



Urban Pollinator Habitat

CONSERVATION ❖ PRESERVATION

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*“That which is not good for the bee-hive
cannot be good for the bees.”*

--Marcus Aurelius



Figure 1 Photo Credit: John R. Kelsey

*I*ntroduction: What is a pollinator?

Pollinators are generally classified as any species that facilitates sexual reproduction in plants that produce food in the form of seeds or fruit. The primary pollinators for most flowering plants are a diverse range of flying insects including bees, butterflies, moths, wasps, and beetles. Birds and bats also help facilitate sexual reproduction in plants by transferring pollen from male to female plant species, but bee species are the primary pollinators for most food crops world-wide.

*B*ee Species Diversity

Almost 20,000 species of bees have been identified in the world; around 8% of those produce honey. All species of North American honey-bees are non-native and require human management. Most Michigan bee species are solitary and build nests either in ground dwellings or organic material such as old raspberry canes. Increased human development and pesticide applications have negative impacts on many pollinator

species, especially those in direct contact with typical urban landscape management methods.



Why do we need to conserve bees?

Bees are a “keystone” species, which means they play a critical role in the health and stability of our environment and the production of food throughout the ecosystem. They are the only group which collects pollen and nectar as their primary food source. The use of chemical pesticides and habitat destruction may be causing a decline in bee species.

Conservation and best management strategies are becoming a universal component of urban planning and habitat restoration and resiliency. Cities are increasingly turning





to alternative green space use, urban farming, and animal husbandry to help promote and preserve healthy pollinator ecology.

*O*bjectives

Identify and develop cost effective measures to increase healthy pollinator habitat in the city of Muskegon; implement sustainable conservation techniques and environmental best management practices and strategies; increase species diversity for the environmental quality of citizens.

*G*oals

- Increase pollinator habitat and diversity with sustainable plantings which require minimal additional resources.
- Reduce pesticide use and minimize drift with buffering zones.
- Minimize chemical drift by creating pesticide-free buffer zones in parks and public green spaces.
- Reduce mowing and thereby save on equipment and personnel costs.
- Educate the public about the importance of pollinator habitat.



*C*ommunity Engagement



Cooperation and sharing of knowledge between the city of Muskegon, community organizations, schools, and the public is critical to the development and success of restoring and maintaining pollinator habitat. One example of community engagement is the *Grand Trunk Restoration Day* event planned for May 18th, 2018 which will include children from local classes to help plant flowering trees and shrubs at the site and hear a brief presentation on the importance of urban pollinators.

*I*mplementation

The following areas in the city of Muskegon are suggested, but not exclusive, for THE 2018 pollinator habitat restoration and development program: Farmer's Market

- Grand Trunk boat launch
- Hartshorn Point
- Seaway/Shoreline Drive interchange*
- Moses J. Jones Parkway*
- Ryerson Creek
- Richards Park*
- Marquette Ave terraces between US-31 and Getty

