

WEST MICHIGAN ENVIRONMENTAL ACTION COUNCIL

Great Lakes Urban Stormwater Calculator Valuing Ecosystem Services for Green Infrastructure



Who is WMEAC?

Leading environmental protection in West Michigan by inspiring action

Protect Water Resources

Build Environmentally Sustainable
Communities

Non-Profit 501C3

West Michigan's voice for
environmental protection since 1968



Stormwater Work in West Michigan

- ❖ Rain Barrel Program
- ❖ 15 to River
- ❖ Grand Rapids Stormwater Planning
 - Community-Based Stormwater Initiative
 - Sustainably Managing Stormwater
 - Sustaining Stormwater Investments
 - 2013 Flood Sandbag Volunteers
 - Stormwater Oversight Commission
 - Vital Streets Oversight Commission
- ❖ “Rain to Roots” Residential Program
- ❖ Plaster Creek & Rogue River Tributaries





StormGI-ESCalc Project

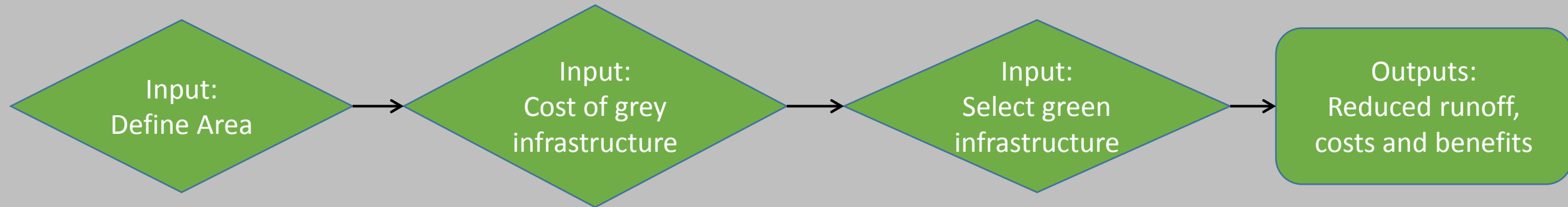
Great Lakes Restoration Initiative Funding



