Improving Ox Creek

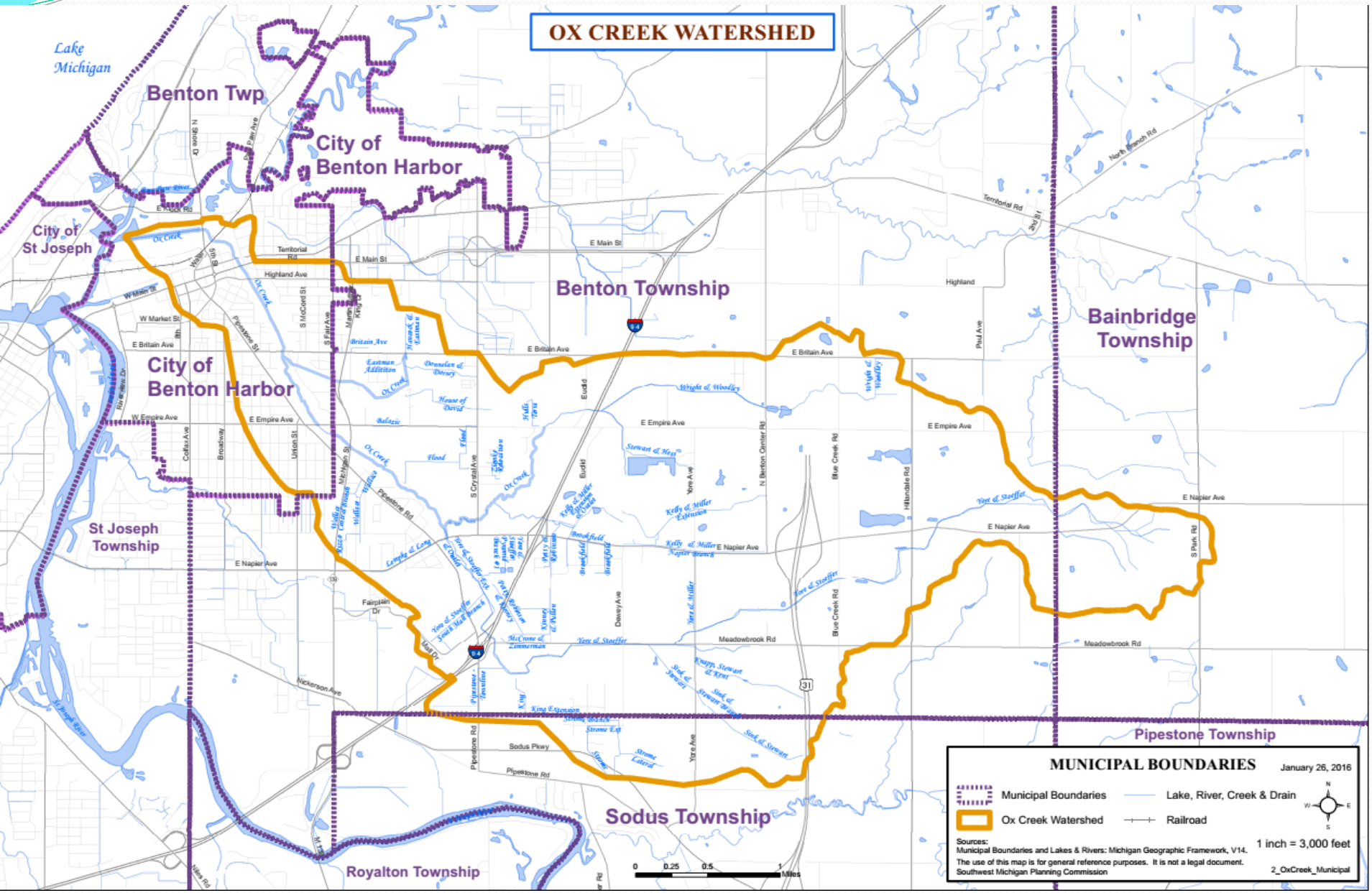
Marcy Colclough

Southwest Michigan

Planning Commission

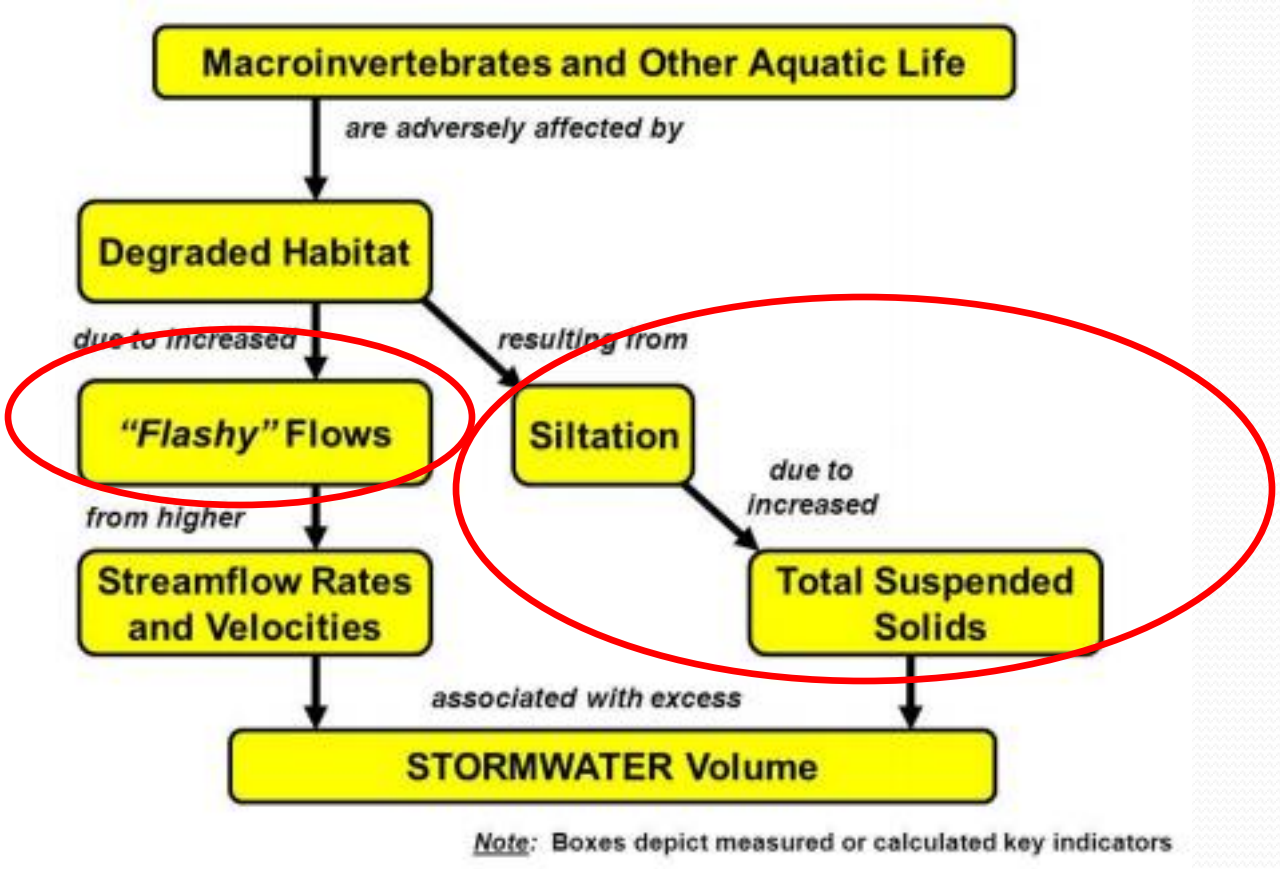
Project Partners

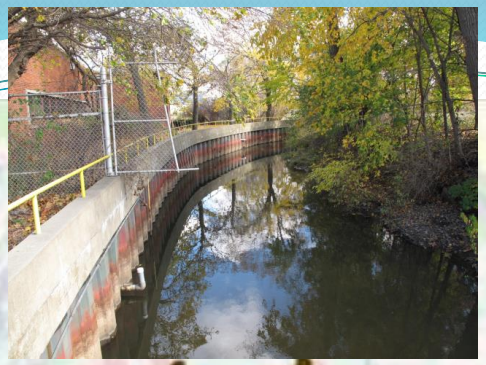
- Southwest Michigan Planning Commission
- Berrien County Conservation District
- USDA - NRCS
- Two Rivers Coalition
- Southwest Michigan Land Conservancy
- Michigan Department of Environmental Q


OX CREEK WATERSHED
Lake Michigan
Benton Twp
City of Benton Harbor
City of St Joseph
Benton Township
Bainbridge Township
City of Benton Harbor
St Joseph Township
