

Smart Assessment: BMP Certification Program

County Drain Assessments



Joe Parman
Van Buren County Drain Commissioner

Special Thanks to Matt Meersman
VBC Conservation District

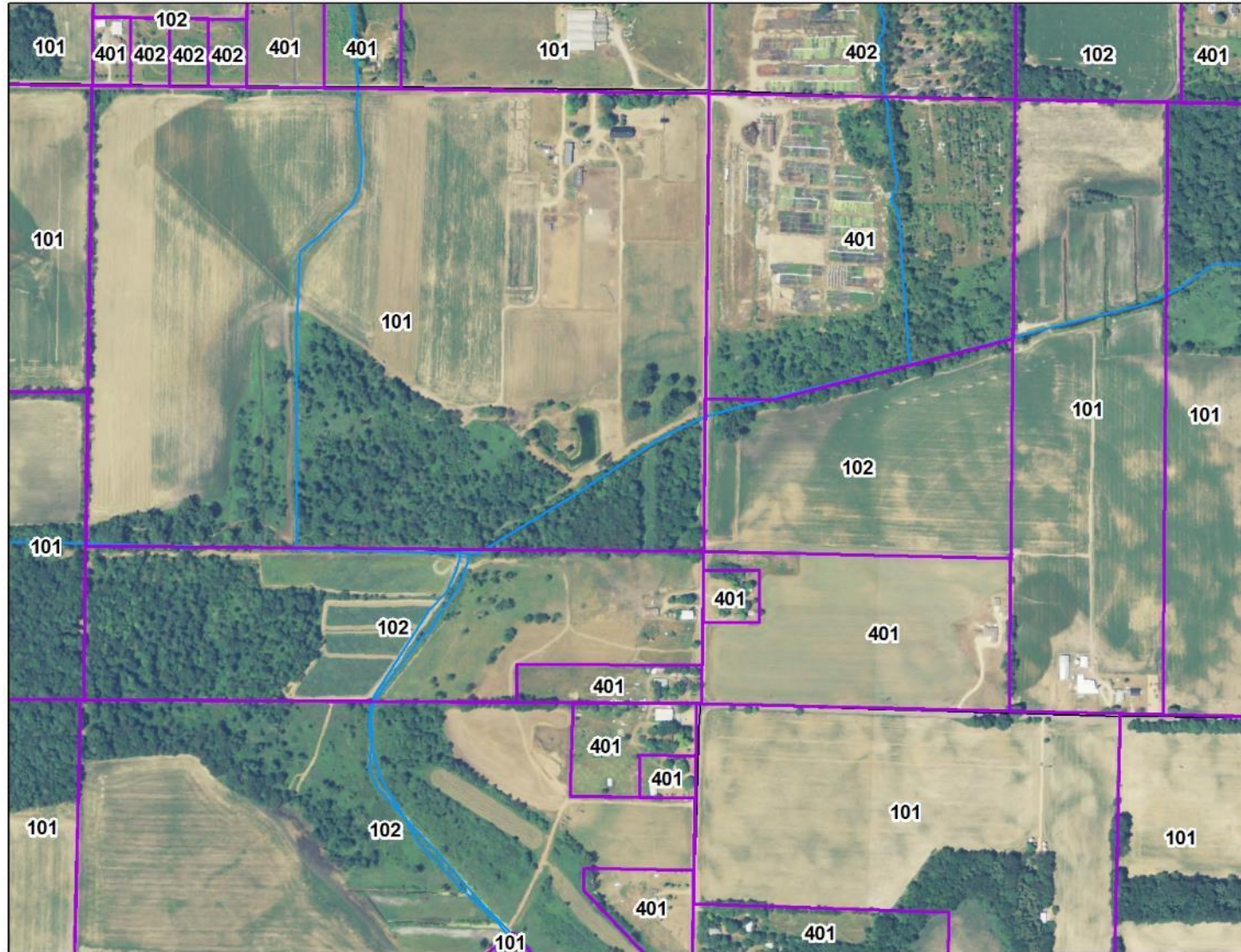
Drain Assessment Methodology

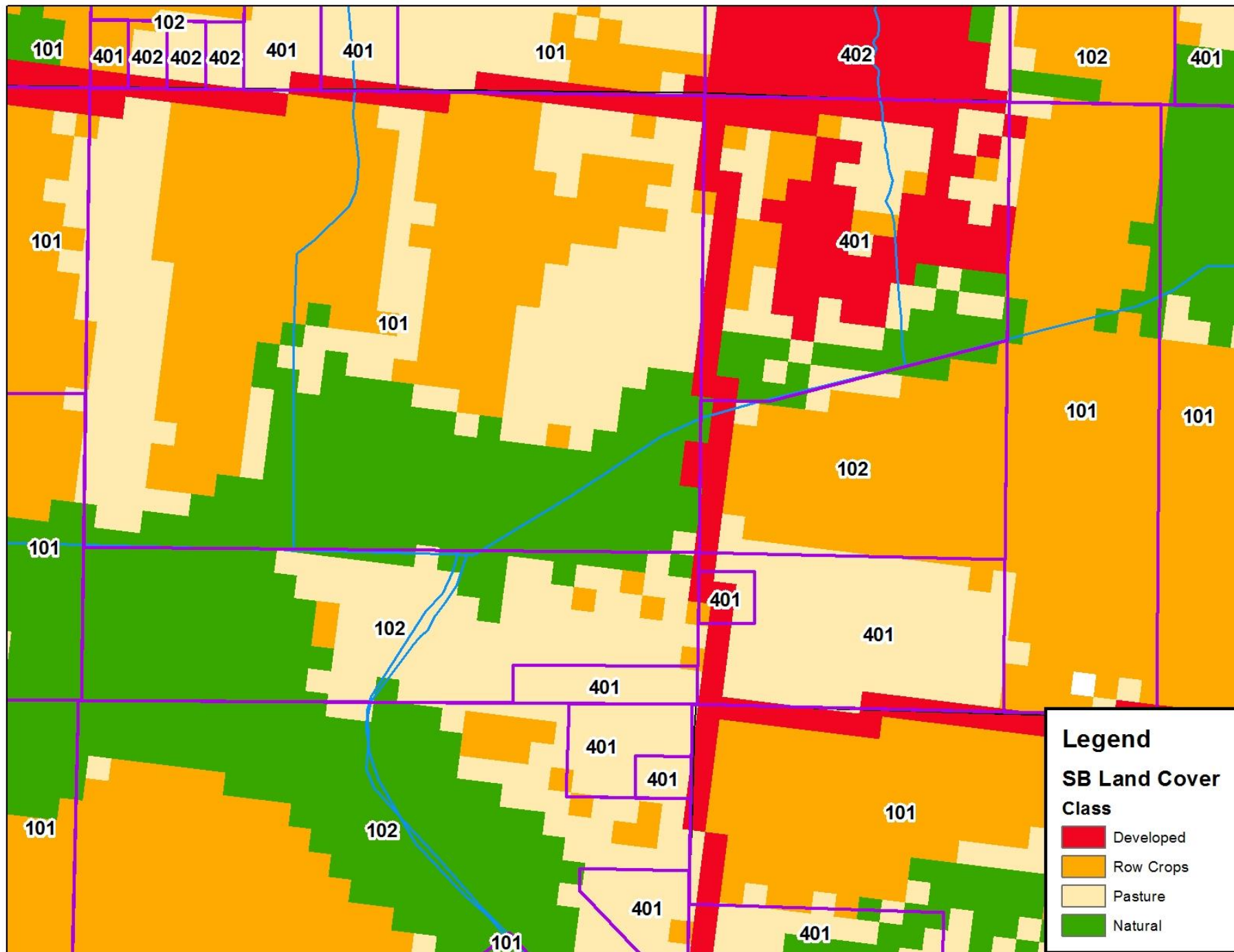
- Drain assessments are based on an individual parcels “benefit derived” from a county drain
- A parcels “benefit derived” is established as a percent apportionment within a drainage district based on several factors;
- Standard factors used in drain assessments may included the size of a parcel, land use, proximity to the drain, and location of the property within the district
- The new methodology uses land cover data from USDA know as the “National Cropland Data Layer”