*MDOT authorization required





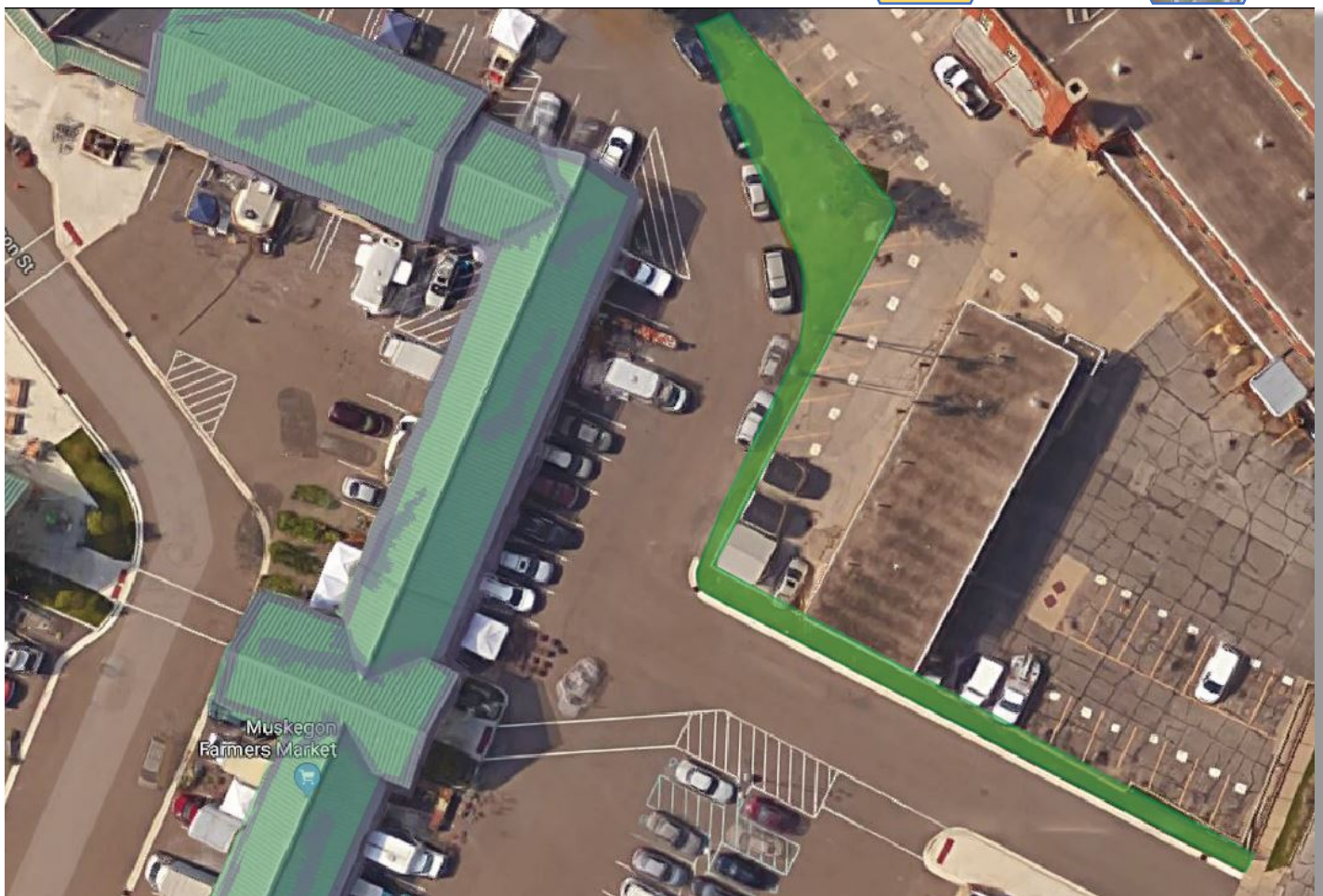
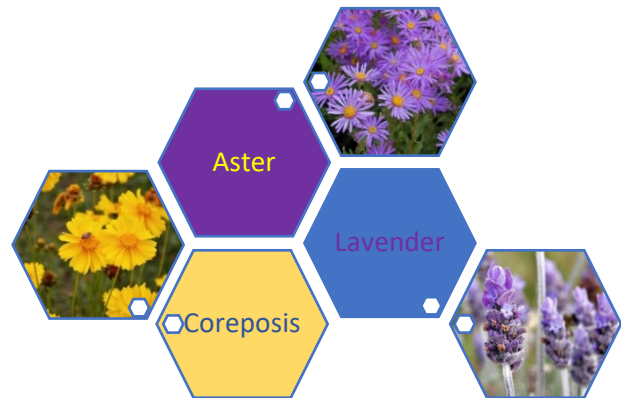
*“bees are the batteries of orchards,
gardens, guard them.”*

— Carol Ann Duffy, *The Bees*

Muskegon Farmer's Market 242 W. Western Drive 231-722-3251

A small area to the west of Muskegon's premier Farmers Market is an ideal location to plant pollinator friendly perennial flowering species, including asters, lavender, and coreopsis. Some flowering trees may be planted, including apple and cherry.

Time line: Spring of 2018.