Project Pilot Cities

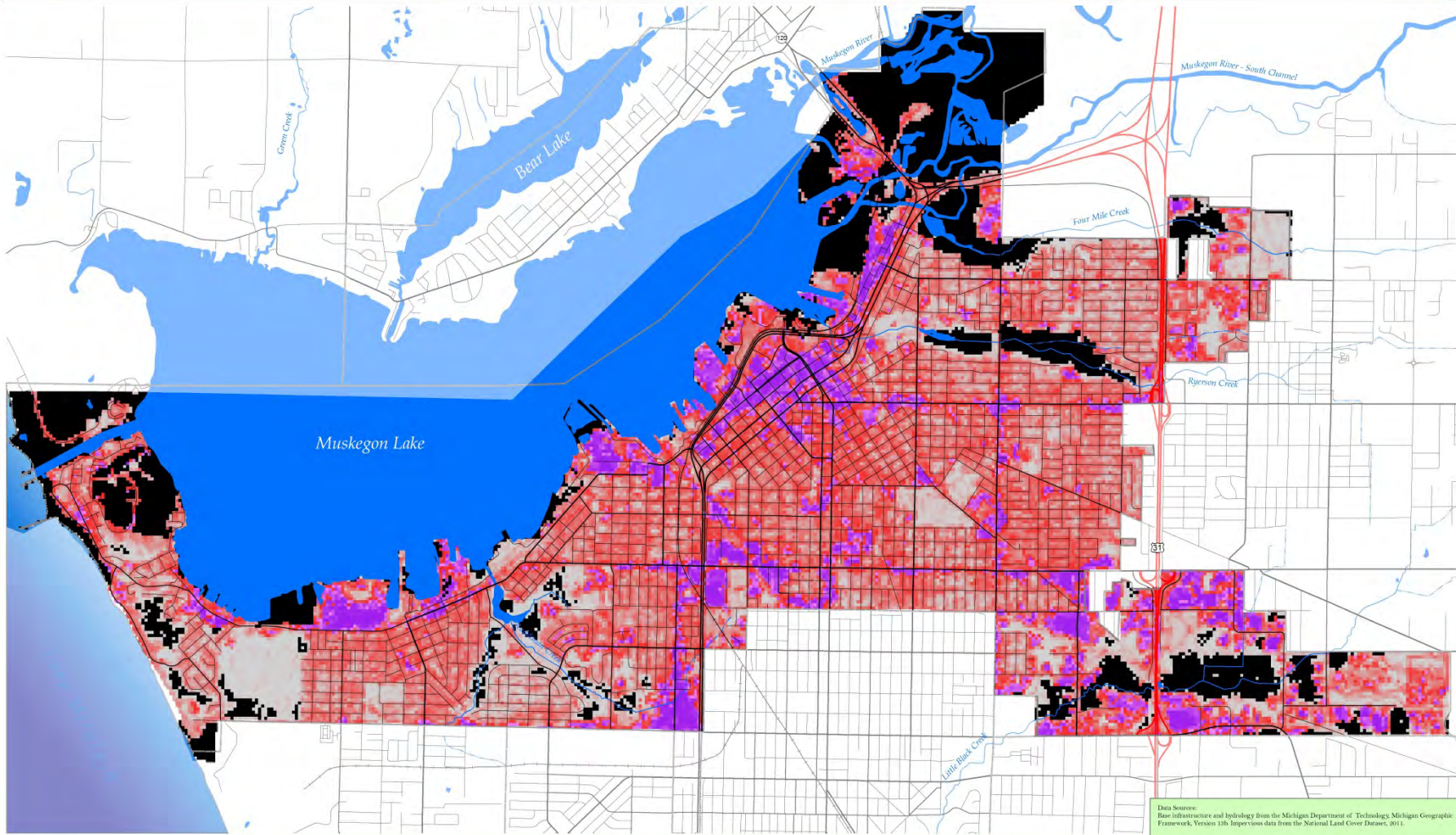


How will the calculator work?



Impervious Surfaces

City of Muskegon, Michigan

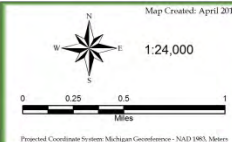
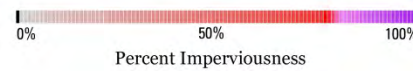


Data Source:
Base Infrastructure and hydrology from the Michigan Department of Technology, Michigan Geographic Framework, Version 13b
Impervious data from the National Land Cover Dataset, 2011.