Pipestone Township
Sodus Township
Royalton Township
MUNICIPAL BOUNDARIES
January 26, 2016
Municipal Boundaries
Lake, River, Creek & Drain
Ox Creek Watershed
Railroad
1 inch = 3,000 feet
Sources:
Municipal Boundaries and Lakes & Rivers: Michigan Geographic Framework, V14.
The use of this map is for general reference purposes. It is not a legal document.
Southwest Michigan Planning Commission
2_OxCreek_Municipal
0 0.25 0.5 1 Miles

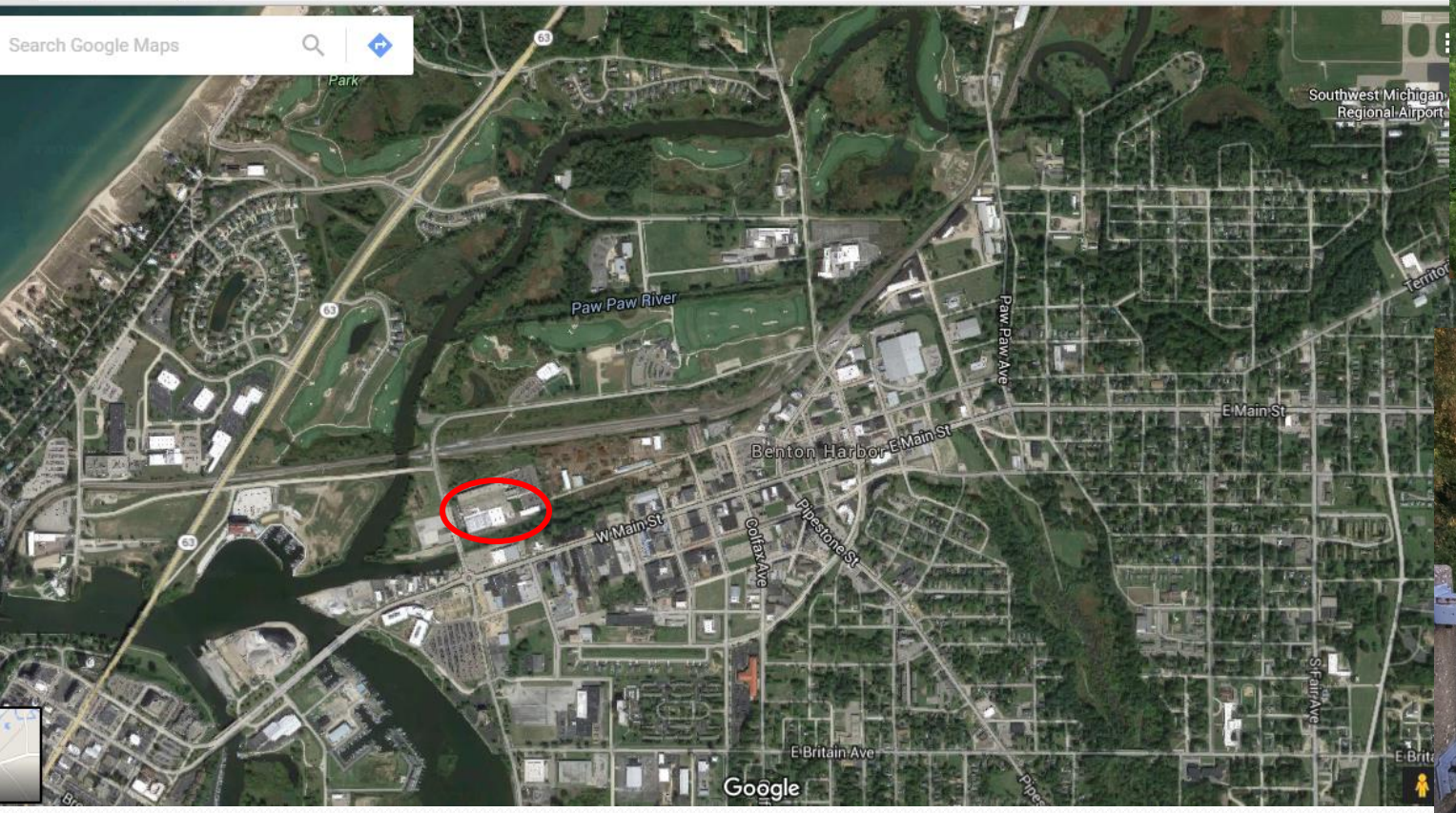
Why Ox Creek?

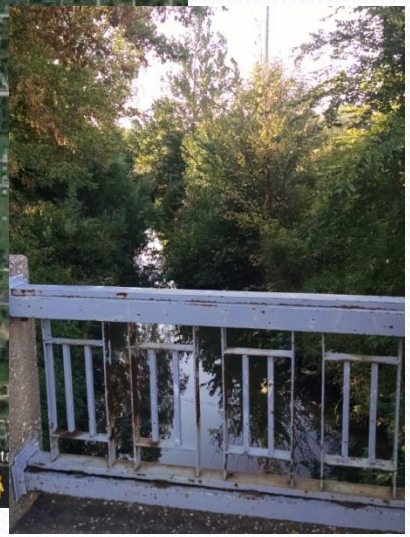
- 2000 acres/10,500 are impervious!

