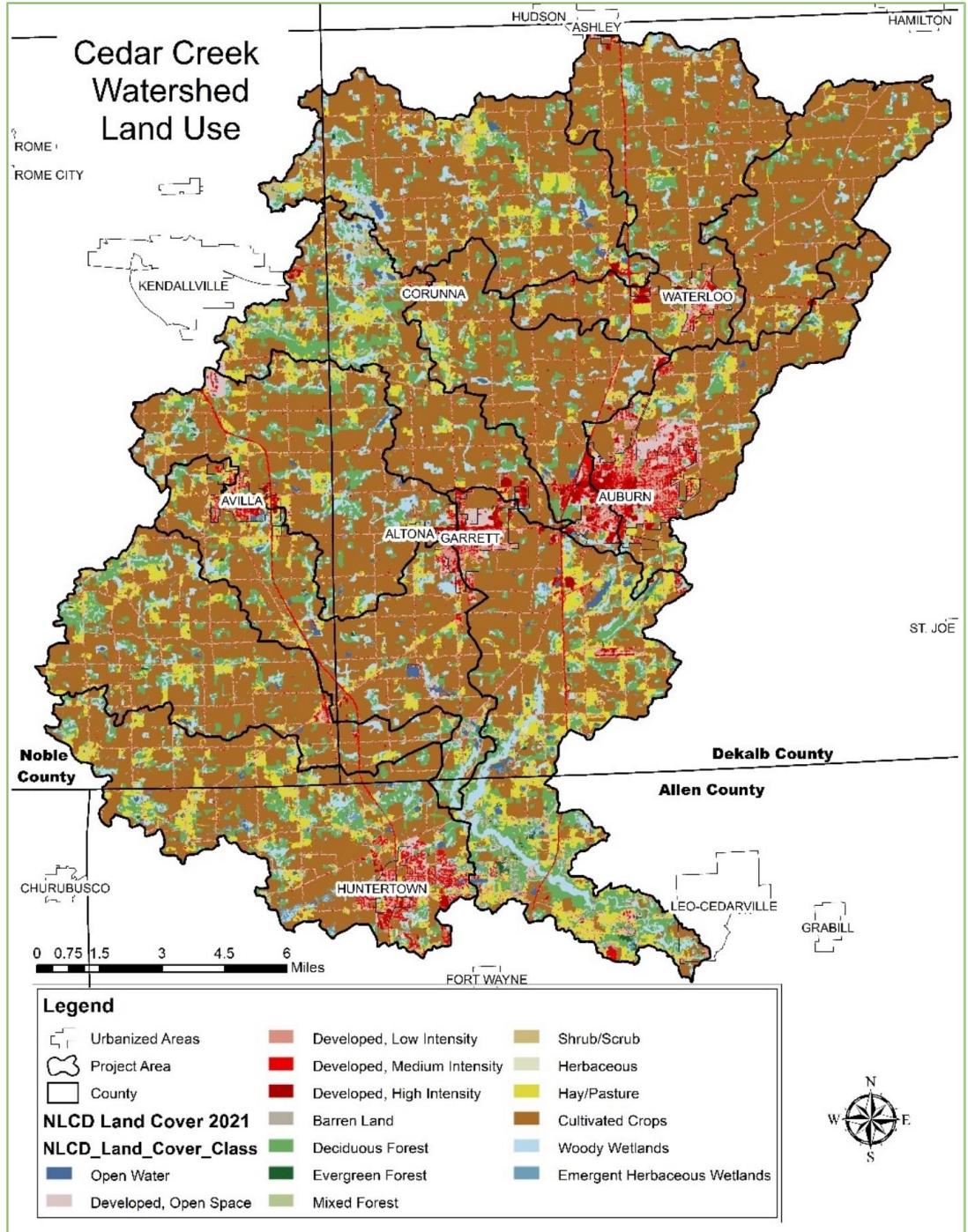
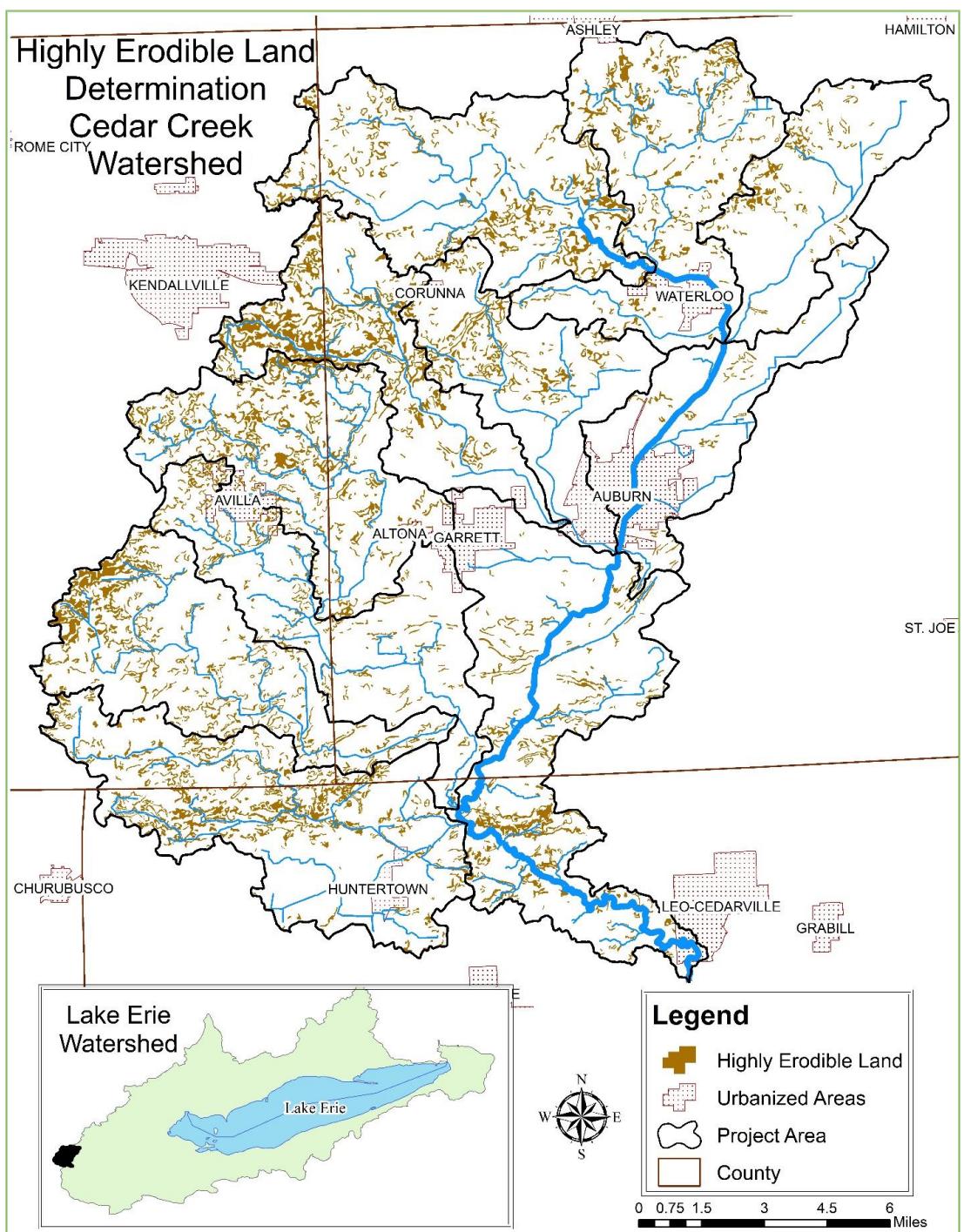


Cedar Creek Land Use and Water Quality Analysis



Hydric Soil Classification	% of Watershed
Non-Hydric	22.4%
Predominantly Non-Hydric	44.1%
Predominantly Hydric	9.0%
Hydric	24.5%



