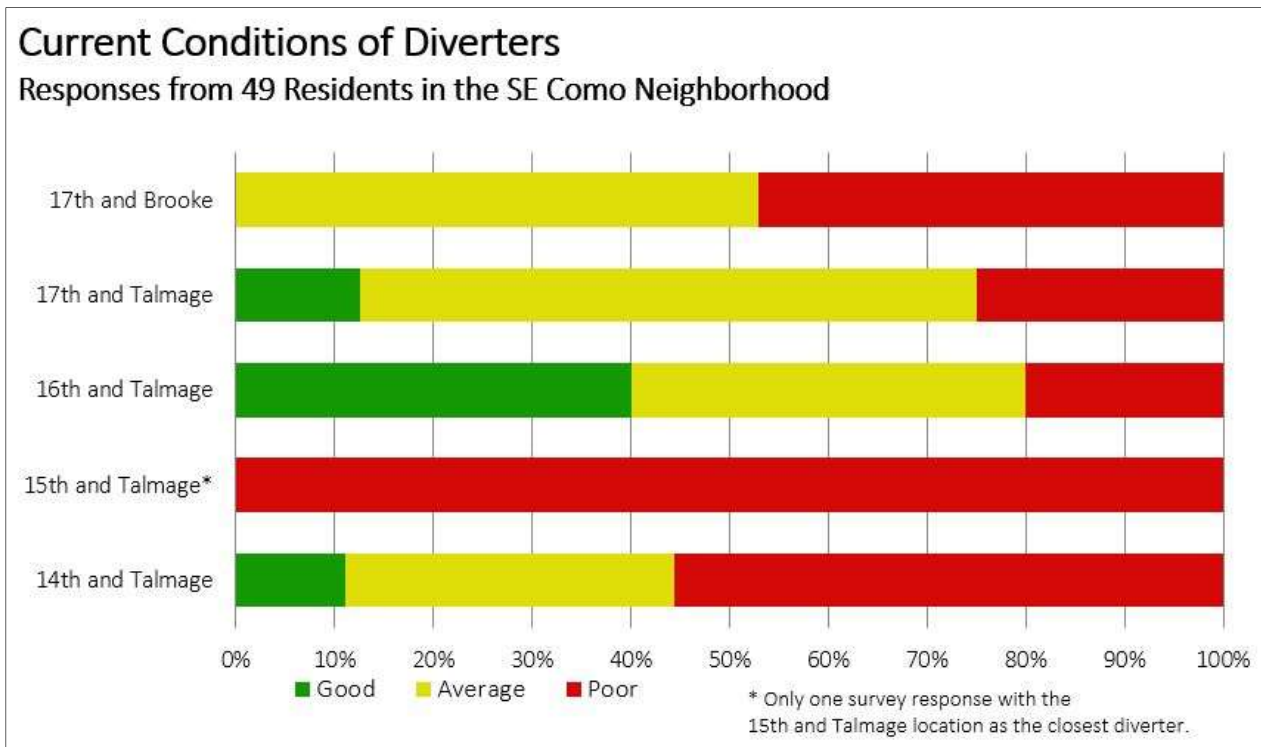
17th Ave and Talmage (top: east, bottom: west)