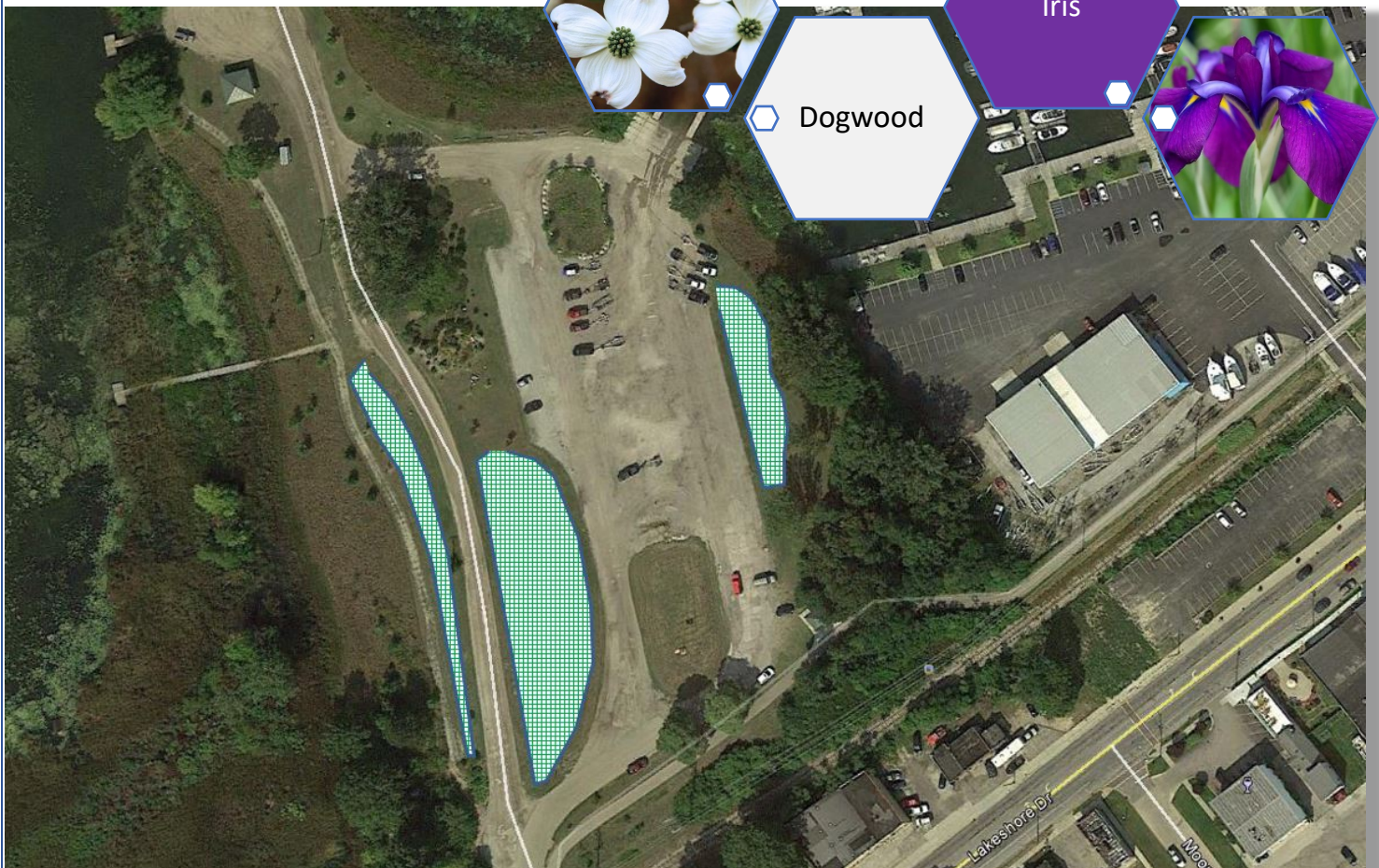
Grand Trunk Boat Launch

2090 Lakeshore Drive

A partnership between the City of Muskegon, West Michigan Shoreline Regional Development Commission, and the former SAPPI collective bargaining unit has helped redevelop the former industrial property into a thriving ecosystem. Additional plantings of flowering tree and shrub species, including buttonbush and dogwoods are planned for the annual Grand Trunk Restoration and Clean-up Day. Several local schools participate in the clean-up and planting efforts.

Timeline:

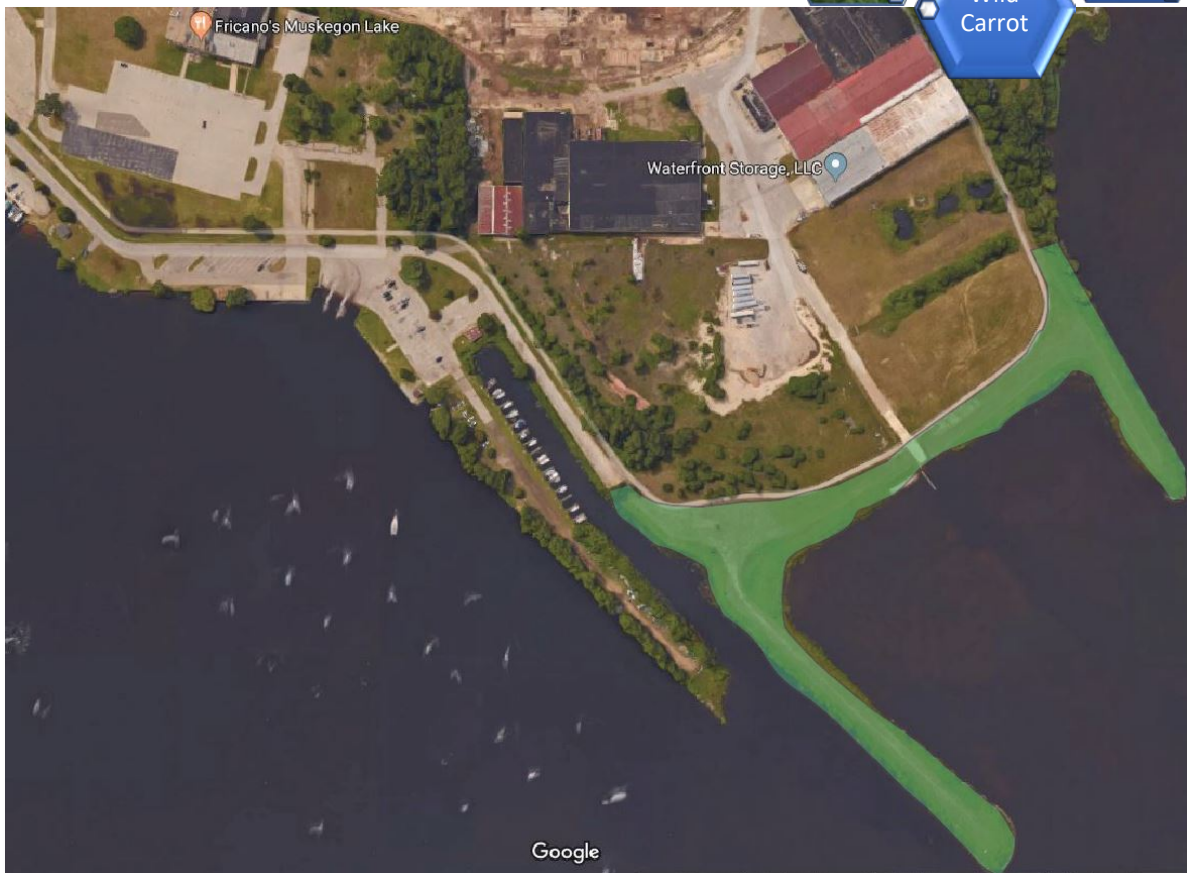
May 18, 2018



Hartshorn Point

920 W. Western Ave

Hartshorn Point is a former industrial site with a mix of public and private property. Remediation work was completed on the former West Michigan Steel property as recently as 2013, which included a 500' foot conservation easement on the far east side. The city would discontinue mowing operations except for a maintenance swath along the bike path to the eastern point for public access. Some flowering trees and shrubs, including oaks, buttonbush, and dogwoods will be planted near the eastern shoreline, and wildflowers such as lobelia, iris's, and wild carrot would be allowed to re-establish. **Timeline:** Spring/Summer 2018



Seaway/Shoreline Interchange

The city will discontinue mowing the hills near the Seaway Drive overpass at Shoreline except for a maintenance swath between the road and steep grades. Not mowing will allow native perennials and grasses to re-establish. The increased biomass will reduce storm water run-off and help stabilize the eroding hillside while creating an inviting habitat for pollinators.



Purple
Coneflower



Cows Vetch

Milkweed



Purple coneflowers, cow's vetch, and milkweed will be introduced to the hillside.



Seaway Drive from Laketon to Sherman Boulevard

The center median of Seaway Drive between Laketon Avenue and Sherman Boulevard will continue to be mowed, as would a six-foot maintenance swath on the east and west side. Hills on either side would be untouched and allowed to return to pollinator-friendly habitat. Educational signage stating, "Pollinator Habitat Next 2/3 of a Mile" would be placed in several locations visible to oncoming traffic from the north and south.