LAGRANGE

HUDSON STEUBEN

ASHLEY HAMILTON

Cedar Creek Hydric Soils

ROME CITY
ROME CITY

KENDALLVILLE

NOBLE

AVILLA

CORUNNA

DEKALB

AUBURN

ALTONA

GARRETT

ST. JOE

CHURUBUSCO
WHITEY

HUNTERTOWN

ALLEN

LEO-CEDARVILLE

GRABILL

Lake Erie Watershed

Project Area

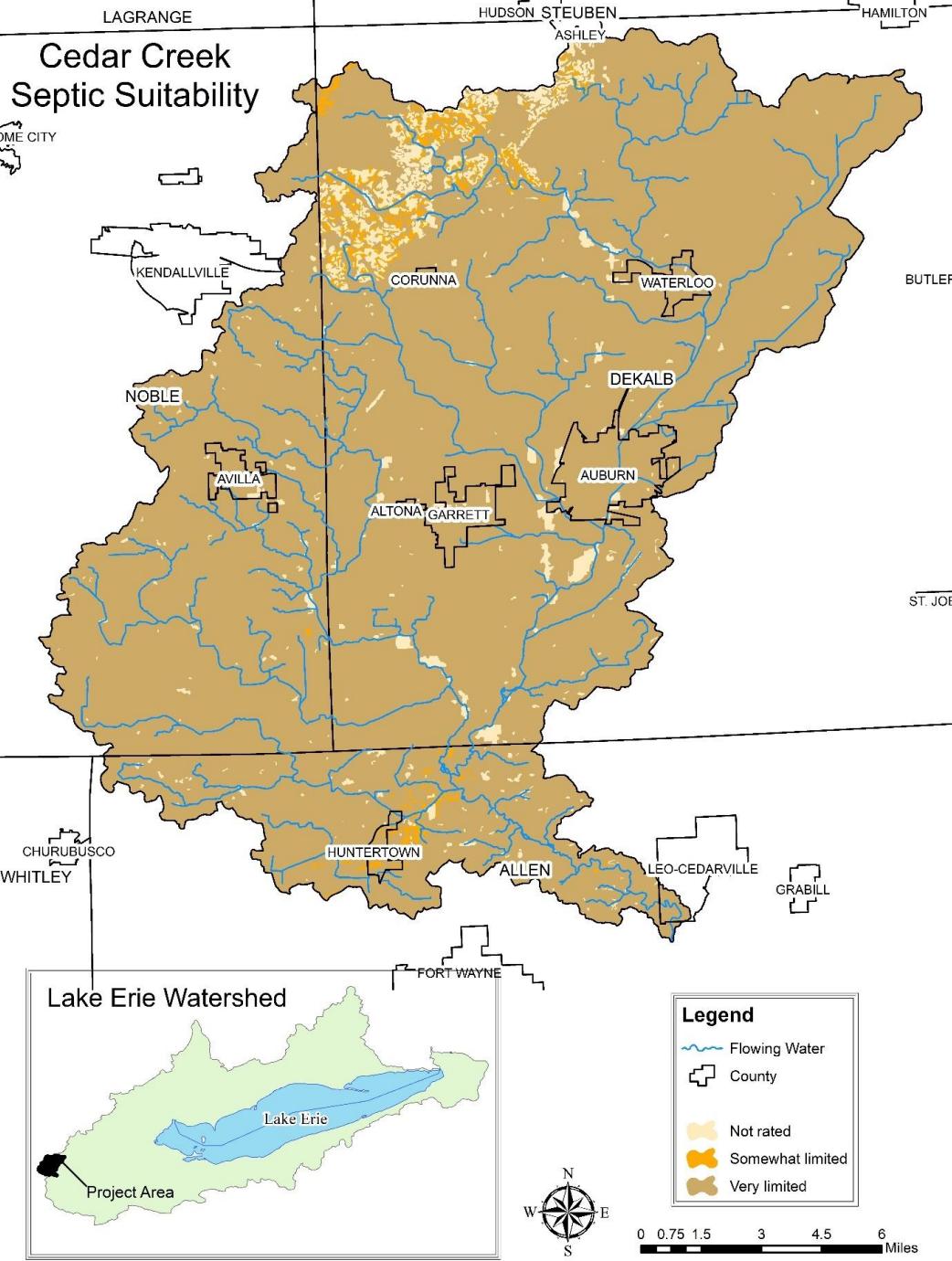
Lake Erie

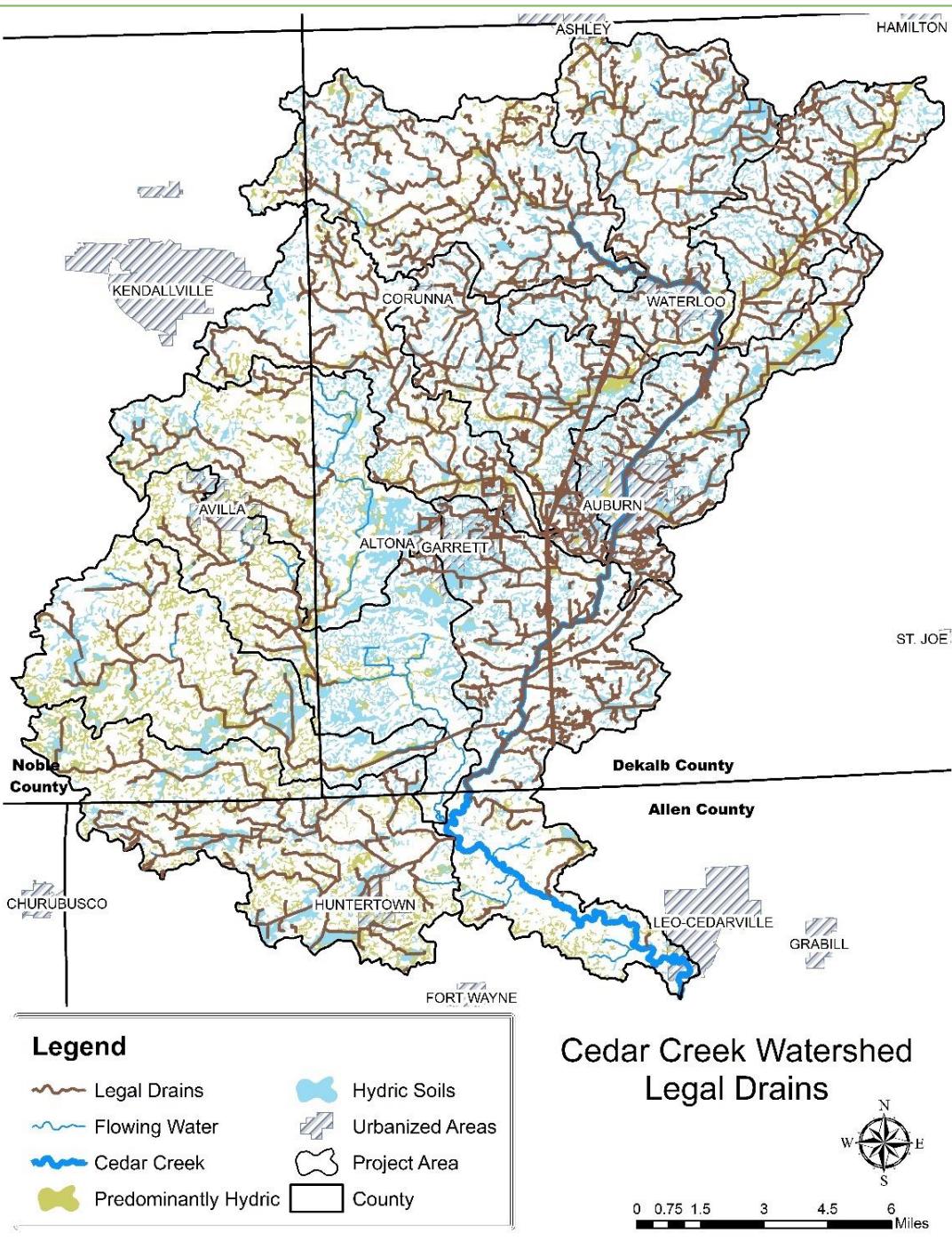


0 0.75 1.5 3 4.5 6 Miles

Legend

- County
- Flowing Water
- Predominantly Non-Hydric
- Non-Hydric
- Predominantly Hydric
- Hydric Soils