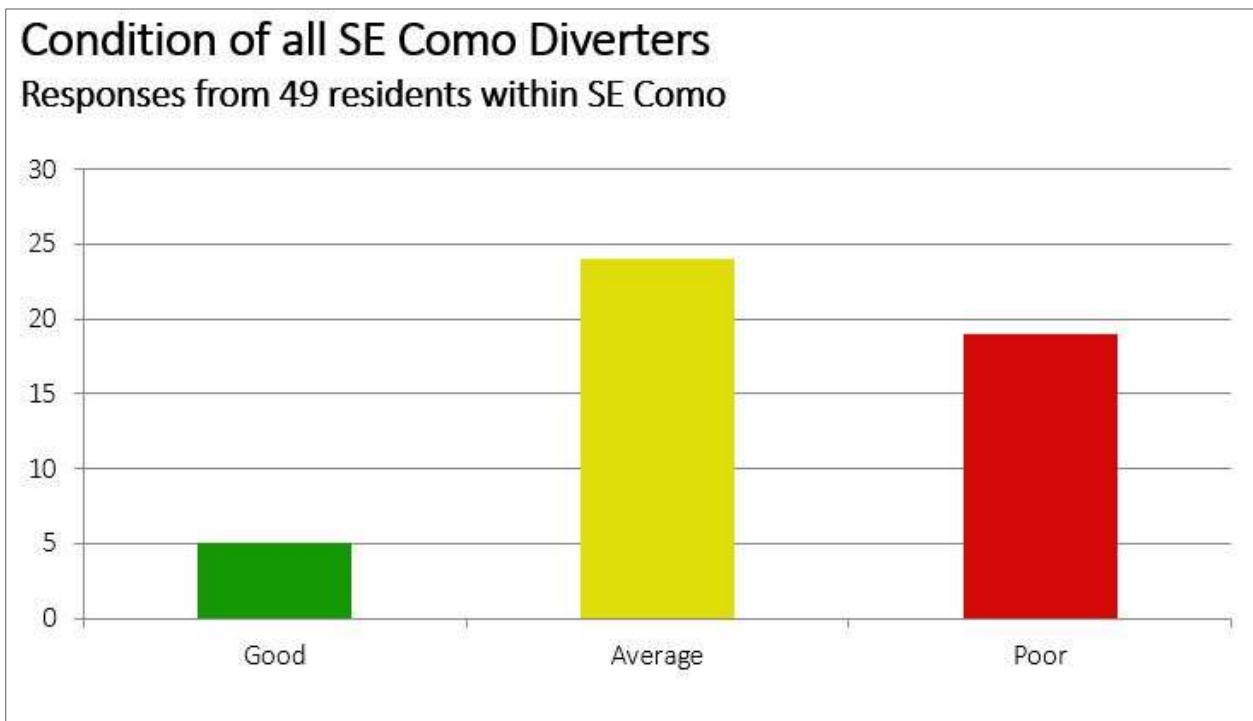
17th Ave and Brook Ave (top: east, bottom: west)



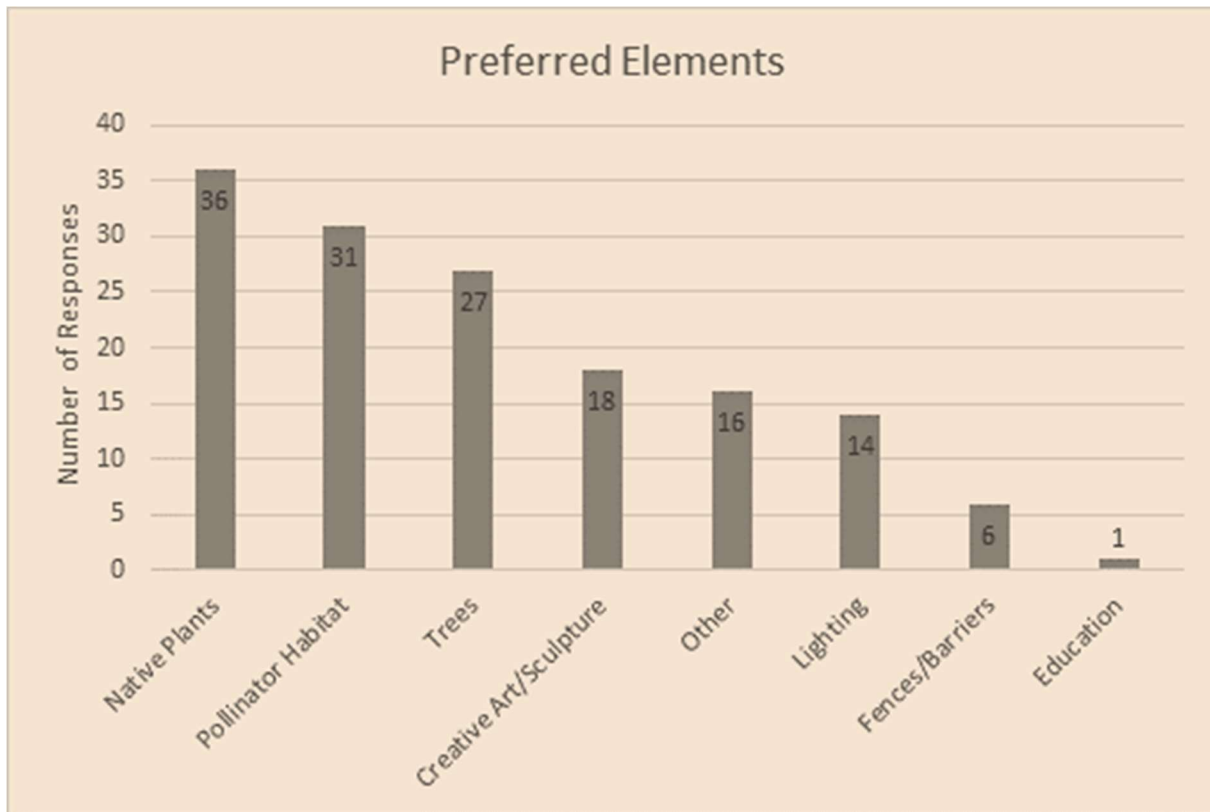
3. Survey Results (Figures 14, 15, 19, 27, and 28)