Apportionment Factors



Use Factor – Land Cover

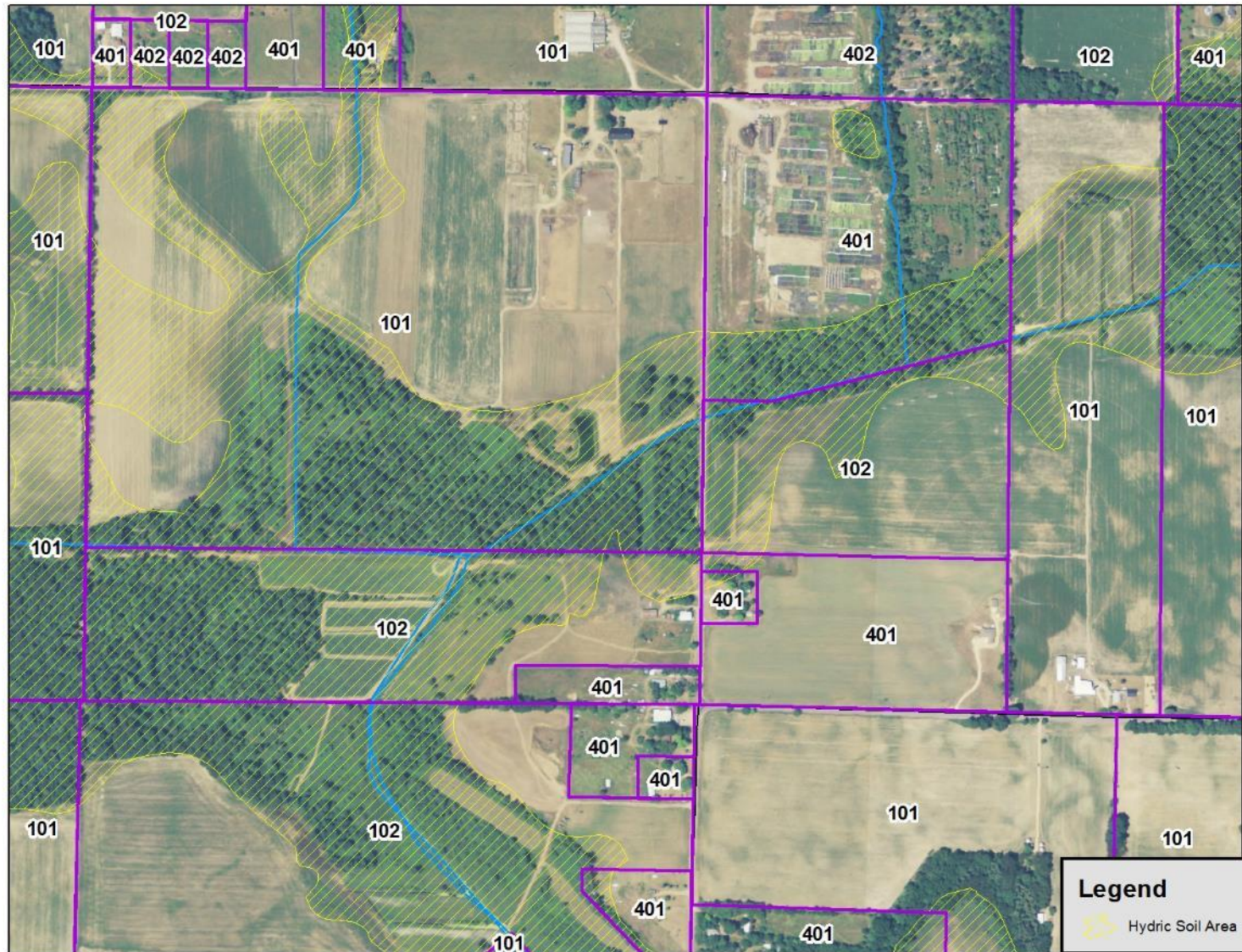




Land Cover Classifications

- Natural Hydric Acres X 0.245
- Natural Upland Acres X 0.245
- Pasture/Hay/Treecrop Hydric Acres X 0.5 (plus up to 30% reduction from certified BMPs)
- Pasture/Hay/Treecrop Upland Acres X 0.35 (plus up to 30% reduction from certified BMPs)
- Rowcrop/Berry Hydric Acres X 1 (plus up to 50% reduction from certified BMPs)
- Rowcrop/Berry Upland Acres X 0.7 (plus up to 50% reduction from certified BMPs)
- Developed Hydric Acres X 1
- Developed Upland Acres X .7