Legal Drains: 733.22 miles

Streams/Rivers: 200.07 miles

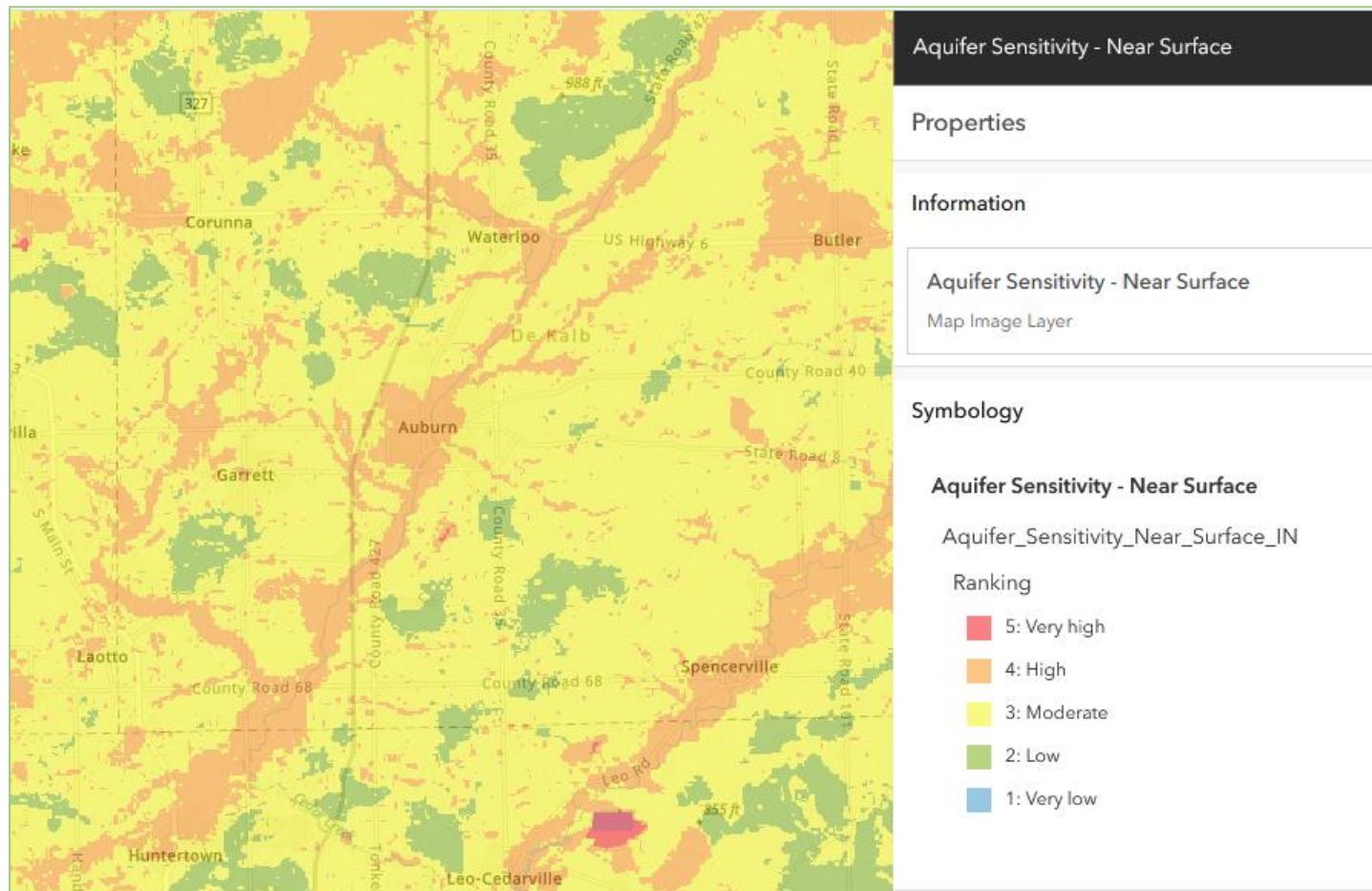
Connectors: 0.17 miles

Canal/Ditch: 91.14 miles

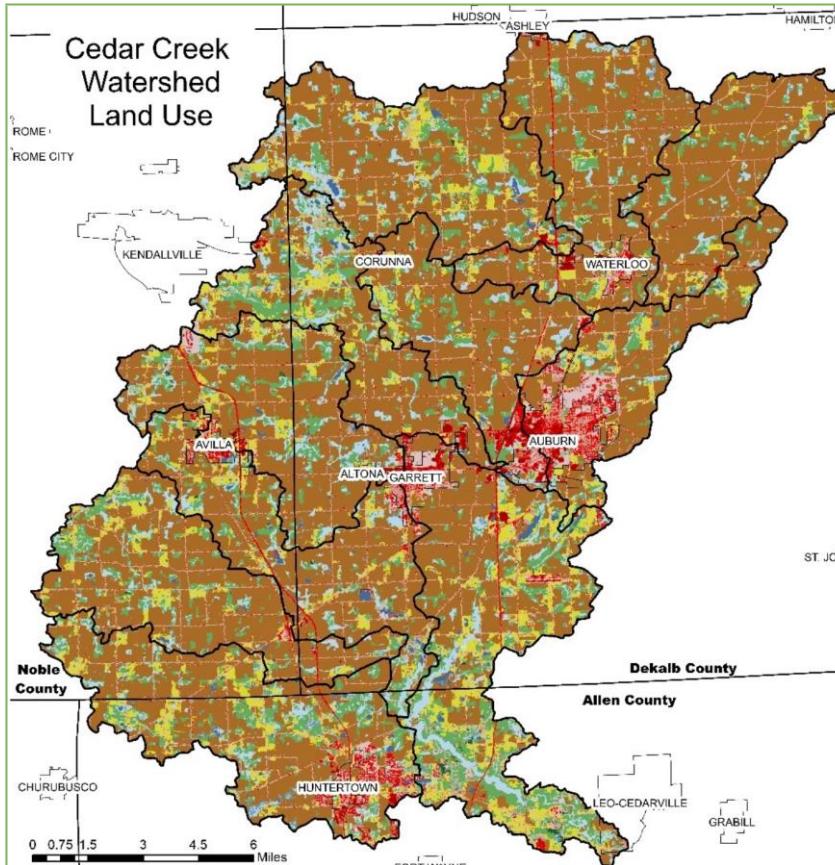
Artificial Path: 18.34 miles

There are over 400 miles more legal drains than surface waters indicating extensive use of tile drainage

System Name	Susceptibility to Contamination	Population Served	Pump Rate (GPD)	HUC 12
Hunertown Water Works	Moderate	7400	615916	41000030706
Auburn Water Dept.	Moderate	12800	165000	41000030604
Ben Mar Chateau	Low	166	No data available	41000030707
Garrett Water Utility	Moderate	6390	490000	41000030707
Waterloo Water Works	Moderate	2242	160000	41000030602
Corunna Water Utility	Low	255	20000	41000030701



County	Allen			DeKalb			Noble		
# of Fields	497			496			464		
Crop	Beans	Corn	Hay	Beans	Corn	Hay	Beans	Corn	Hay
No-Till	64.6%	81.3%		87.3%	62.4%	55.0%	92.1%	83.2%	
Reduced Till	<1	3.9%		6.1%	36.2%	0.0%	3.2%	6.0%	
Conventional Till									
	34.2%	13.5%	4.2%	6.5%	3.5%	1.7%	4.2%	9.8%	3.9%
Unknown (U)			95.8%			43.3%			96.1%
Cover Crops	13.1%	6.5%	2.1%	11.8%	7.1%	U	29.1%	11.4%	0.0%

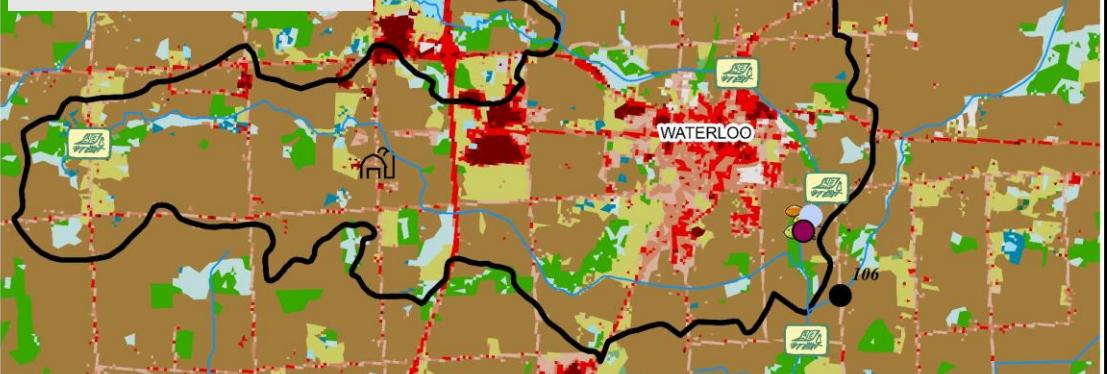


0.0176.35 0.7 1.05 1.4 Miles



Windshield Survey:
Single Family – Severe Erosion;
<10 buffer
Agriculture – Severe Erosion;
<10 buffer

NPDES – 8
CAFO - 1



- SJRWI - Sample Sites
- IDEM Sample Site - Biological
- IDEM Sample Site - Chemistry
- IDEM Sampe Site - Fish