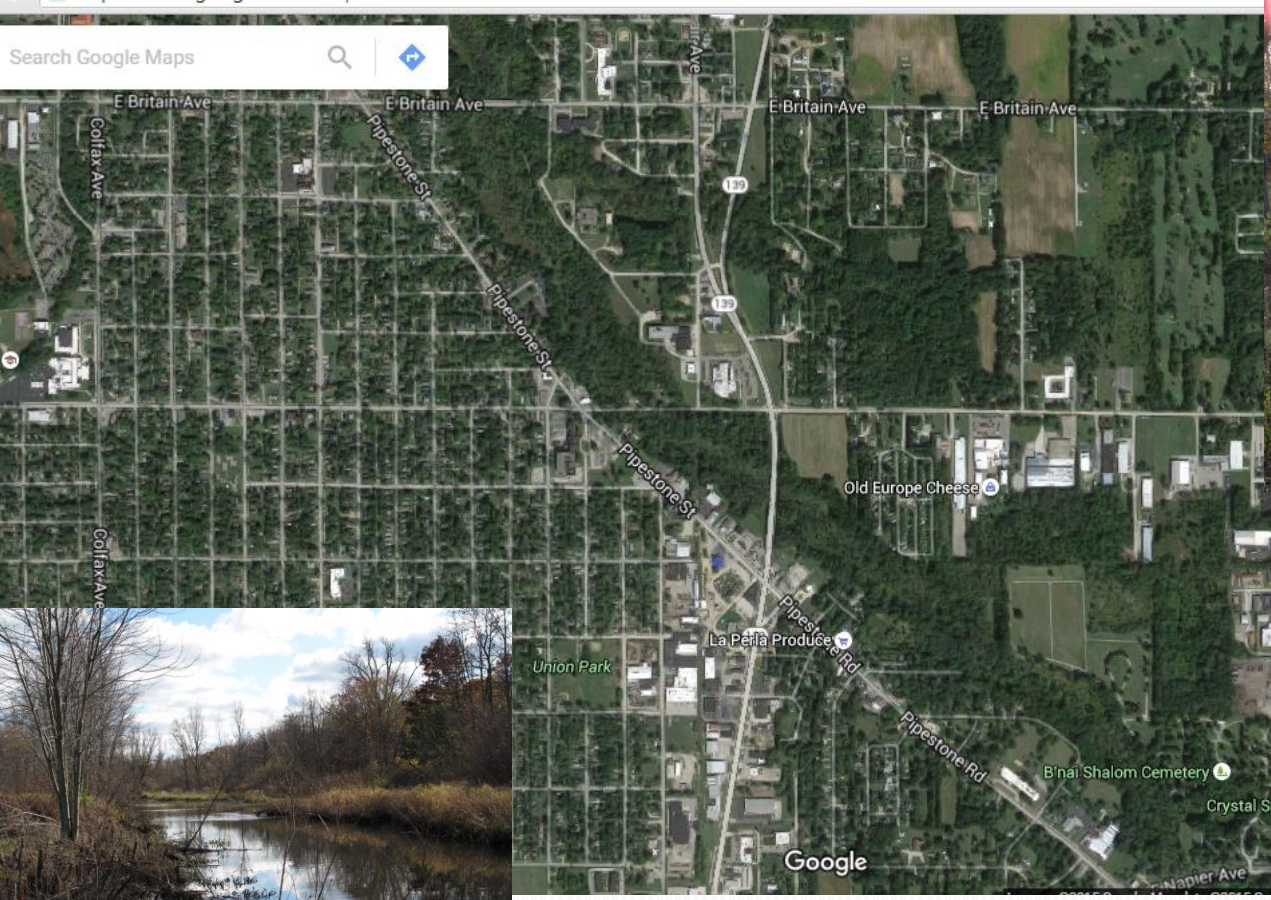




Lake Michigan
Paw Paw River
Benton Harbor
Ox Creek
Yore - Stoeffer
St. Joseph River
Open Water
Developed, Open Space
Developed, Low Intensity
Developed, Medium Intensity
Developed, High Intensity
Bare Rock/Sand/Clay
Deciduous Forest
Evergreen Forest
Mixed Forest
Shrub/Scrub
Grassland/Herbaceous
Pasture/Hay
Cultivated Crops
Woody Wetlands
Emergent Herbaceous Wetlands


Search Google Maps
Paw Paw River
Paw Paw Ave
E Main St
Benton Harbor
W Main St
Cofax Ave
Pipestone St
E Britain Ave
Google