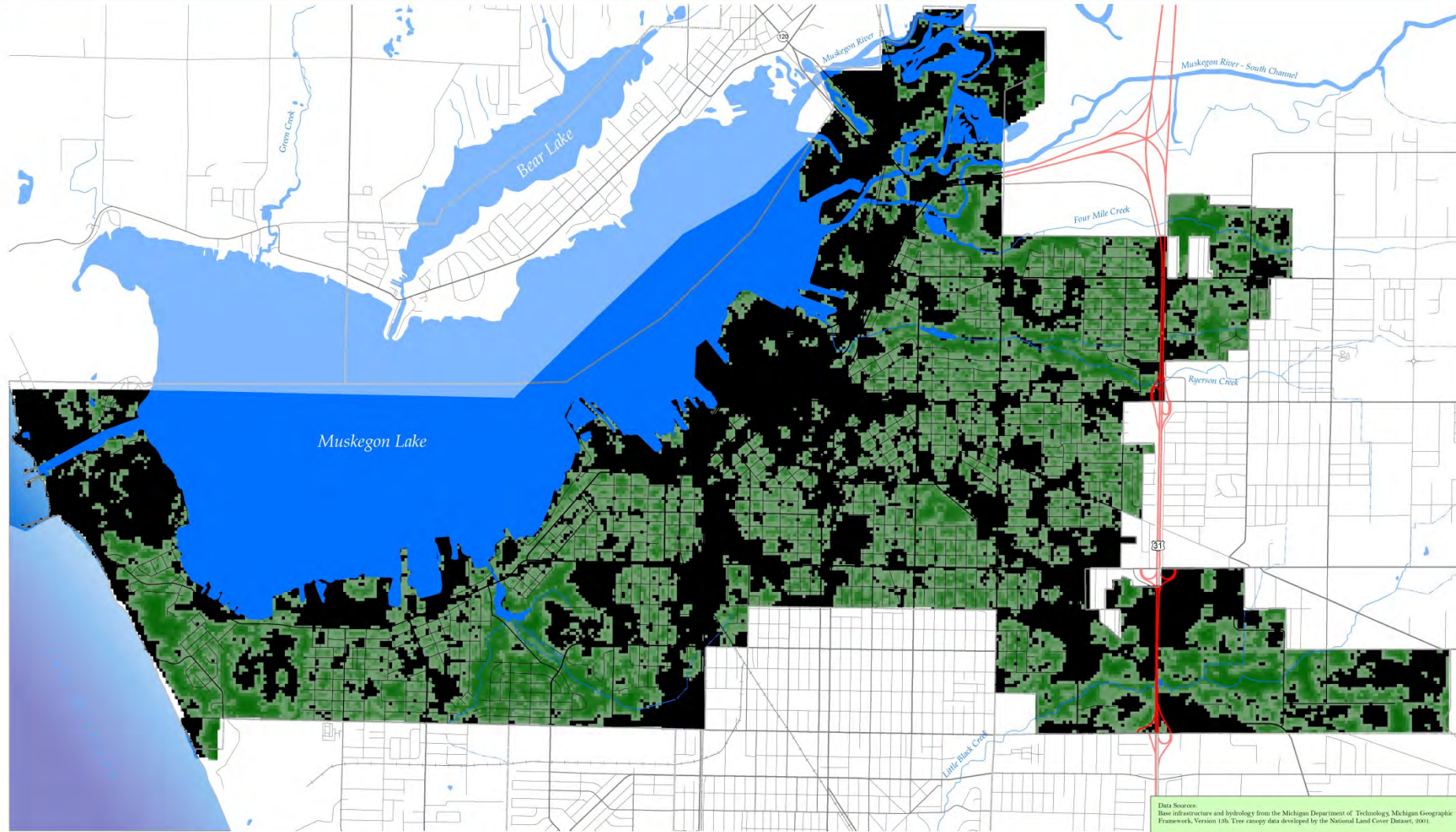
Legend

- Interstate
- Arterial Road
- Collector Road
- Local Road
- Political Limits
- Railroad
- Creek
- Intermittent Stream/Drain
- Water
- Lake Michigan



Urban Tree Canopy - NLCD

City of Muskegon, Michigan

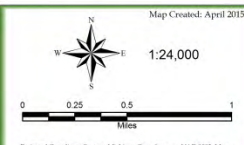
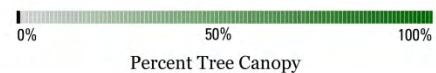


Data Sources:
 Base infrastructure and hydrology from the Michigan Department of Technology, Michigan Geographic Framework, Version 13b. Tree canopy data developed by the National Land Cover Dataset, 2001.



Legend

- Interstate
- Arterial Road
- Collector Road
- Local Road
- Political Limits
- Railroad
- Creek
- Intermittent Stream/Drain
- Water
- Lake Michigan