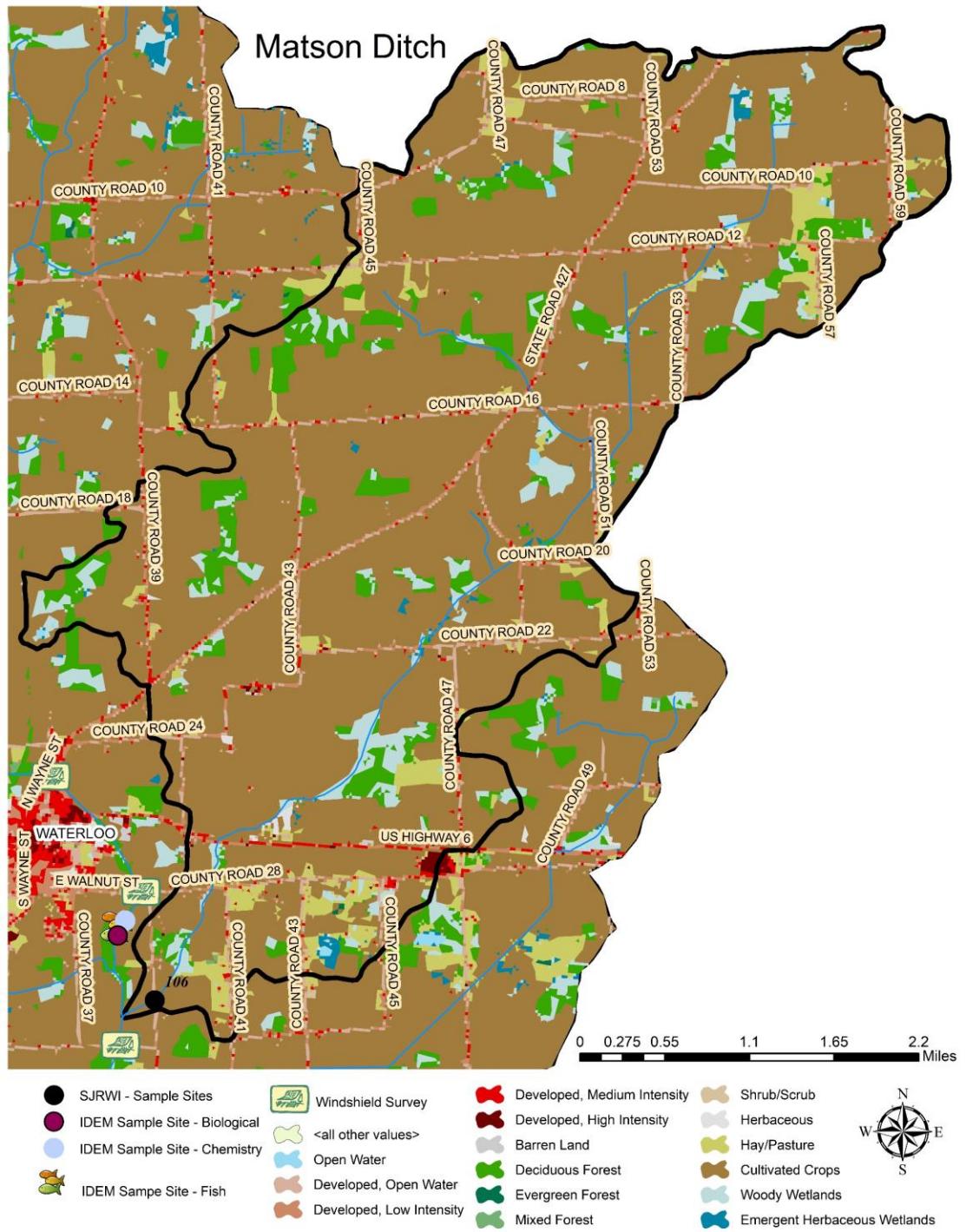
- Windshield Survey
- <all other values>
- Open Water
- Developed, Open Water
- Developed, Low Intensity

- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Herbaceous
- Hay/Pasture
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

Dibbling Ditch Cedar Creek

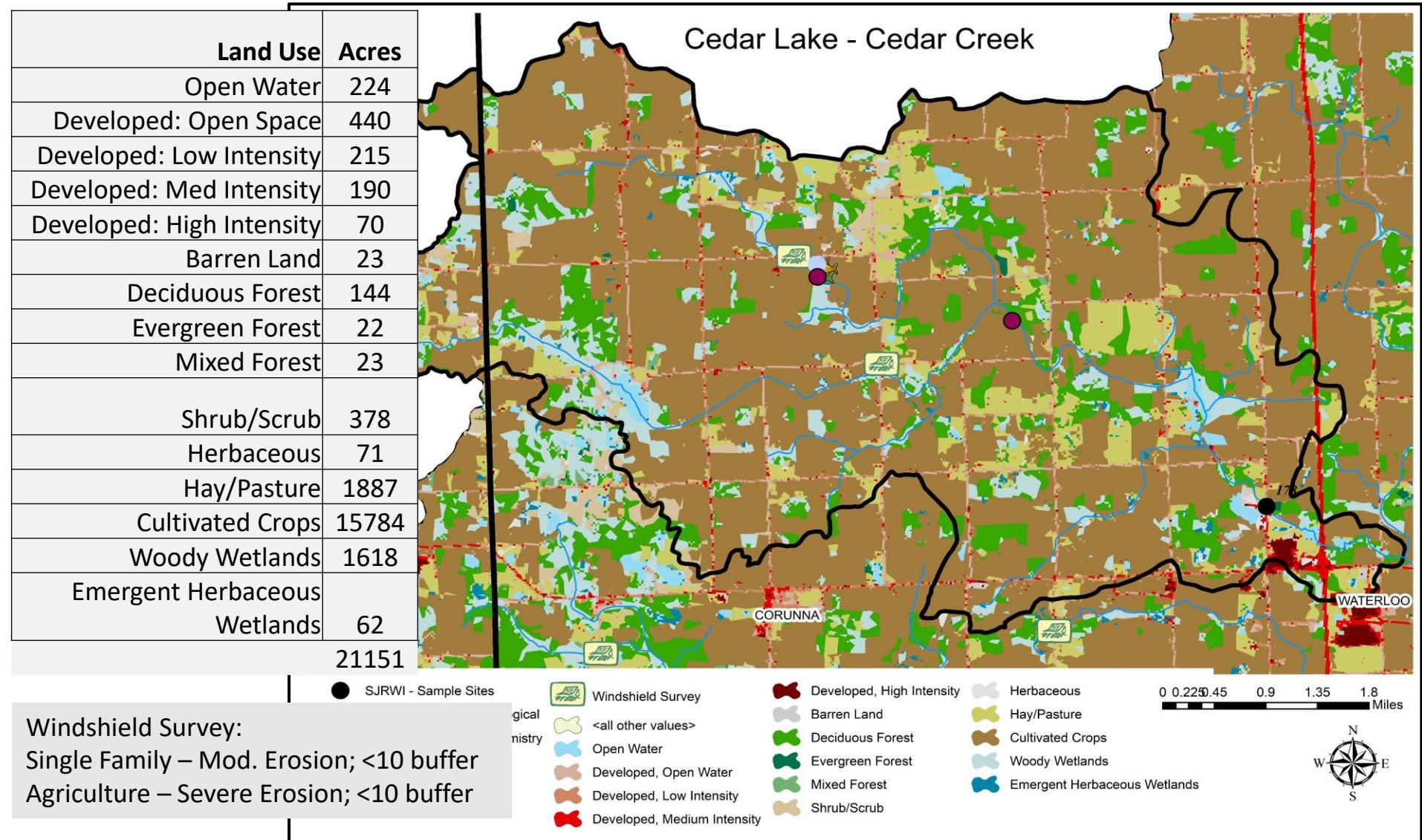
Land Use	Acres
Open Water	16
Developed: Open Space	416
Developed: Low Intensity	483
Developed: Med Intensity	439
Developed: High Intensity	158
Barren Land	11
Deciduous Forest	1415
Evergreen Forest	17
Mixed Forest	18
Shrub/Scrub	25
Herbaceous	46
Hay/Pasture	913
Cultivated Crops	20161
Woody Wetlands	924
Emergent Herbaceous Wetlands	78
	25120

Parameter	Sample Avg	Target	Unit
PH	8.068	> 6 & < 9	
DO	10.7	> 5 & < 9	
Turbidity	4.51	< 10.4	NTU
Atrazine	0.219	< 3	ppb
E. Coli	140	235	CFU
TSS	8.429	< 25	ppm
DRP	0.06	< 0.05	ppm
N + N	2.1	< 1.6	ppm
Ammonia	0.084	< 0.21	ppm
		< 0.08 tribs;	
TP	0.3	< 0.30 main	ppm



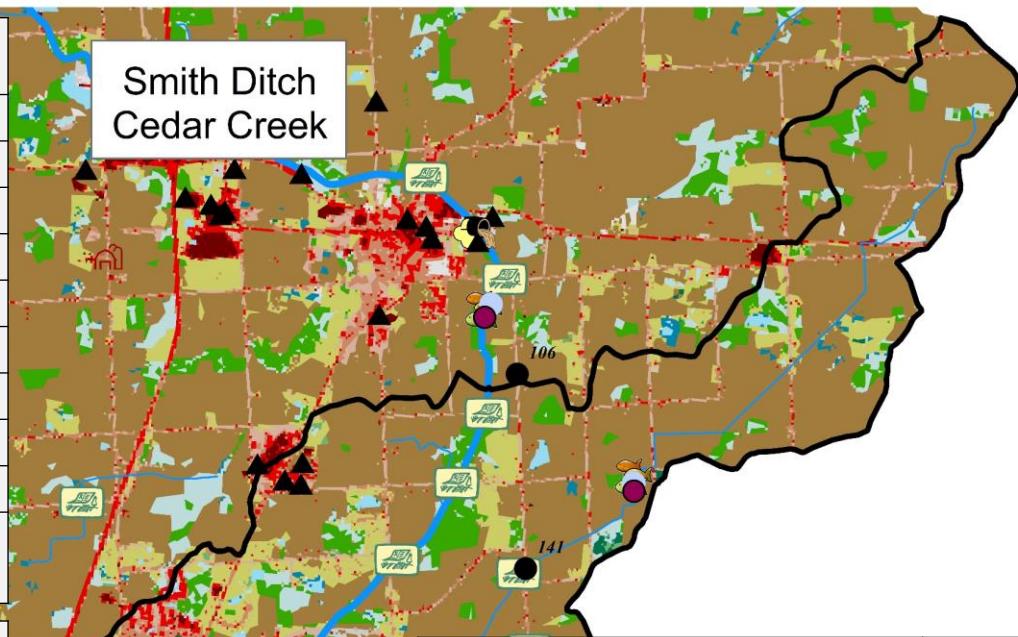
Land Use	Acres
Open Water	22
Developed: Open Space	219
Developed: Low Intensity	138
Developed: Med Intensity	32
Developed: High Intensity	16
Barren Land	1
Deciduous Forest	781
Evergreen Forest	2
Mixed Forest	6
Herbaceous	13
Hay/Pasture	491
Cultivated Crops	12495
Woody Wetlands	468
Emergent Herbaceous Wetlands	33
	14717