Search Google Maps
E Britain Ave
E Britain Ave
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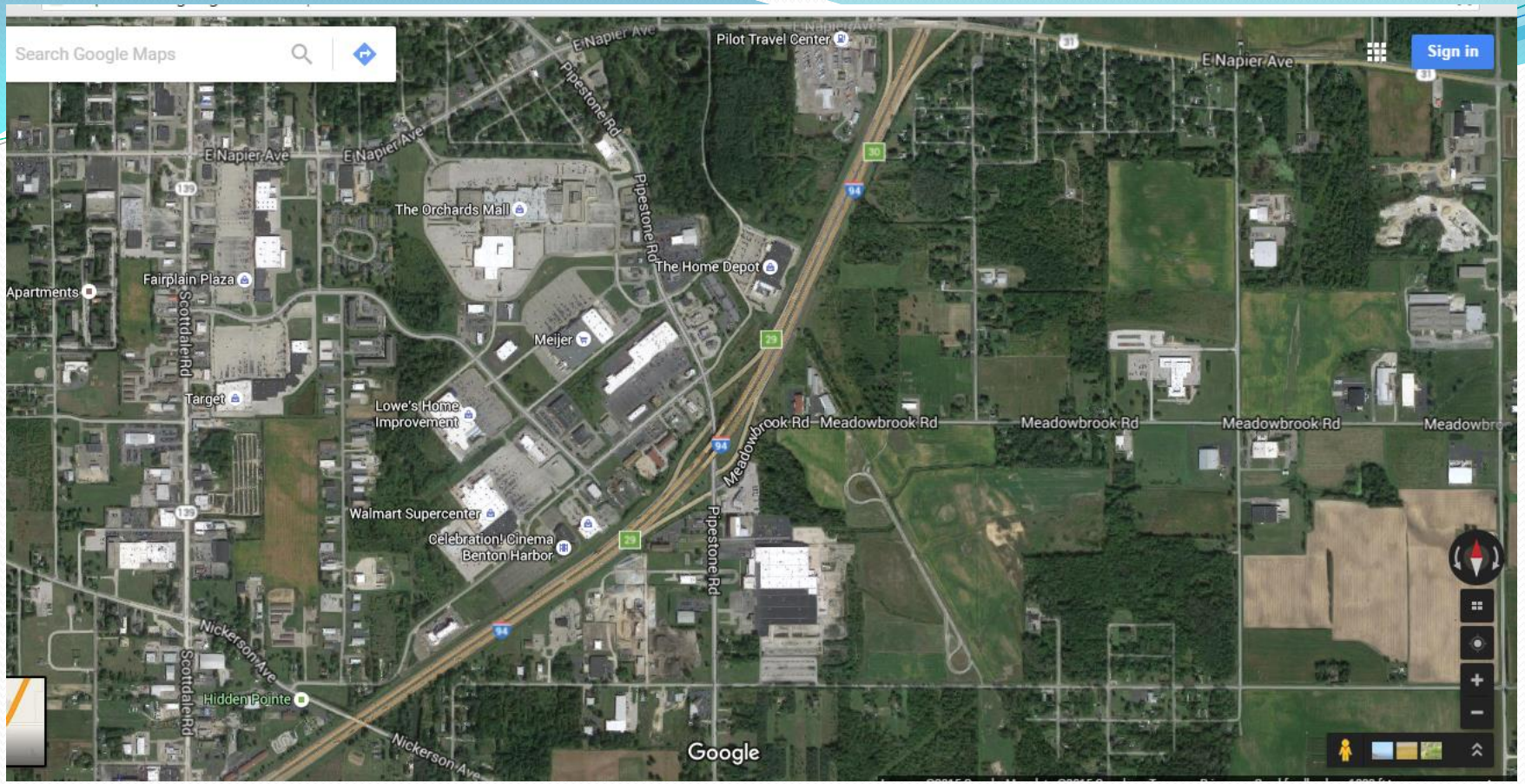
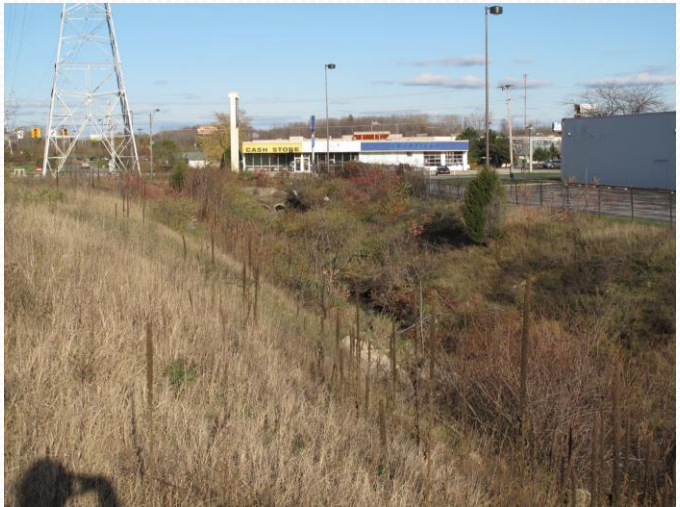
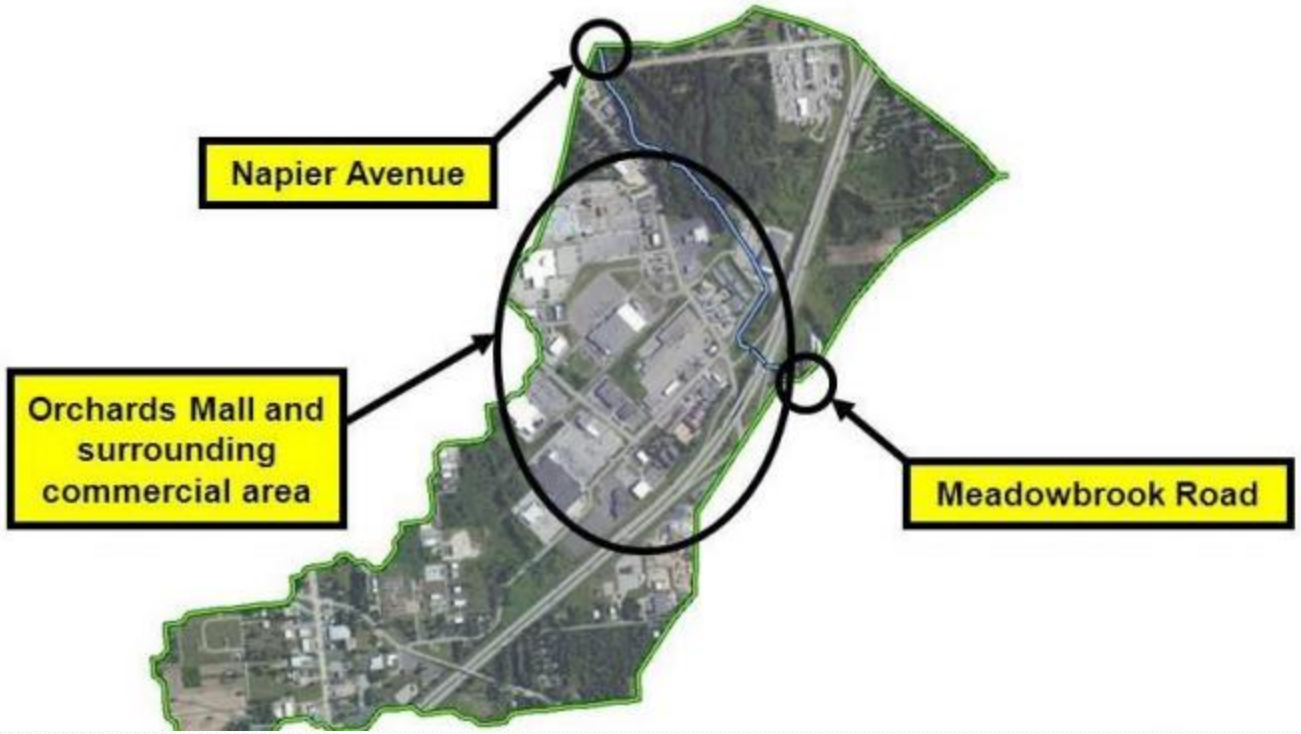
E Britain Ave
Colfax Ave
Pipestone St
Pipestone St
Pipestone St
Colfax Ave
139
139
Old Europe Cheese
La Perla Produce
Union Park
Pipestone Rd
Pipestone Rd
S Crystal Ave
S Crystal Ave
B'nai Shalom Cemetery
Crystal Springs Cemetery
E Napier Ave
E Napier Ave
Pilot Travel Center
Google


Search Google Maps
Sign in
E Napier Ave
Pipestone Rd
Pilot Travel Center
The Orchards Mall
The Home Depot
Fairplain Plaza
Apartments
Meijer
Target
Lowe's Home Improvement
Walmart Supercenter
Celebration! Cinema Benton Harbor
Meadowbrook Rd
Scottdale Rd
Nickerson Ave
Hidden Pointe
Google