Need Factor – Hydric Soils



Management Factor – Runoff Reduction



Agricultural BMP's Translate Into Lower Drain Assessments

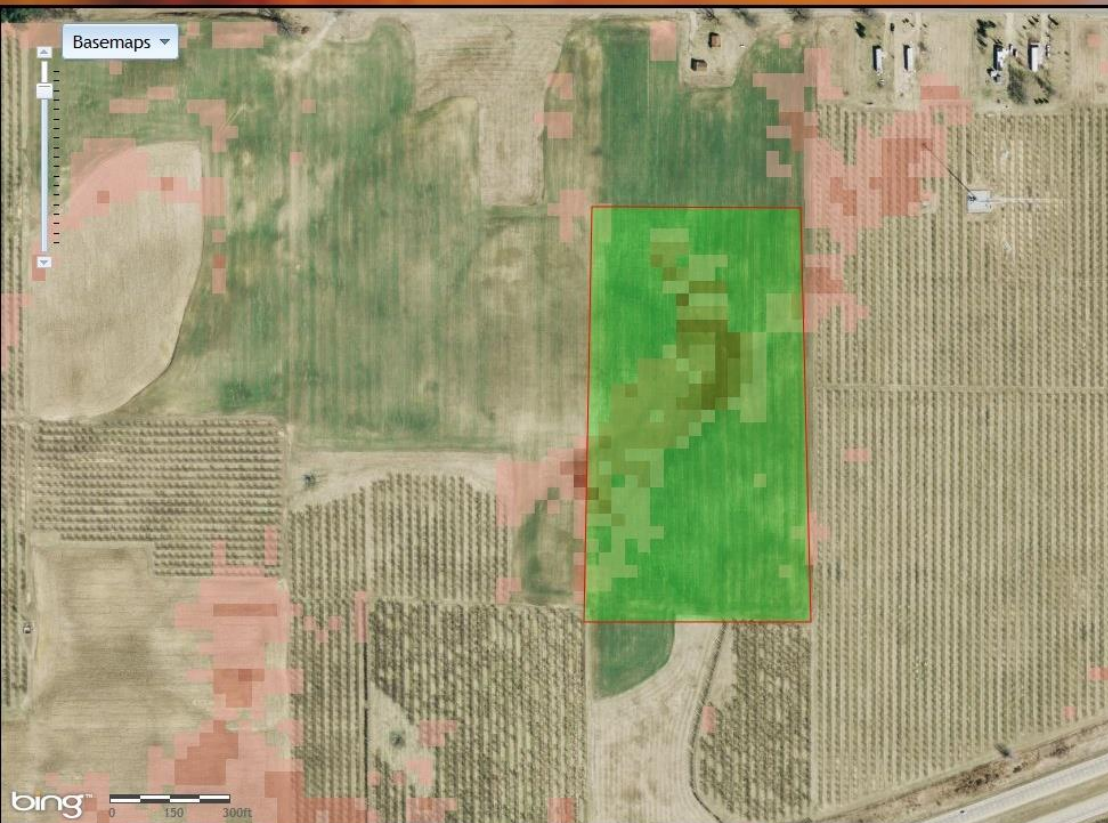
- Agricultural property owners can lower drain assessments through improved BMP's: Cover crops, Filter Strips, Mulch Till, and No-Till
- Improved BMP's will reduce the amount of sediment runoff into the county drain
- Sediment reductions are calculated by using the Sediment Calculator developed by The Nature Conservancy and MSU
- Each BMP is tied to a percentage that is then used in the property owners benefit factor for their drain assessment
- Van Buren Conservation District staff reviews and verifies all practices before they are applied to the next drain assessment

Model linked to GIS database and user interface with mapping software

www.iwr.msu.edu/sedcalc

Sediment Calculator

for the Paw Paw River Watershed



Developed by the Institute of Water Research at Michigan State Un

Calculate baseline change

Draw an area of land-cover change or a best-management practice (BMP) to see how erosion and/or sediment loading may change when compared to a best estimate of the current condition.

Digitizer: Acres: 13.4

Land cover / BMP:

grass

Optional parameters

2 RUSLE C-Factor: 0.005

➤ RUSLE K-Factor:

➤ RUSLE LS-Factor:

2 RUSLE R-Factor:

2 Surface roughness (Manning's n): 0.24

? Delivery ratio:

Calculate Estimated time to calculate: 11

Results:

Seconds elapsed: 11

Calculation complete:

Initial erosion in affected areas: 66.5 tons/yr

Calculated erosion: 22.2 tons/yr

Erosion **REDUCTION**: 44.3 tons/yr

Initial sediment loading in affected areas: 11.1 tons/yr

Calculated sediment loading: 2.3 tons/yr

Sediment load **REDUCTION**: 8.9 tons/yr

Calculation took 8 seconds

Benefit/Apportionment - Spreadsheet

PARCEL_NO	Pasture; Hayland; Treecrop Mgmt Factor	Rowcrop; Berry Mgmt Factor	Natural Hydric Acres	Natural Upland Acres	Pasture; Hayland; Treecrop Hydric Acres	Pasture; Hayland; Treecrop Upland Acres	Rowcrop Berry Hydric Acres	Rowcrop Berry Upland Acres	Developed Hydric Acres	Developed Upland Acres	Assessed Acres	Exempt	(Benefit) Apportionment
80-14-031-006-00	1.00	1.00	0.95	0.20	0.00	0.20	0.00	0.00	2.08	0.00	3.44	Yes	0.000000
80-14-430-011-00	1.00	1.00	0.19	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.57	Yes	0.000000
80-08-006-002-74	1.00	1.00	0.00	0.00	0.00	1.22	0.00	0.00	0.00	0.17	1.39	Yes	0.000000
80-14-670-010-30	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	No	0.000001
80-14-670-009-10	1.00	1.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02	No	0.000002
80-14-670-012-00	1.00	1.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.04	No	0.000003
80-14-100-041-00	1.00	1.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05	No	0.000004
80-14-100-041-50	1.00	1.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05	No	0.000004
80-14-430-020-00	1.00	1.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	No	0.000006
80-14-430-021-00	1.00	1.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.07	No	0.000006
80-14-430-019-00	1.00	1.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.08	No	0.000007
80-14-430-047-00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	No	0.000007
80-14-100-048-00	1.00	1.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	No	0.000007
80-14-033-001-55	0.74	0.74	0.22	0.00	1.11	12.62	7.57	12.62	1.56	1.99	37.70	No	0.006275
80-14-032-006-10	1.00	1.00	12.21	2.26	1.05	43.27	0.00	0.00	0.00	0.00	58.80	No	0.006405
80-14-034-014-00	0.78	0.78	10.17	0.00	0.88	1.14	2.65	19.58	1.33	2.96	38.71	No	0.006435
80-14-034-010-10	1.00	1.00	6.06	0.46	2.81	7.98	0.65	3.88	0.43	13.91	36.18	No	0.006443
80-14-033-002-01	1.00	1.00	8.00	1.56	2.11	4.67	0.00	20.24	0.00	0.89	37.46	No	0.006606
80-08-004-001-02	0.70	0.50	27.26	0.00	8.27	4.33	3.13	21.89	0.67	0.23	65.78	No	0.006896
80-08-005-011-00	1.00	1.00	12.12	0.21	10.10	1.50	3.14	12.86	0.00	0.00	39.94	No	0.006914
80-14-034-001-00	1.00	1.00	0.49	2.89	1.94	12.45	0.00	2.00	0.49	19.34	39.59	No	0.007192
80-14-034-013-00	0.77	0.77	2.40	0.68	0.22	0.45	10.24	25.02	0.00	0.68	39.68	No	0.007600
80-08-005-010-02	1.00	1.00	0.22	0.00	0.22	0.00	7.58	21.24	0.22	0.22	29.71	No	0.007662
80-08-007-011-00	1.00	1.00	0.00	0.00	0.26	0.90	0.53	31.40	0.00	1.11	34.21	No	0.007911
80-10-002-005-10	1.00	1.00	34.76	30.46	1.77	4.93	0.22	6.05	0.44	1.34	79.98	No	0.008142
80-14-033-007-00	1.00	1.00	0.00	0.00	2.74	2.47	7.77	64.54	0.69	2.22	80.42	No	0.019138
80-14-031-025-00	1.00	1.00	7.57	0.22	0.46	0.22	16.07	52.11	1.84	1.98	80.47	No	0.019325
80-14-034-017-00	1.00	1.00	3.36	3.08	0.90	9.03	32.26	28.85	0.00	2.42	79.90	No	0.019777
80-10-001-002-10	1.00	1.00	0.45	3.34	3.79	2.44	7.14	65.35	1.12	3.11	86.74	No	0.019950
80-08-004-008-00	1.00	1.00	7.07	1.11	0.66	0.44	14.59	59.63	0.00	1.77	85.27	No	0.020017
80-14-033-009-00	1.00	1.00	32.59	0.47	12.64	23.39	14.19	32.08	2.00	2.67	120.02	No	0.021036
80-14-034-002-10	1.00	1.00	5.67	0.00	0.65	0.46	44.93	20.71	1.96	0.69	75.07	No	0.021245
80-14-032-017-01	1.00	1.00	3.35	0.22	17.84	67.35	5.58	52.68	0.45	5.78	153.25	No	0.026769
80-14-032-015-00	1.00	1.00	3.86	23.39	2.03	2.47	4.47	114.90	1.02	5.17	157.32	No	0.032696

Why.....?