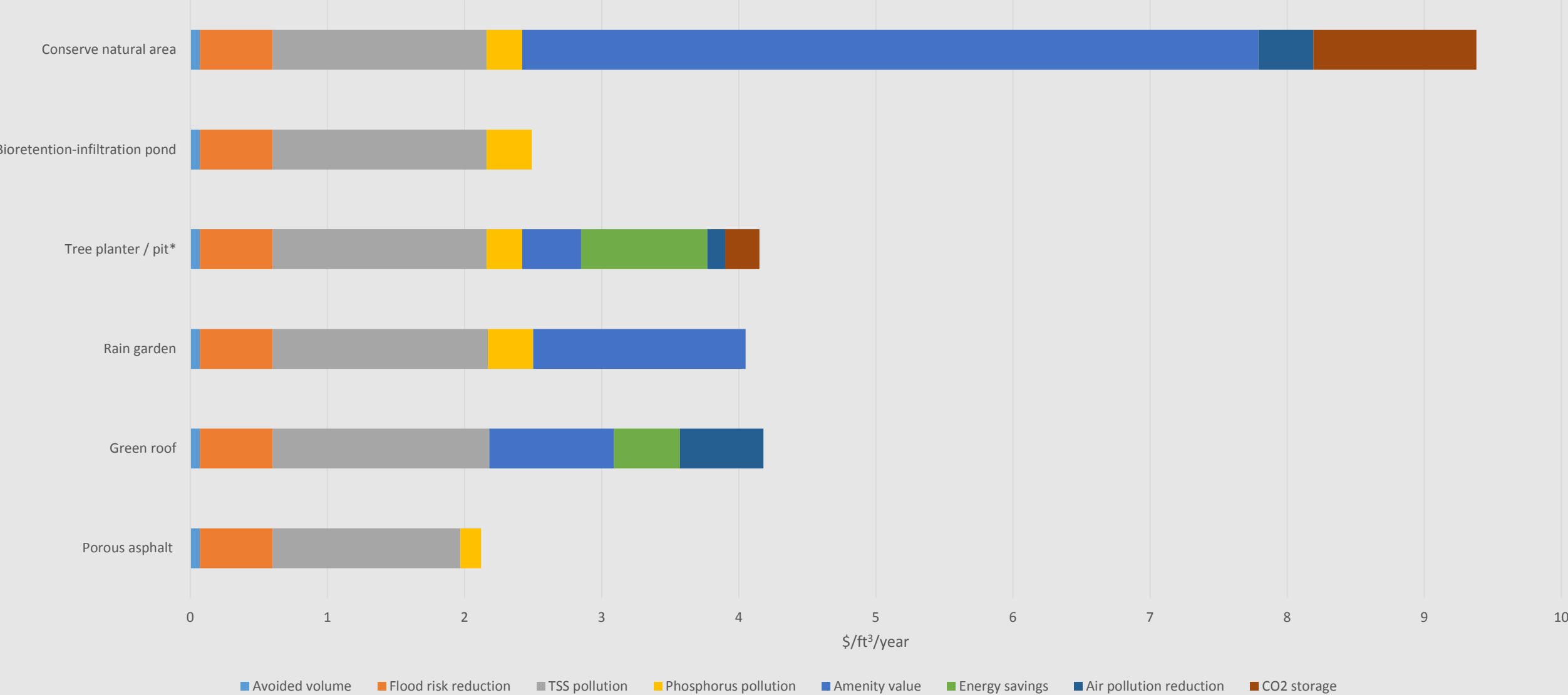
Projected Coordinate System: Michigan Government - NAD 1983, Meters



Stormwater Solutions: Green Infrastructure



Benefits of green infrastructure practices (\$/ft³/year)



SMP	Unit price of stormwater mitigation benefits (\$/ft ³ <u>WOv/year</u>)					
	Porous asphalt	Green roof	Rain garden	Tree planter / pit*	Bioretention-infiltration pond	Conserve natural area
Avoided volume	0.07	0.07	0.07	0.07	0.07	0.07
Flood risk reduction	0.53	0.53	0.53	0.53	0.53	0.53
Total suspended solids water pollution reduction	1.37	1.58	1.57	1.56	1.56	1.56
Phosphorus water pollution reduction	0.15	0	0.33	0.26	0.33	0.26
Property value amenity	0	0.91	1.55	0.43	0	5.37
Energy savings	0	0.48	0	0.92	0	0
Air pollution reduction	0	0.61	0	0.13	0	0.40
CO ₂ storage	0	0	0	0.25	0	1.19
Total annual benefits	2.12	7.1	3.96	4.14 – 11.21	2.41	9.37

* Benefits during first five year and increase thereafter.

WE.

Community. There is beauty in this place we live. It emanates from the natural wonders of Lake Michigan. It is a source of energy and a guide to keep us true. It is a source of energy and a guide to keep us true. And the seeds of the future. A reach of us, waiting to emerge. Ready to change minds. And to change the world.

ME.

Commitment. The power in individual resolve. It is a source of energy and a guide to keep us true. And the seeds of the future. A reach of us, waiting to emerge. Ready to change minds. And to change the world.

ACT.

Action. We must preserve this special place for all generations. By gathering our collective hopes and intentions we create a beginning. Our next step is to act; placing our intentions in policy commits our communities to sustaining what is best for today and tomorrow.

WMEAC

Elaine Sterrett Isely
West Michigan Environmental Action Council
1007 Lake SE
Grand Rapids, MI 49504
616-451-3051
esisely@wmeac.org

wmeac.org