Parameter	Sample Avg	Target	Unit
PH	7.894	> 6 & < 9	
DO	10.325	> 5 & < 9	
Turbidity	4.394	< 10.4	NTU
Atrazine	0.501	< 3	ppb
E. Coli	287.69	235	CFU
TSS	6.423	< 25	ppm
DRP	0.0308	< 0.05	ppm
N + N	2.414	< 1.6	ppm
Ammonia	0.074	< 0.21	ppm
TP	0.262	< 0.08 tribs; < 0.30 mainstem	ppm



Parameter	PH	DO	Turbidity	Atrazine	E. Coli	TSS	DRP	N + N	Ammonia	TP
Sample Avg	7.779	7.822	7.384	0.171	187.14	10.85	0.031	1.507	0.124	0.29
Target	> 6 & < 9	> 5 & < 9	< 10.4	< 3	235	< 25	< 0.05	< 1.6	< 0.21	< 0.08 tribs; < 0.30 mainstem
Unit			NTU	ppb	CFU	ppm	ppm	ppm	ppm	ppm

Parameter	Sample 141	Target	Unit
PH	7.489	> 6 & < 9	
DO	7.001	> 5 & < 9	
Turbidity	7.124	< 10.4	NTU
Atrazine	0.296	< 3	ppb
E. Coli	172.143	235	CFU
TSS	8.425	< 25	ppm
DRP	0.042	< 0.05	ppm
N + N	2.737	< 1.6	ppm
Ammonia	0.124	< 0.21	ppm
TP	0.346	< 0.08 trib; < 0.30 mainstem	ppm



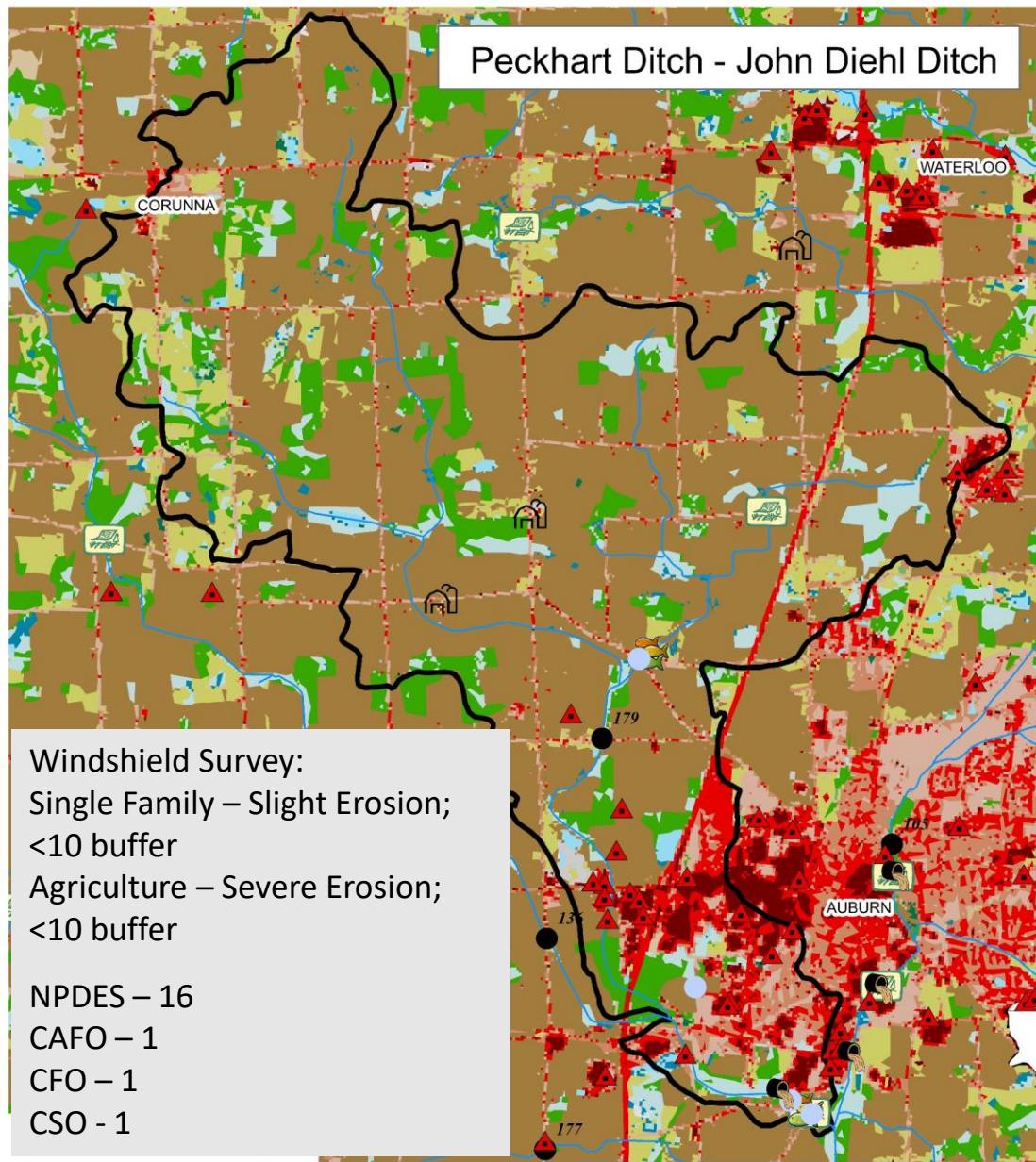
Parameter	Sample 105	Target	Unit
PH	8.25	> 6 & < 9	
DO	7.55	> 5 & < 9	
Turbidity	28.46	< 10.4	NTU
Atrazine	0.81	< 3	ppb
E. Coli	1304.81	235	CFU
TSS	23.98	< 25	ppm
DRP	0.0488	< 0.05	ppm
N + N	1.91	< 1.6	ppm
Ammonia	0.09	< 0.21	ppm
TP	0.13	< 0.08 trib; < 0.30 mainstem	ppm

Land Use	Acres
Open Water	70
Developed: Open Space	874
Developed: Low Intensity	1036
Developed: Med Intensity	1123
Developed: High Intensity	395
Barren Land	17
Deciduous Forest	872
Evergreen Forest	20
Mixed Forest	25
Shrub/Scrub	18
Herbaceous	9
Hay/Pasture	1203
Cultivated Crops	9499
Woody Wetlands	437
Emergent Herbaceous Wetlands	41
	15639

Windshield Survey:
Moderate – Severe Erosion; <10' to > 40' buffer
Single Family, Commercial, Parkland, Ag.
NPDES – 22; CSO – 1; SWPP - 1