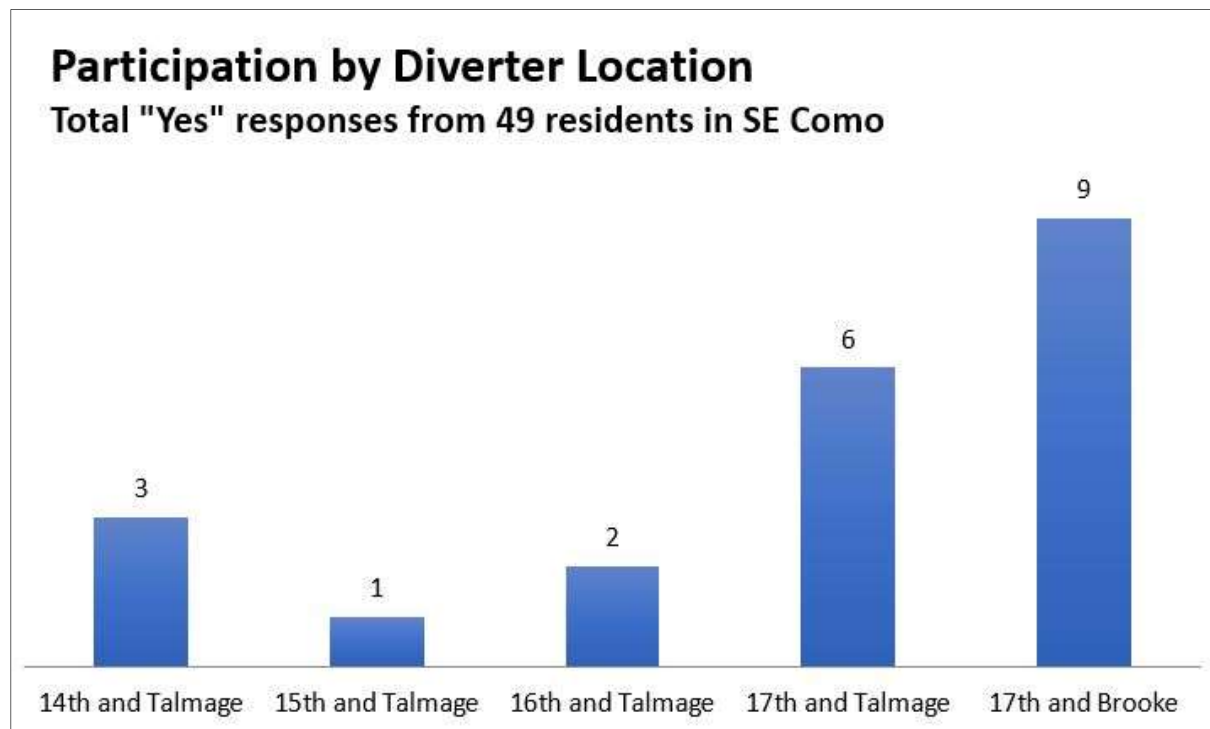
Condition responses classified by residents' proximity to diverter location