Moses J. Jones Parkway / Ryerson Creek

These areas are combined because of their proximity to each other. The maintenance plan allows for mowing only along the roadway, allowing native flowering plants to re-establish in the defined area near Ryerson Creek and along Moses J. Jones Parkway. Flowering fruit tree such as apple and cherry, could be planted along the parameter of road. Signage indicating "Pollinator Habitat/Pesticide-Free" zone would be placed in areas visible to outgoing and inbound traffic.

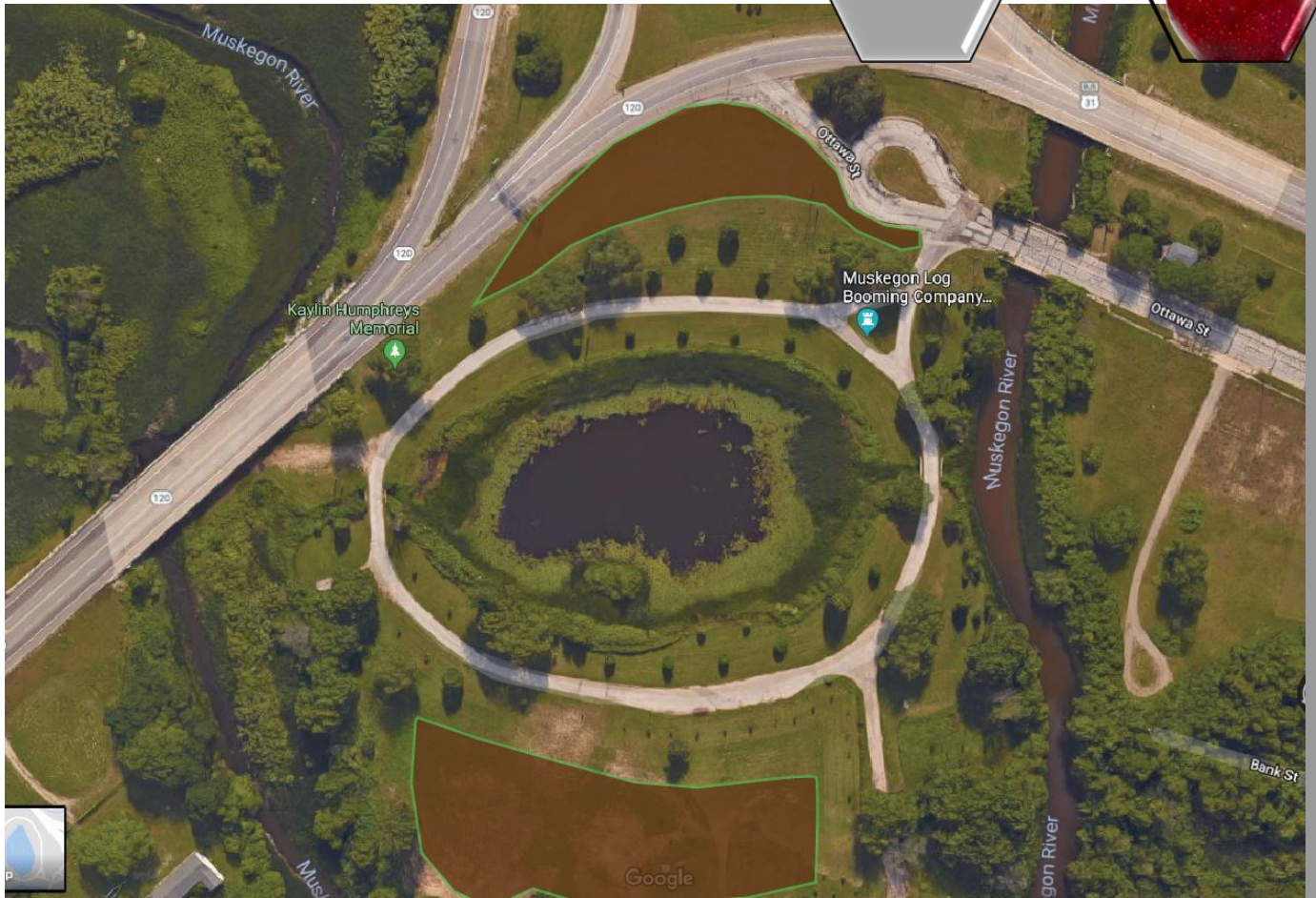


Richards Park

95 North Causeway

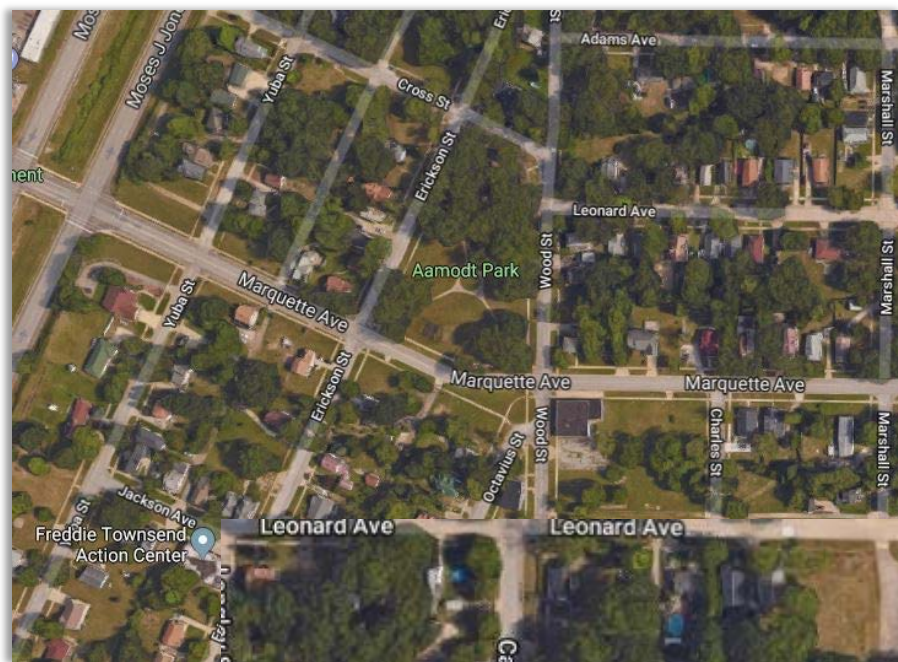
Several "Pollinator-Friendly/Pesticide-Free" zones would be created near the entrance to the park and towards the rear. A combination of native wildflower seeds, and twenty to thirty apple/cherry trees would be planted as buffer between the highway and park.

Timeline: Late Summer/Fall 2018



Marquette Ave. between US-31 and Getty Street.

Street trees were removed from the Marquette corridor in 2015 when Consumers Energy installed new power lines. The terraces on either side allow for planting flowering ornamental species such as Crabapple, Kwanzan Cherry, Thundercloud Plum, and flowering Dogwood. The city will apply for a Consumers Energy tree grant in the fall of 2018.



“Such bees! Bilbo had never seen anything like them. “If one were to sting me,” He thought “I should swell up as big as I am!””

— J.R.R. Tolkien, *The Hobbit*



Educational Components

Signage would be placed in key locations to inform and educate the public.

Pollinator Habitat

This area has been planted with pollinator-friendly flowers and is protected from pesticides to provide valuable habitat for bees and other pollinators.

To learn how you can help to bring back the pollinators, please visit www.xerces.org.



The Xerces Society for Invertebrate Conservation
(415) 224-6031 www.xerces.org

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Tree Species

Native species and cultivars are preferred for street and other municipal plantings and landscape projects. A variety of ornamental cultivars are often available from West Michigan nurseries, including the following nursery pollinator species sample:



Autumn Blaze Maple



Coral Burst Crabapple



Kwanzan Cherry



Don Wyman Crabapple



Fort McNair Horse Chestnut



Stellar Pink Dogwood

While local nursery stocks are preferred, quantities, availability, and price often require procurement from businesses outside the city of Muskegon.



Flower / Shrub Species

Flowering plants and shrubs are selected by examining the type of soil, temperature, moisture, and light profiles of each species to determine the most optimal chances for survival with limited additional resources. Several Michigan seed and bare-root suppliers offer native species in seed mixtures to match the soil and light profiles of planting areas or geographic regions in the state. The following is a sample list of native and regional species which could be included in pollinator habitat planting projects:



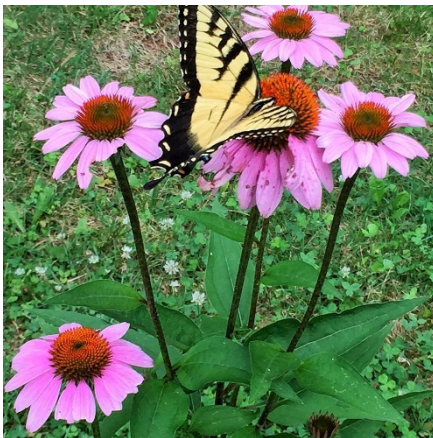
Butterfly Weed, Asclepias tuberosa



Buttonbush Cephalanthus occidentalis



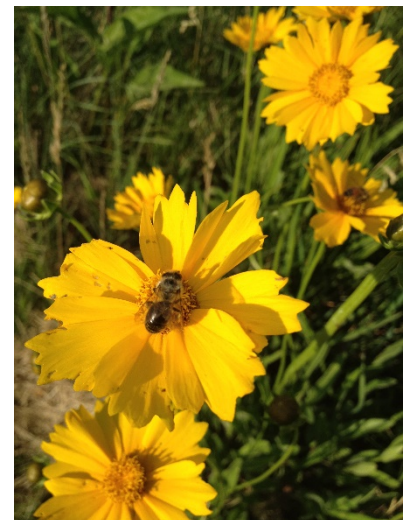
Showy Goldenrod, Solidago nemoralis



Echinacea augustifolia



Silky Dogwood, Cornus amomum



Tickseed, Coreopsis lanceolata



Pollinator Habitat Budget Estimate

The 2018 budget estimate for this program was extrapolated using previous state grants and other planting projects which were accomplished using city personnel and equipment.

<u>SALARY AND BENEFITS</u>	- FRINGE BENEFITS, WAGES, S/S, COMP, UNEMPLOY	120 HOURS	
			5100 TOTAL
			\$3,923
<u>IRRIGATION SUPPLIES</u>	- SPRINKLERS	\$100	
	- HOSES AND STORAGE UNITS, MOBIL SPRINKLER HEADS		
	- HARDWARE- NOZZLES, CLAMPS, POLY PIPE, PVC, RISERS,		
	- TERRASORB HYDROGEL	\$300	
	- WATERING DEVICES	\$150	
			\$550
<u>TOOLS</u>	- HAND SAWS, CUTTERS, PLIERS, VICE GRIPS, CHANNEL LOCKS, HAMMERS, CHISELS, DRIVERS, POWER TOOL ATTACHMENTS		
	- SHOVELS, RAKES, WEEDING TOOLS, LOPPERS, PRUNERS	\$250	
	- SPECIALTY TOOLS, WRENCHES, SOCKETS, PULLERS	\$50	
	- Terra-Sorb HYDROGEL		
			\$300
<u>SEEDING AND PLANTING</u>	- WILD FLOWER SEED/LIVE PLANTS	\$4,000	
	- BLACK DIRT	\$350	
	- PEAT MOSS	\$300	
	- TREES	\$4,780	
			\$9,430
			5200 TOTAL
			\$10,280
<u>CONTRACTUAL SERVICES</u>	- STAFFING THROUGH TEMP SERVICE	160 HRS	\$2,800
	- SIGNAGE		\$1,500
	- EQUIPMENT RENTAL		\$1,200
			\$5,500
<u>VEHICLE RENTAL</u>	- MINI EXCAVATOR	\$250	
	- 1 TON DUMP TRUCK	\$584	
	- PICKUP	\$809	
			BI-WEEKLEY EXPENSE
		\$1,643	\$1,643
			5300 TOTAL
			\$7,143
			TOTAL
			\$21,346

Resources

Enhancing Beneficial Insects with Native Plants Web site: www.ipm.msu.edu/plants/home.htm

Finneran, Rebecca. *Gardening for Pollinators: Choosing Smart Plants to Support Pollinators*. 16 Oct. 2015,

http://msue.anr.msu.edu/news/gardening_for_pollinators_choosing_smart_plants_to_support_pollinators

Identifying Natural Enemies in Crops and Landscapes. Extension bulletin E-2949. East Lansing, Mich.: Michigan State University. Shepherd, M., S.L. Buchmann, M. Vaughan and S.H. Black. 2003.

Michigan Pollinator Initiative, Michigan State University,
<https://pollinators.msu.edu/resources/pollinator-planting/>

Michigan Recommended Native Plant Species, Ladybird Johnson Wildflower Center, Univ. of Texas/Austin, 2018, <https://www.wildflower.org/plants-main>

Packer, Laurence. *Keeping the Bees: Why All Bees Are at Risk and What We Can Do to Save Them*. HarperCollins, 2010.

Pollinator Conservation Handbook. Portland, Ore.: The Xerces Society.