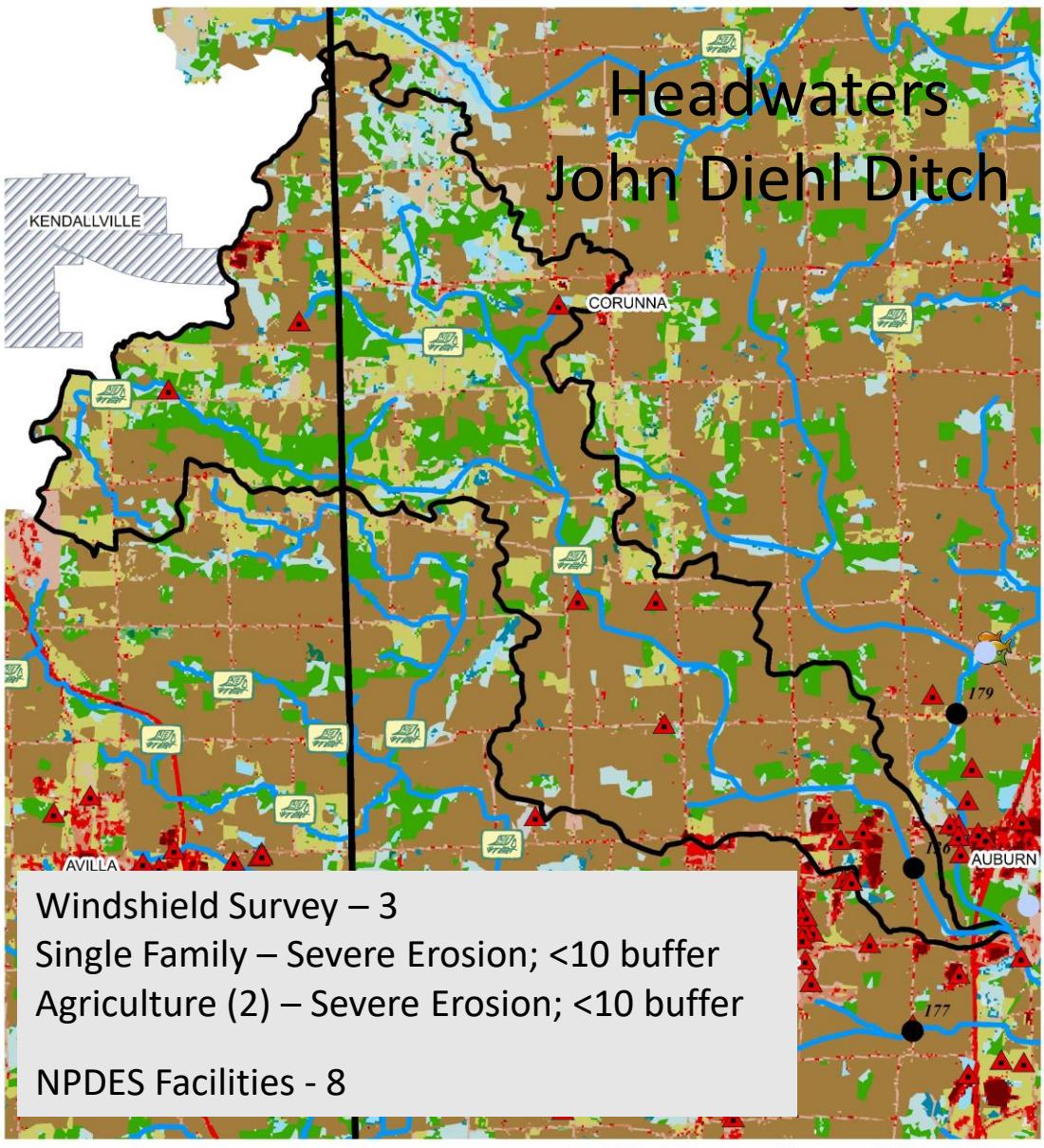


Peckhart Ditch - John Diehl Ditch



Land Use	Acres
Open Water	75
Developed: Open Space	401
Developed: Low Intensity	430
Developed: Med Intensity	679
Developed: High Intensity	327
Barren Land	28
Deciduous Forest	1284
Evergreen Forest	10
Mixed Forest	19
Shrub/Scrub	7
Herbaceous	8
Hay/Pasture	800
Cultivated Crops	11587
Woody Wetlands	771
Emergent Herbaceous Wetlands	46
	16472

Parameter	Sample Avg	Target	Unit
PH	7.797	> 6 & < 9	
DO	8.262	> 5 & < 9	
Turbidity	13.517	< 10.4	NTU
Atrazine	0.261	< 3	ppb
E. Coli	154.286	235	CFU
TSS	14.225	< 25	ppm
DRP	0.0379	< 0.05	ppm
N + N	1.862	< 1.6	ppm
Ammonia	0.2085	< 0.21	ppm
		< 0.08 tribs;	
TP	0.231	< 0.30 mainstem	ppm



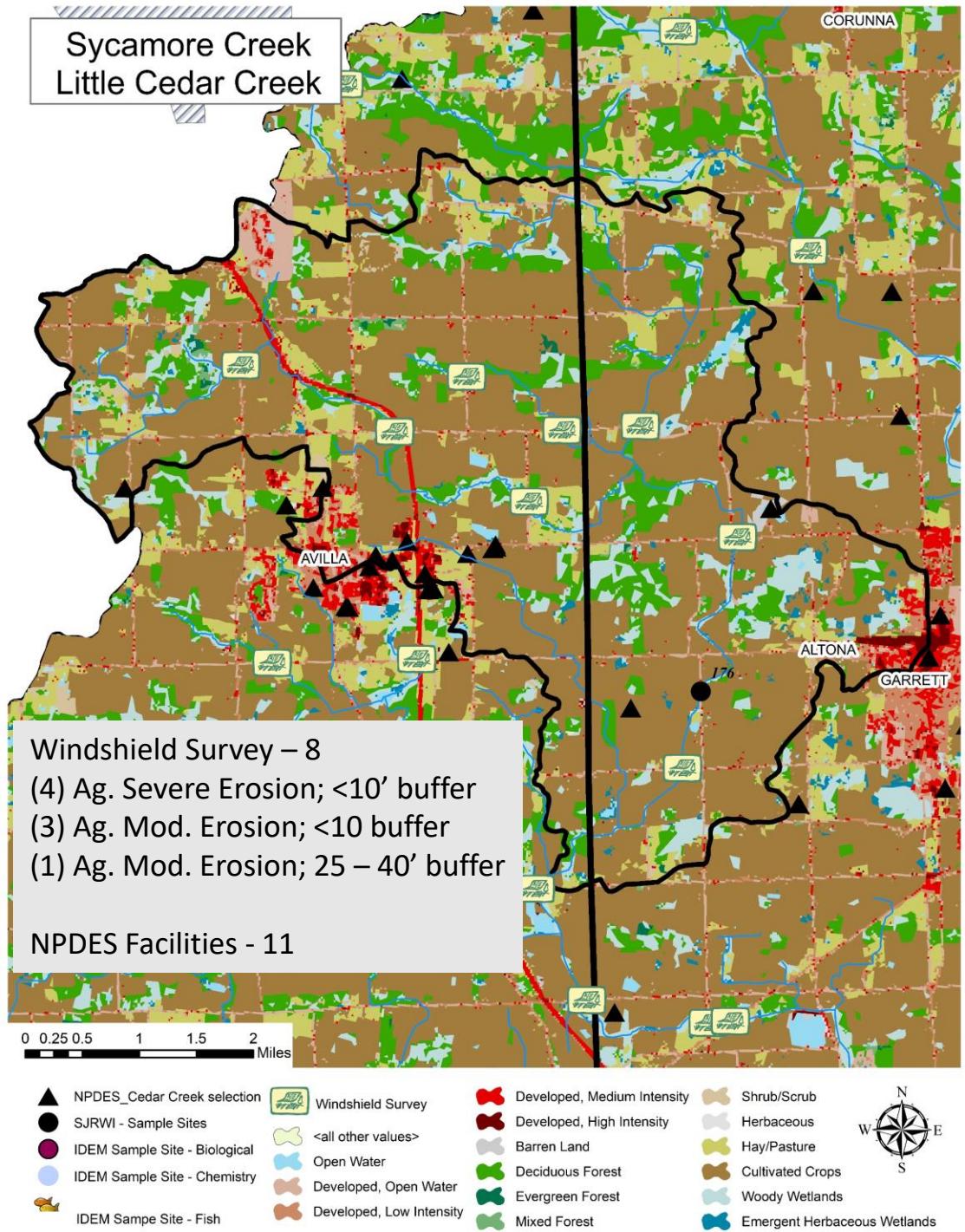
- SJRWI - Sample Sites
- IDEM Sample Site - Biological
- IDEM Sample Site - Chemistry
- IDEM Sampe Site - Fish

- Windshield Survey
- <all other values>
- Open Water
- Developed, Open Space
- Developed, Low Intensity

- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Herbaceous
- Hay/Pasture
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

Land Use	Acres
Open Water	140
Developed: Open Space	475
Developed: Low Intensity	221
Developed: Med Intensity	327
Developed: High Intensity	112
Barren Land	68
Deciduous Forest	2335
Evergreen Forest	10
Mixed Forest	50
Shrub/Scrub	324
Herbaceous	13
Hay/Pasture	1767
Cultivated Crops	11315
Woody Wetlands	1315
Emergent Herbaceous Wetlands	102
	18574