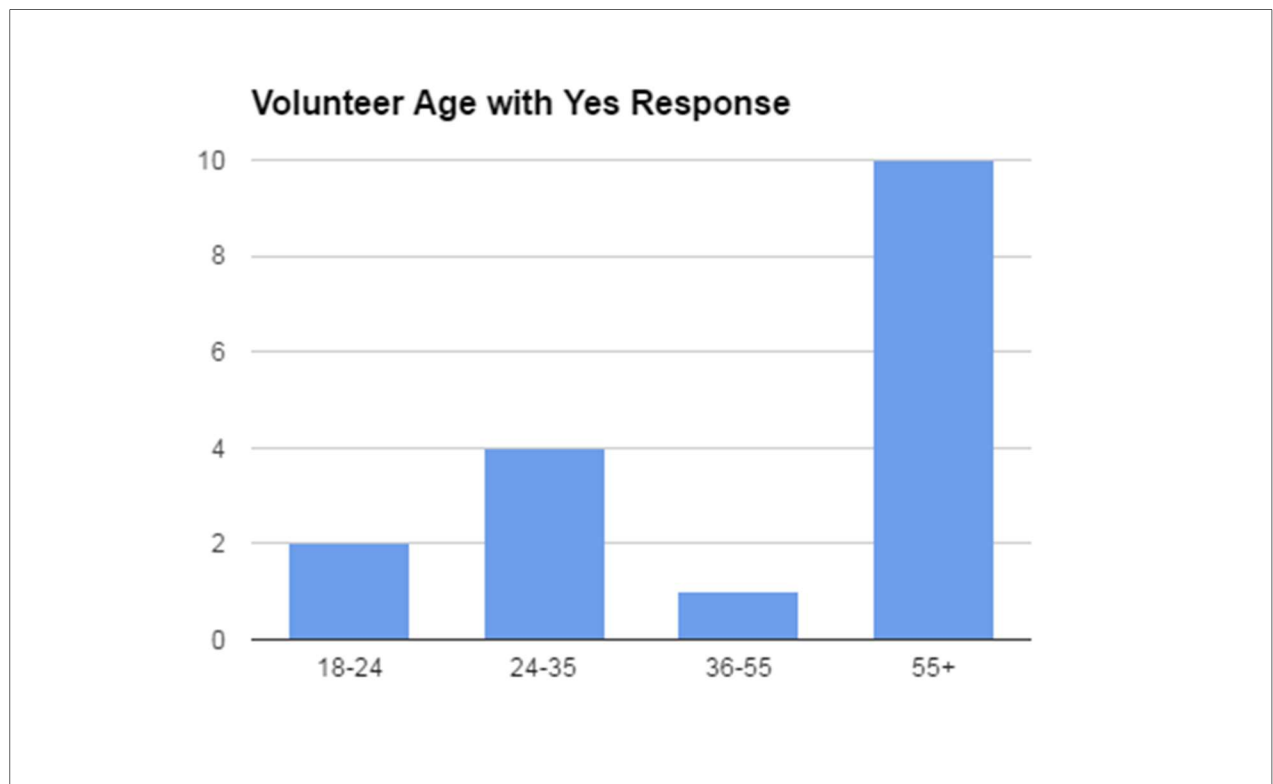
Condition responses classified by responders' perception of quality