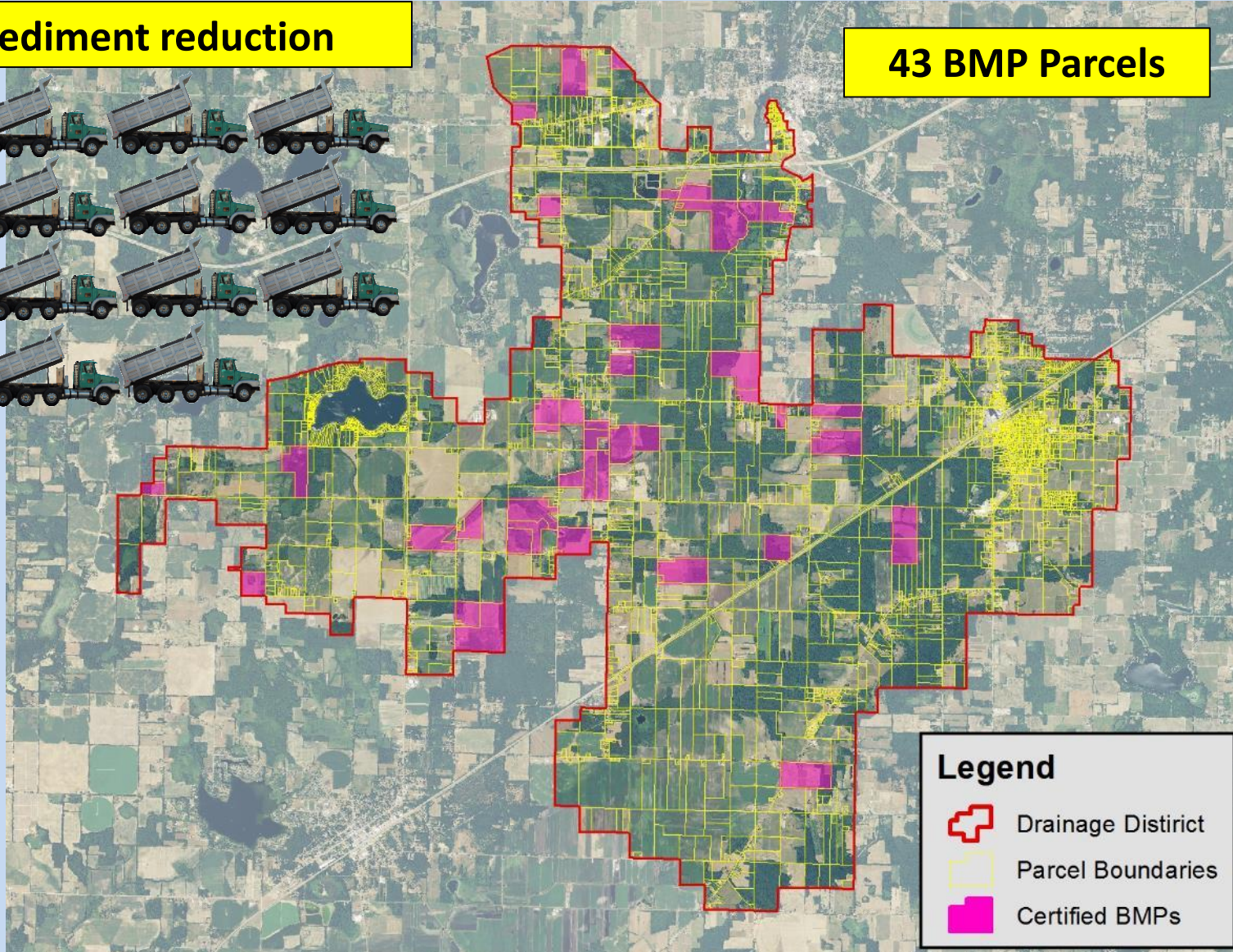
- Prevents Flooding - Water flow and storage is reduced when sediment accumulates in county drain
- Reduces Maintenance Costs – Drain maintenance for sediment removal uses heavy equipment translating to higher cost
- Future maintenance – Reducing sediment load with decrease the frequency of future maintenance projects
- Improved water ecology/quality

Pilot Project Outcomes

192 tons of sediment reduction



43 BMP Parcels



Legend

-  Drainage District
-  Parcel Boundaries
-  Certified BMPs



21% savings



PREVENTION + PROTECTION = WIN, WIN!



PARTNERSHIPS!