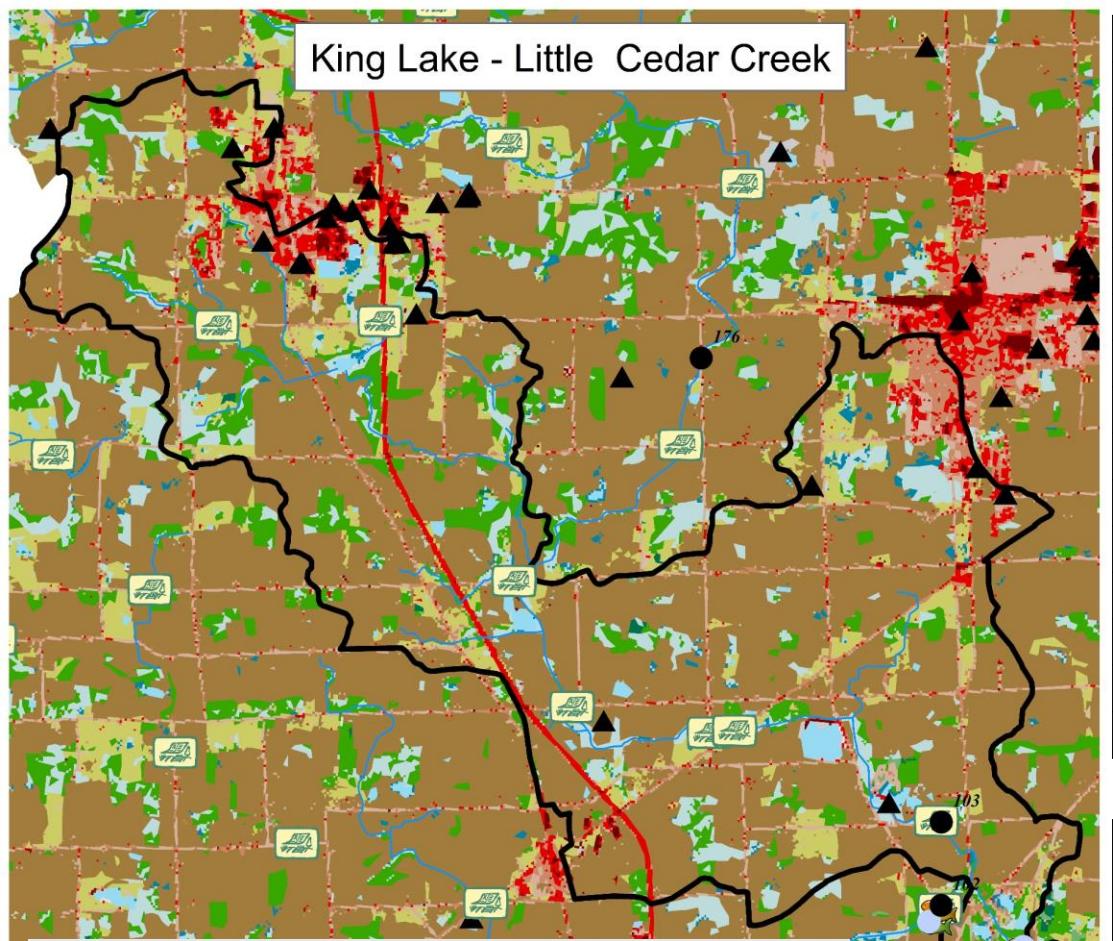
Parameter	Sample Avg	Target	Unit
PH	7.894	> 6 & < 9	
DO	9.7413	> 5 & < 9	
Turbidity	4.956	< 10.4	NTU
Atrazine	0.067	< 3	ppb
E. Coli	312.67	235	CFU
TSS	6.767	< 25	ppm
DRP	0.079	< 0.05	ppm
N + N	0.851	< 1.6	ppm
Ammonia	0.092	< 0.21	ppm
		< 0.08 tribs; < 0.30 main	ppm
TP	0.205		ppm



Landuse	Acres
Open Water	117
Developed: Open Space	542
Developed: Low Intensity	478
Developed: Med Intensity	430
Developed: High Intensity	131
Barren Land	32
Deciduous Forest	2203
Evergreen Forest	27
Mixed Forest	50
Shrub/Scrub	80
Herbaceous	6
Hay/Pasture	1539
Cultivated Crops	13110
Woody Wetlands	1152
Emergent Herbaceous Wetlands	101
	19998

Parameter	Sample Avg	Target	Unit
PH	7.756	> 6 & < 9	
DO	8.579	> 5 & < 9	
Turbidity	7.555	< 10.4	NTU
Atrazine	0.384	< 3	ppb
E. Coli	386.92	235	CFU
TSS	9.635	< 25	ppm
DRP	0.03	< 0.05	ppm
N + N	1.836	< 1.6	ppm
Ammonia	0.085	< 0.21	ppm
TP	0.223	< 0.08 tributaries; < 0.30 mainstem	ppm

King Lake - Little Cedar Creek



Windshield Survey – 6
Mix of Single family, industrial, ag. and forest
Severe bank erosion
Buffers 0 – 24' (most <10')

NPDES facilities - 11

- SJRWI - Sample Sites
- IDEM Sample Site - Biological
- IDEM Sample Site - Chemistry
- IDEM Sampe Site - Fish

- Windshield Survey
- <all other values>
- Open Water
- Developed, Open Water
- Developed, Low Intensity

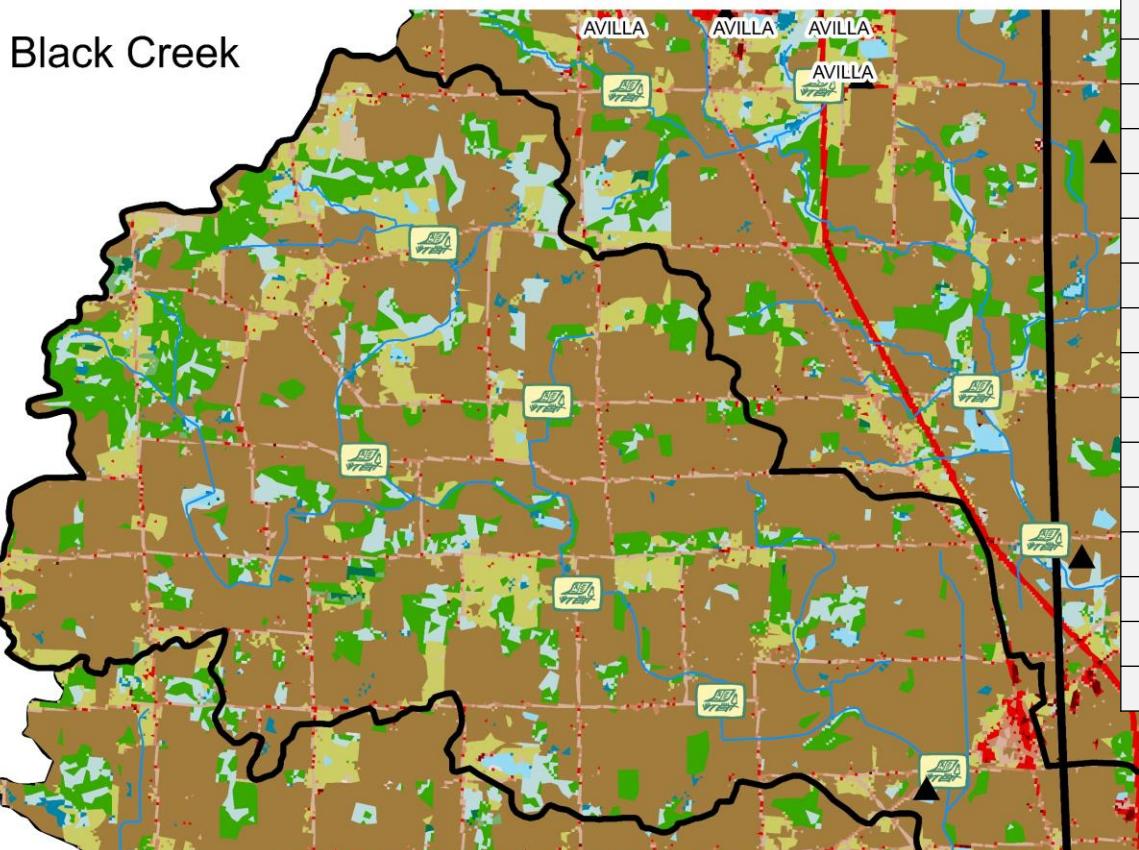
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest



Landuse	Acres
Open Water	238
Developed: Open Space	541
Developed: Low Intensity	622
Developed: Med Intensity	598
Developed: High Intensity	3720
Barren Land	20
Deciduous Forest	1677
Evergreen Forest	37
Mixed Forest	31
Shrub/Scrub	40
Herbaceous	11
Hay/Pasture	1485
Cultivated Crops	17250
Woody Wetlands	1189
Emergent Herbaceous Wetlands	92
	27551

Parameter	Sample Avg	Target	Unit
PH	7.903	> 6 & < 9	
DO	8.173	> 5 & < 9	
Turbidity	8.457	< 10.4	NTU
Atrazine	0.222	< 3	ppb
E. Coli	199.286	235	CFU
TSS	9.289	< 25	ppm
DRP	0.0429	< 0.05	ppm
N + N	1.249	< 1.6	ppm
Ammonia	0.088	< 0.21	ppm
		< 0.08 tributaries; < 0.30 mainstem	ppm
TP	0.278		

Black Creek



Landuse	Acres
Open Water	104
Developed: Open Space	480
Developed: Low Intensity	179
Developed: Med Intensity	182
Developed: High Intensity	14
Barren Land	0
Deciduous Forest	1828
Evergreen Forest	17
Mixed Forest	36
Shrub/Scrub	71
Herbaceous	2
Hay/Pasture	1455
Cultivated Crops	14550
Woody Wetlands	892
Emergent Herbaceous Wetlands	62

Windshield Survey – 6

- (1) Ag. – Field Erosion; <10' buffer
- (5) Ag. Slight – Severe bank erosion; <10' buffers