THE HOME DEPOT



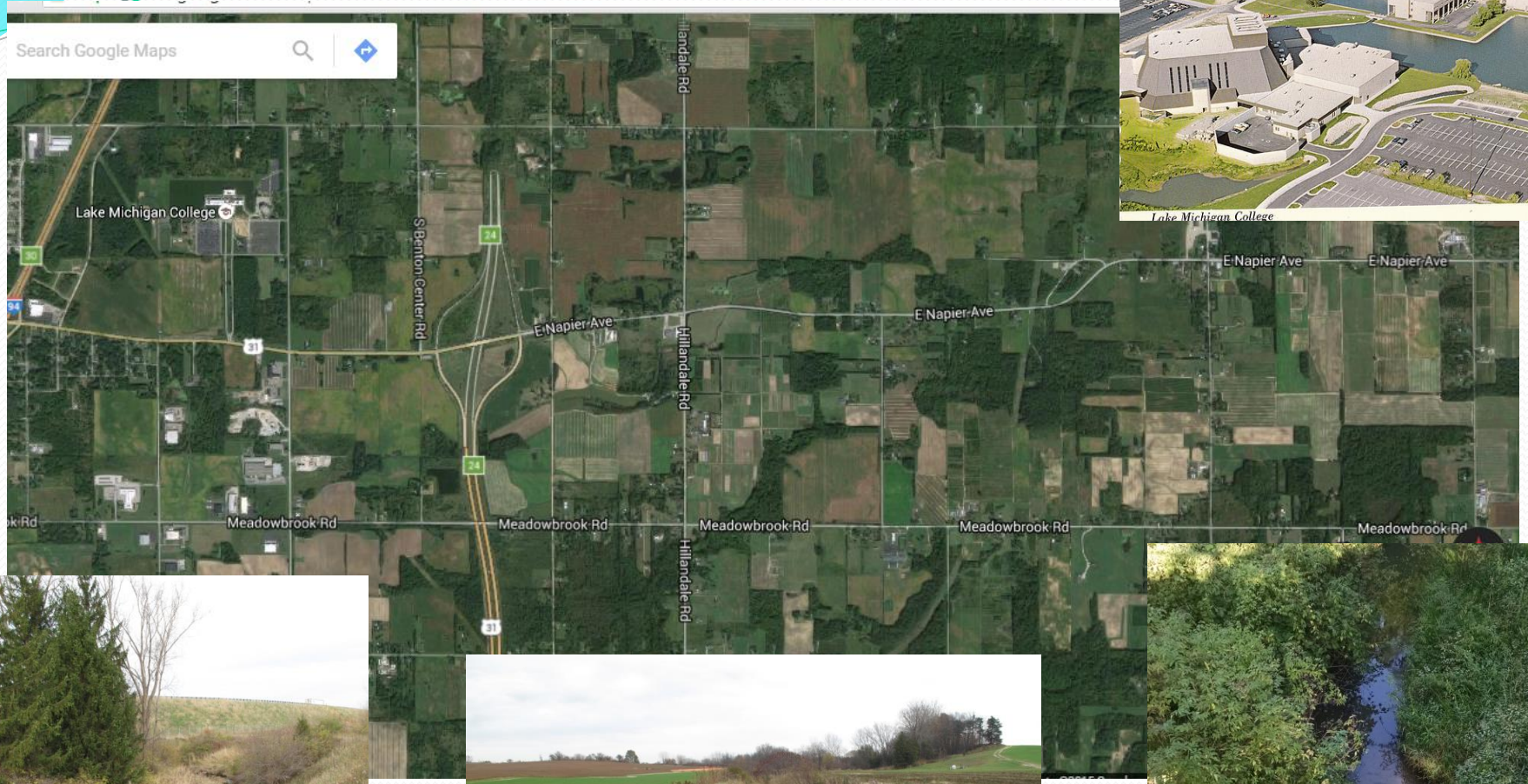
Subwatershed		Area (acres)	Development Intensity				Estimated Impervious Cover
			High	*Med*	*Low*	*Open*	
A	*Yore – Stoeffer HW*	2,150	0%	0%	4%	3%	1%
B	*Upper Yore - Stoeffer*	465	0%	0%	4%	6%	1%
C	*Middle Yore - Stoeffer*	1,755	3%	4%	17%	19%	9%
D	*Lower Yore - Stoeffer*	805	17%	27%	17%	25%	34%
E	*Ox Headwaters*	2,600	2%	4%	10%	24%	7%
F	*Upper Ox*	725	10%	20%	25%	33%	26%
G	*Middle Ox*	895	0%	8%	29%	53%	13%
H	*Lower Ox*	1,060	5%	17%	35%	39%	22%
I	*Ox Outlet*	104	20%	32%	27%	19%	41%

Low Impact Development

- Water – slow it down, spread it out, soak it in

www.swmpc.org/lid.asp

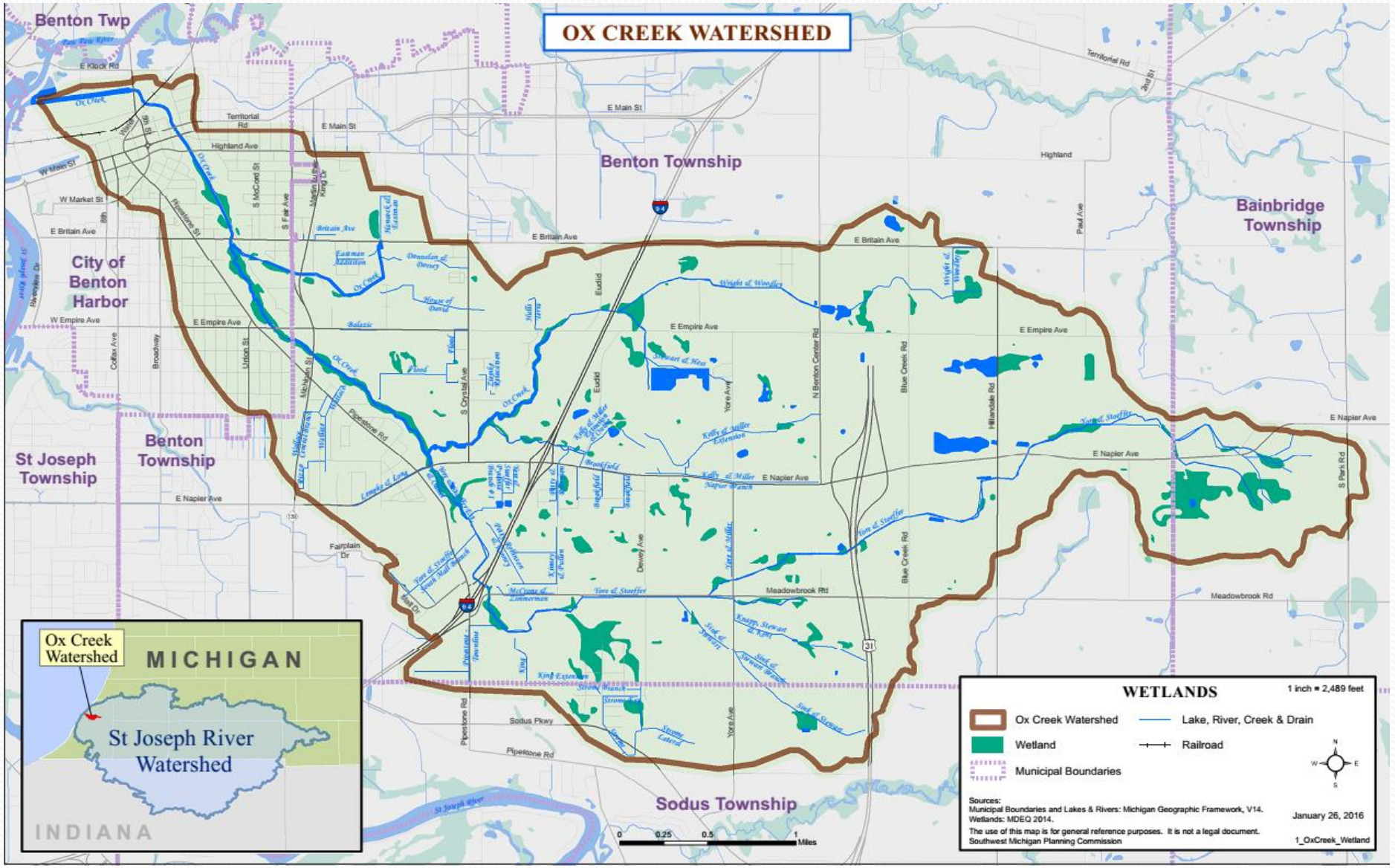

Lake Michigan College
Photo by John Penrod


Search Google Maps
Lake Michigan College
S Benton Center Rd
Hillandale Rd
E Napier Ave
Meadowbrook Rd
31
24
94