Survey results illustrating the design elements desired by responders

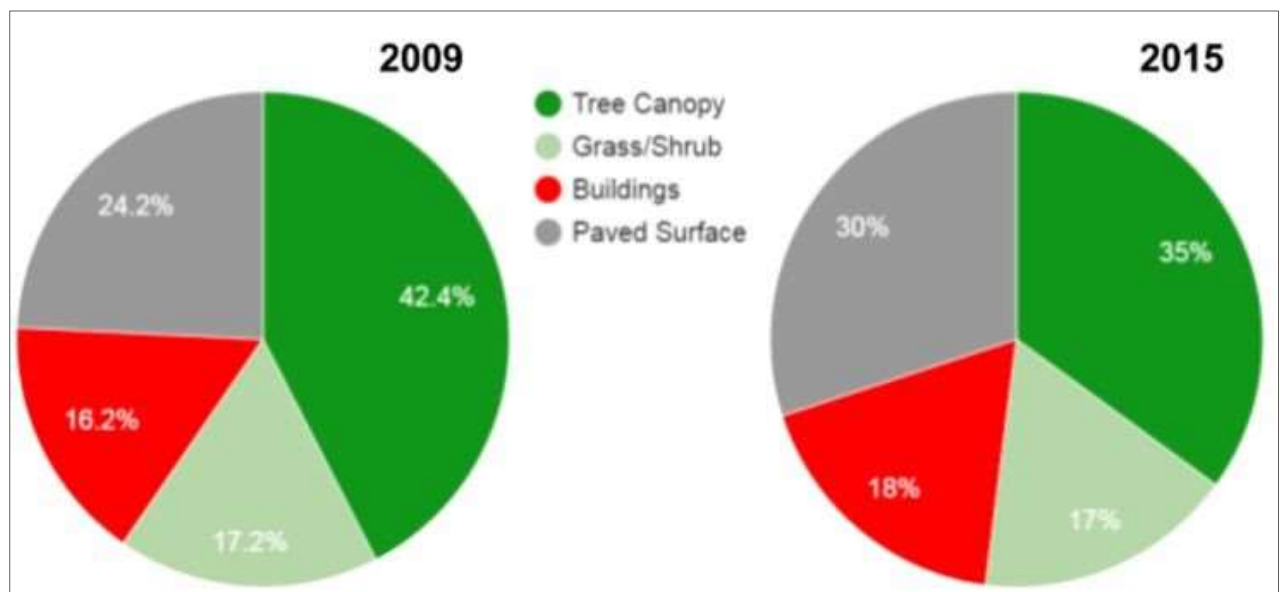


Survey responders who would volunteer to help maintain the diverters divided by proximity to nearest diverter



Survey responders who would volunteer to help maintain the diverters divided by age

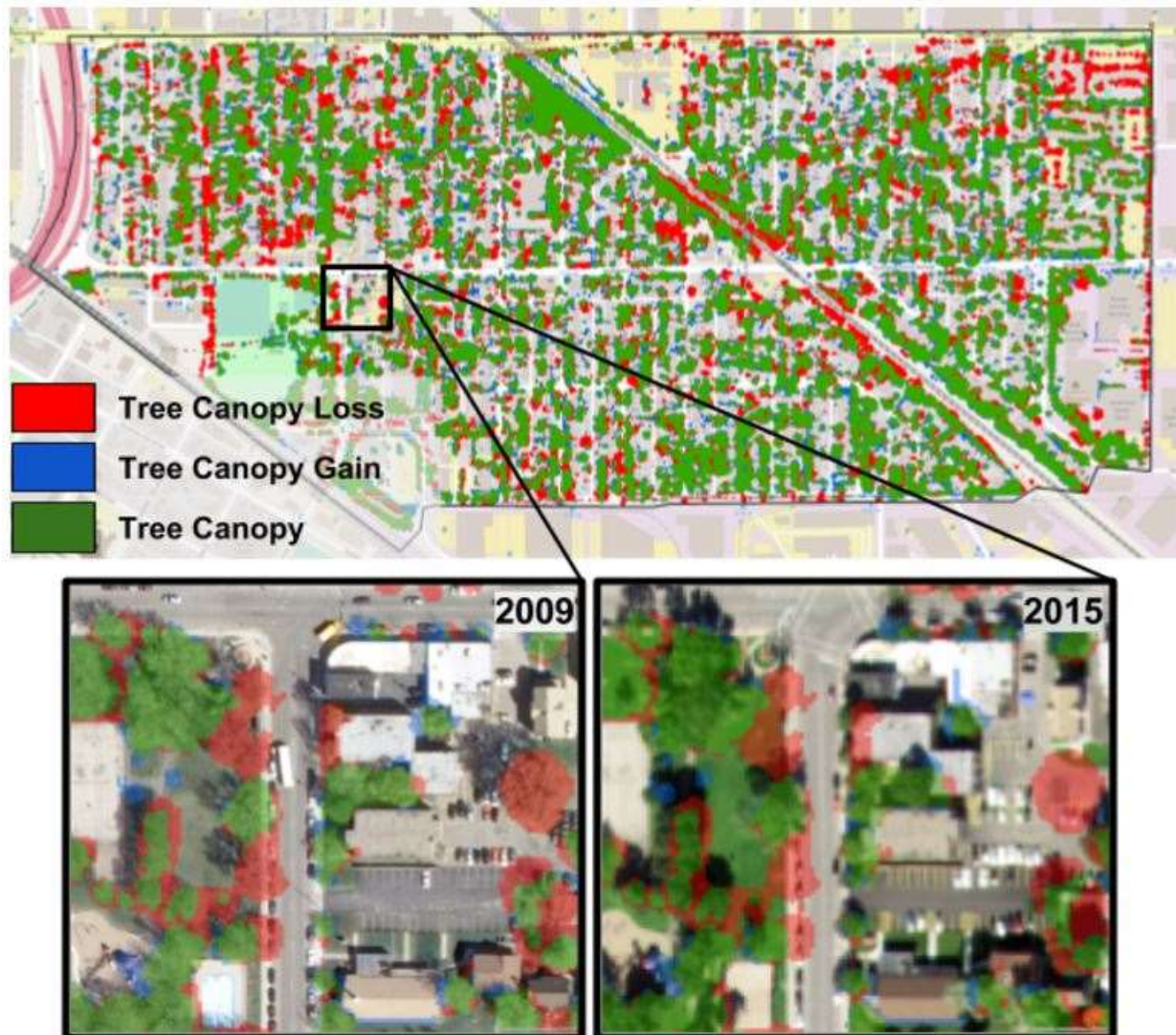
4. Tree Canopy Changes Over Time (Figures 16-18)