Agricultural Landowners

Best Management Practices

- Cover Crop
- No Till /Conservation Tillage
- Filter Strips
- Wetland Restoration


OX CREEK WATERSHED
Benton Twp
Benton Township
City of Benton Harbor
St Joseph Township
Benton Township
Bainbridge Township
Sodus Township
Ox Creek Watershed
MICHIGAN
St Joseph River Watershed
INDIANA
WETLANDS
1 inch = 2,489 feet
Ox Creek Watershed
Wetland
Municipal Boundaries
Lake, River, Creek & Drain
Railroad
Sources:
Municipal Boundaries and Lakes & Rivers: Michigan Geographic Framework, V14.
Wetlands: MDEQ 2014.
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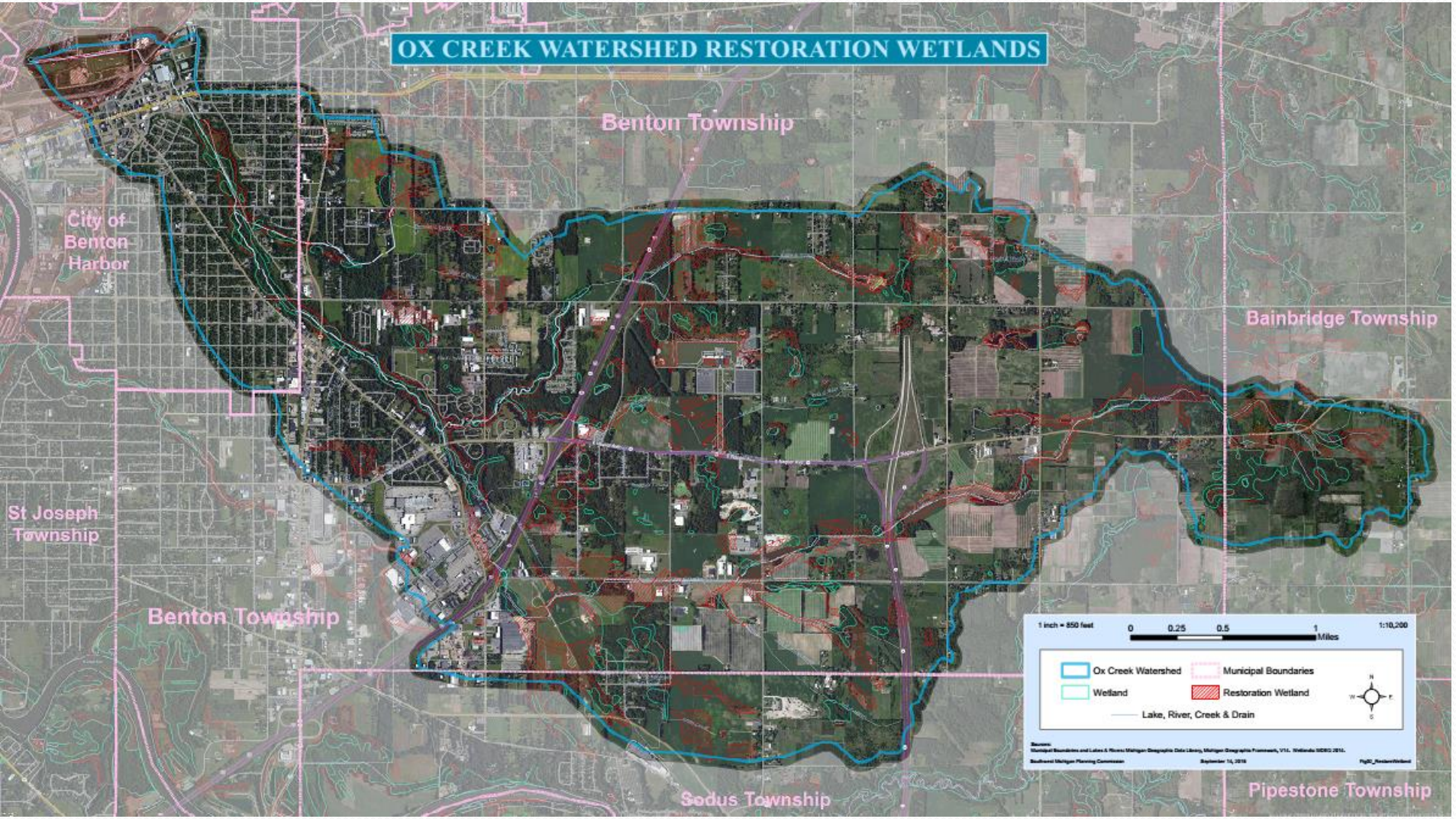
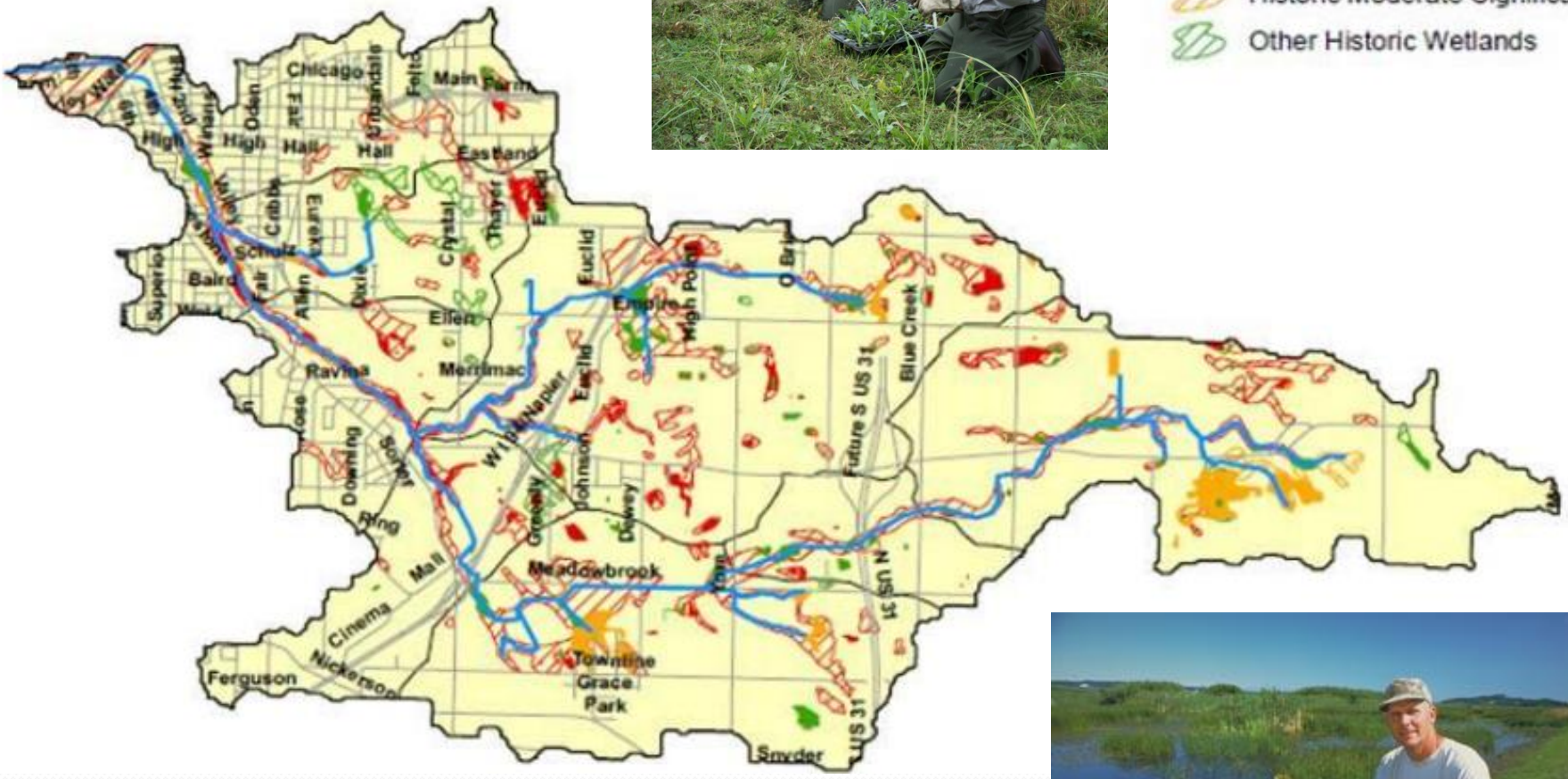
Southwest Michigan Planning Commission
January 26, 2016
1_OxCreek_Wetland
0 0.25 0.5 1 Miles

Wetland Acres Loss	Sediment Retention Loss	Floodwater Mitigation Loss
72%	85%	78%



Sediment Retention Wetlands

- Existing High Significance
- Existing Moderate Significance
- Other Existing Wetlands
- Historic High Significance
- Historic Moderate Significance
- Other Historic Wetlands



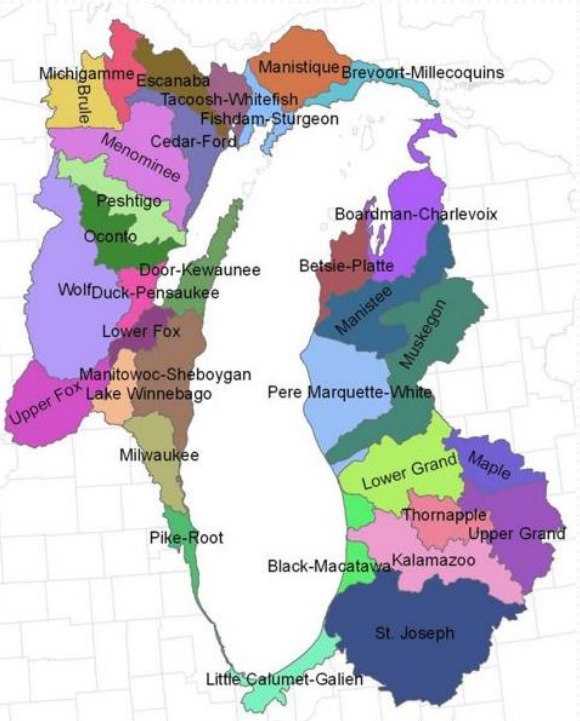
What can we do to Improve Ox Creek?

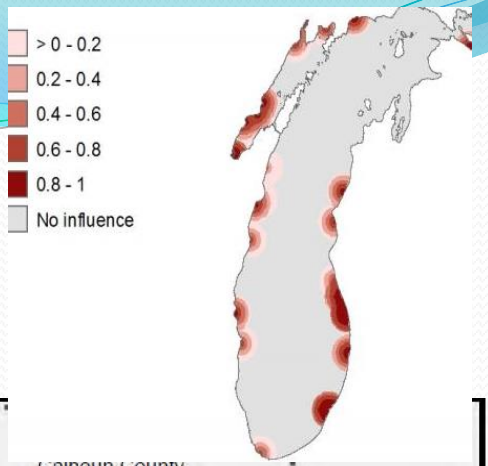
- Implement **urban stormwater best management practices** including rain gardens, swales, green roofs, bioretention areas, and native plantings.

- Ensure **septic systems** and **sanitary sewer infrastructure** are being maintained.

- Implement **agricultural best management practices** to reduce sediment and nutrient runoff and restore hydrology. Practices include cover crop, no-till, filter strips, grassed waterways, wetland restoration and protection, drain tile management and two stage ditches.