Land cover percentage for Como neighborhood in 2009 (left) and 2015 (right)

Comparison	2009 (acres)	2015 (acres)	Change
Tree Canopy	149	127	-22
Grass/Shrub	62	59	-3
Bare Soil	1	1	0
Water	0	0	0
Buildings	58	63	5
Paved Surface	87	107	20

Land cover type (in acres) between 2009-2015 and calculated acres of change



Map comparing tree canopy losses (red) and gains (blue) throughout the SE Como neighborhood from 2009-2015 (unchanged tree canopy in green)

5. Potential Redesign Sketches and Aerial Renditions with Respect to Topography (Figures 22-26)

With Bike Path



Possible diverter redesign that incorporates a path for bikers



Aerial view of potential diverter design (with bike path) with respect to topography

Without Bike Path



Possible diverter redesign without a bike path



Aerial view of potential diverter (without a bike path) with respect to topography



Aerial view of potential diverter (with minimum action taken) with respect to topography

7. Suggested Species List (Figure 21)

Trees:

Black Cherry bc
Yellow Birch bc
Sweet Birch bc
Sweetgum bc
Tamarack (Only for the most open site) ab
Amur Cherry ac
Katsura Tree ac
Amur Maackia ac
Ironwood ac
Yellowwood a/ab
Mugo Pine (dwarf/compact)
Turkish Filbert a
Mongolia Oak
Magnolia 'Merrill' ac
Osage Orange (thornless, male)
Crabapple 'Sugar Tyme' ac
Musclewood ac
Eastern Redbud 'MN Strain' ac
Staghorn or Smooth Sumac ab

Shrubs:

Currants
Forsythia 'bronxensis'
Korean Mountain Ash
Serviceberry 'Autumn Brilliance'
Witch Hazel
Smokebush (Cultivated variety)
Winterberry (Low growing cultivar)
Ninebark (dwarf)
Blueberries
Red Osier Dogwood 'Cardinal' ab
False Indigo
Russian Almond (Dwarf)
Highbush Cranberry ab
Rhododendrons ab
Azalea ab
Black Chokeberry bc
Snowberry
New Jersey Tea
Flowering Raspberry

All names that are *italicized* are native.

a -- upland plant for outside ring in sunken diverter or for flat diverter

b -- lowland plant for centre of diverter

ab -- midland, slightly water tolerant, middle row or multiple uses

ac -- upland plant for flat diverter

bc -- mixed-use