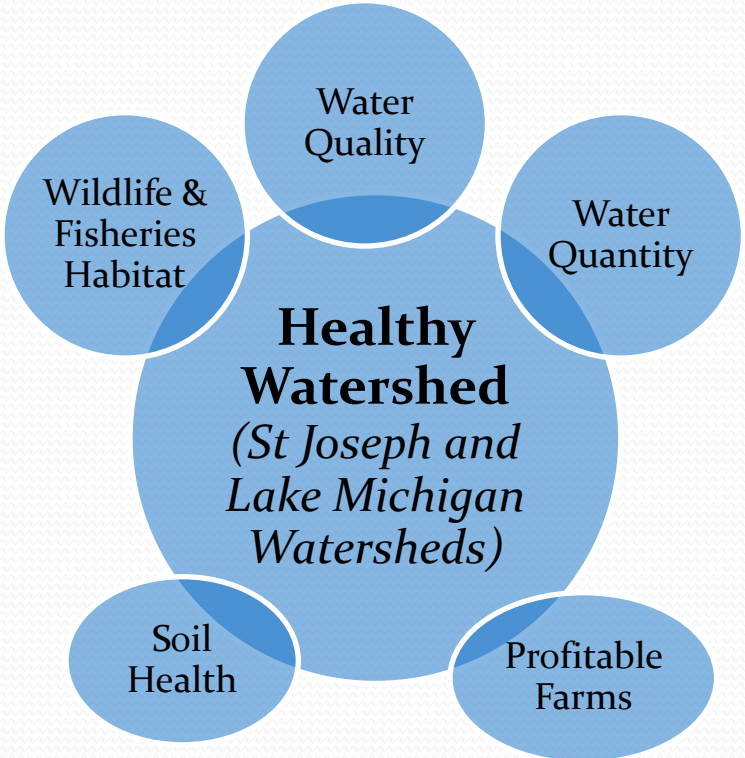
St. Joseph River Watershed

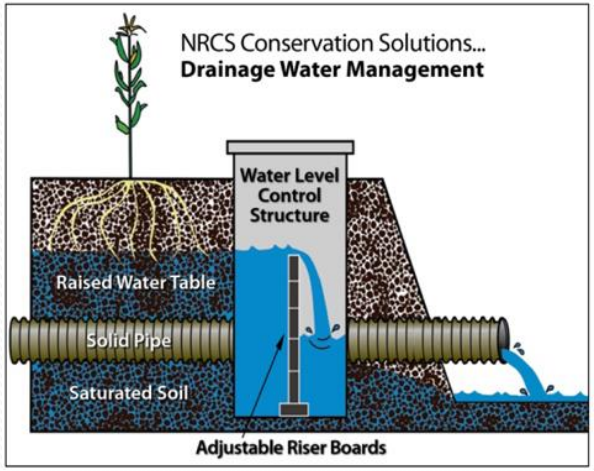




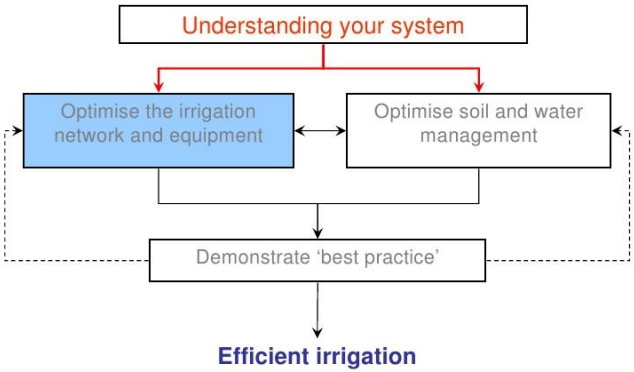
RCPP Cost Share

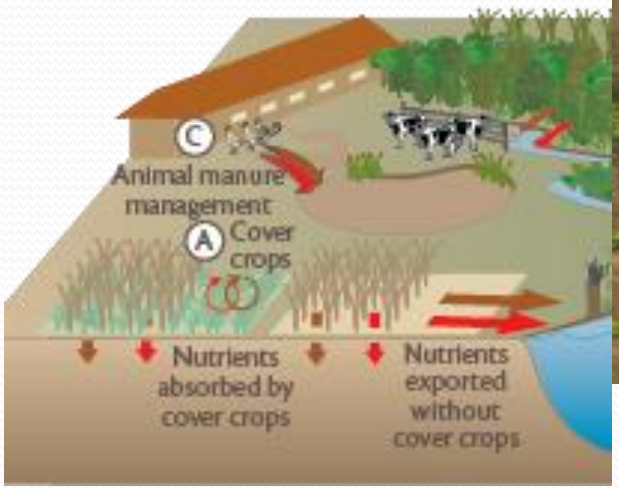
- **Farm Bill funds dedicated to SJRW through end of FY19**
  - $4,080,000 - EQIP
  - $1,360,000 - ACEP – WRE



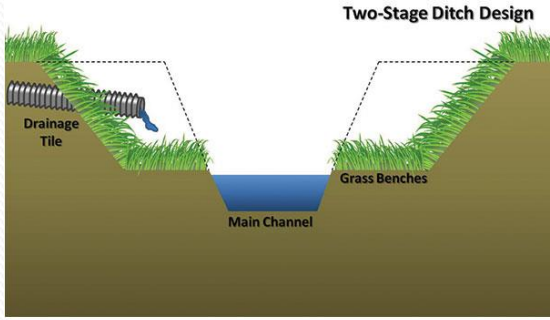

NRCS Conservation Solutions...
Drainage Water Management
Water Level Control Structure
Raised Water Table
Solid Pipe
Saturated Soil
Adjustable Riser Boards

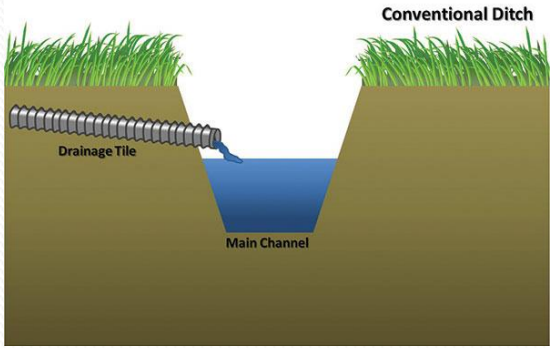

WINDBREAKS
RIPARIAN FOREST BUFFERS
FILTER STRIPS
WETLAND RESTORATIONS
GRASS WATERWAYS


Understanding your system
Optimise the irrigation network and equipment
Optimise soil and water management
Demonstrate 'best practice'
Efficient irrigation


C
Animal manure management
A
Cover crops
Nutrients absorbed by cover crops
Nutrients exported without cover crops


healthy, productive soils
checklist for growers


Two-Stage Ditch Design
Drainage Tile
Grass Benches
Main Channel


Conventional Ditch
Drainage Tile
Main Channel

Expected Outcomes

- **Clean and Abundant Water**
  - Reduced sediment and nutrients
- **Better Habitat**
  - Restored wetlands
  - Increased pheasant/turkey/ waterfowl populations
  - Improved fisheries
- **Profitable Farms**

Who Can Help?

- **NRCS -** Enroll participants, provide engineering and technical assistance
  Conservation Districts- Direct producers to RCPP, provide technical assistance
- **Partners –** Promote practices
- **Producers –** Plan and Implement practices

Questions?

Land Use / Land Cover	Subwatershed Unit ID								
	A	B	C	D	E	F	G	H	I
Open Water	2	0	0	0	1	0	0	0	0
Developed, Open	64	26	332	201	628	240	475	410	20
Developed, Low-Intensity	77	20	290	137	256	183	260	370	28
Developed, Medium-Intensity	8	1	67	217	114	145	72	185	33
Developed, High Intensity	0	0	49	137	40	75	1	49	21
Barren Land	4	2	17	0	15	0	0	0	0
Deciduous Forest	152	15	145	61	200	46	32	21	0
Evergreen Forest	3	0	0	1	48	0	0	0	0
Mixed forest	1	0	2	4	10	1	1	1	0
Shrub/Scrub	0	1	8	1	0	0	0	1	0
Grassland/Herbaceous	74	36	110	10	45	0	0	2	0
Pasture/Hay	329	128	63	0	292	0	11	5	0
Cultivated Crops	1,301	220	590	12	847	0	4	0	0
Woody Wetlands	134	16	80	21	95	35	39	16	1
Emergent Herbaceous Wetlands	1	0	2	3	9	0	0	0	1
TOTAL	2,150	465	1,755	805	2,600	725	895	1,060	104

Based on the data collected as a result of investigative activities conducted at the Ox Creek and Hall Park site, the following GRCC have been exceeded:

- GRCC for Drinking Water Protection: arsenic, cadmium, chromium, lead, and benzene.
- GRCC for Groundwater Surface Water Interface: chromium, mercury, selenium, silver, fluoranthene, and phenanthrene.
- GRCC for Direct Contact: arsenic, lead, and benzo(a)pyrene.