NPDES facilities - 1

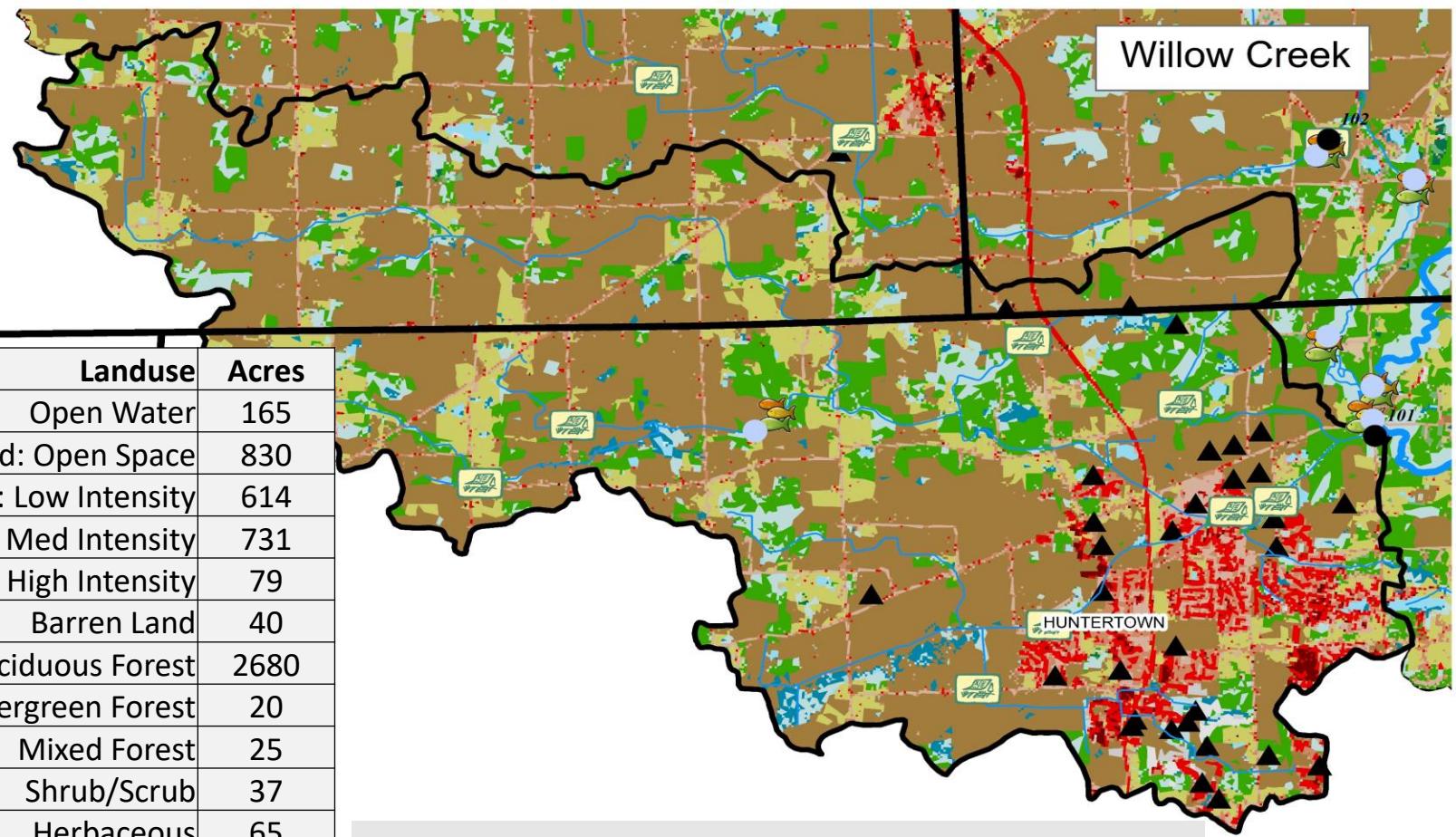


Ag. Medium Intensity	Shrub/Scrub
Ag. High Intensity	Herbaceous
Land	Hay/Pasture
us Forest	Cultivated Crops
Woody Wetlands	

0 0.22 0.45 0.9 1.35 1.8 Miles



Parameter	PH	DO	Turbidity	Atrazine	E. Coli	TSS	DRP	N + N	Ammonia	TP
Sample Avg	7.946	7.988	6.519	0.367	80	8.889	0.049	2.015	0.073	0.239
Target	> 6 & < 9	> 5 & < 9	< 10.4	< 3	235	< 25	< 0.05	< 1.6	< 0.21	< 0.08 tribs; < 0.30 mainstem
Unit			NTU	ppb	CFU	ppm	ppm	ppm	ppm	ppm



Windshield Survey – 8

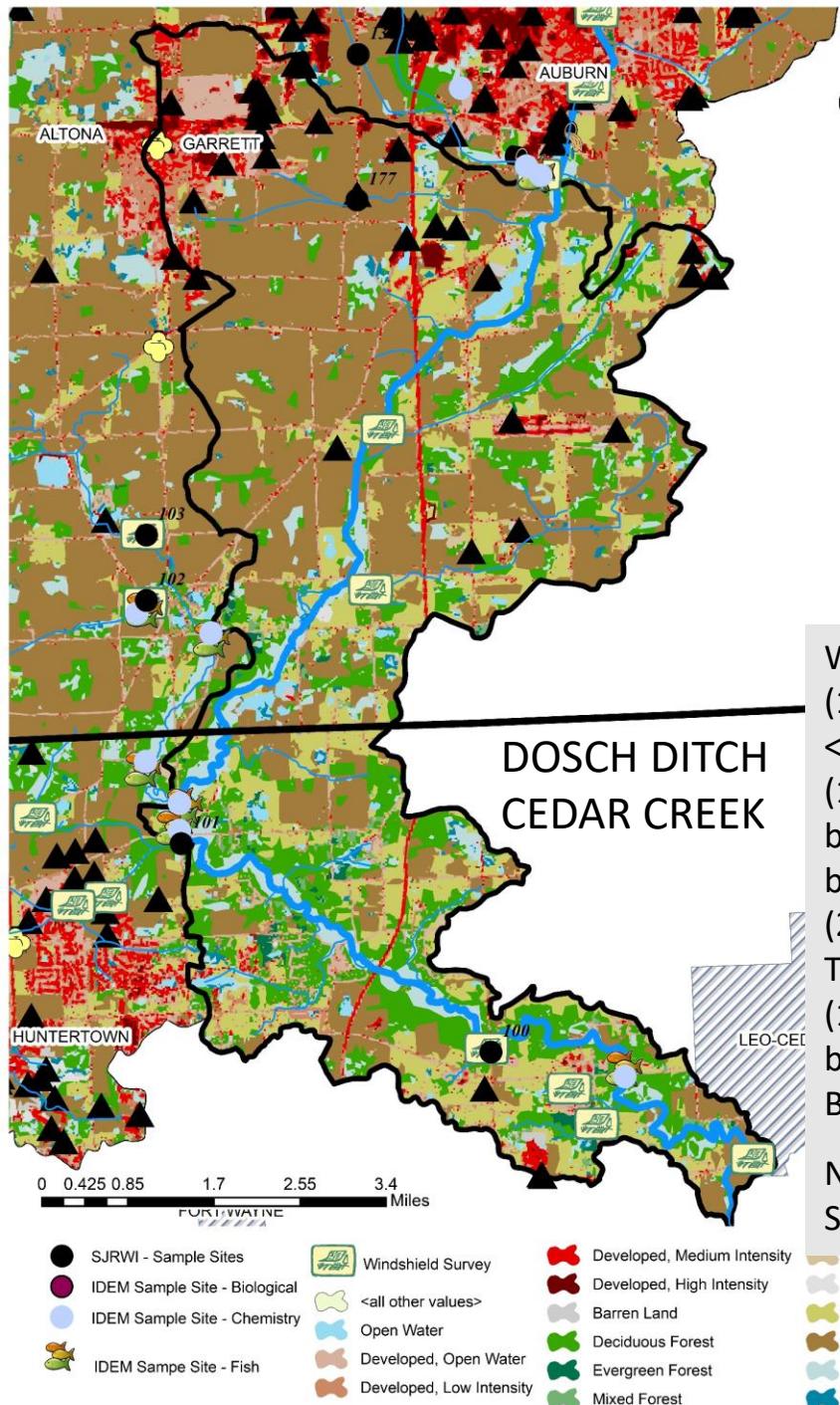
(2) Ag. – 0 – Mod bank erosion; <10' buffer

(6) Single Family - Slight – Severe bank erosion; <10' buffers

NPDES facilities – 31

SWPP – 1 (Hunertown)

Parameter	PH	DO	Turbidity	Atrazine	E. Coli	TSS	DRP	N + N	Ammonia	TP
Sample Avg	7.78	8.03	7.087	0.133	145	6.911	0.041	1.065	0.075	0.234
Target	> 6 & < 9	> 5 & < 9	< 10.4	< 3	235	< 25	< 0.05	< 1.6	< 0.21	< 0.08 tribs; < 0.30 mainstem
Unit			NTU	ppb	CFU	ppm	ppm	ppm	ppm	ppm



Parameter	Sample Avg 177	Sample Avg 100	Target	Unit
PH	7.733	7.994	> 6 & < 9	
DO	9.682	7.91	> 5 & < 9	
Turbidity	3.756	29.093	< 10.4	NTU
Atrazine	0.121	4.518	< 3	ppb
E. Coli	212.857	788.488	235	CFU
TSS	6.679	21.559	< 25	ppm
DRP	0.155	0.055	< 0.05	ppm
N + N	6.714	1.76	< 1.6	ppm
Ammonia	0.151	0.115	< 0.21	ppm
TP	0.347	0.153	< 0.08 tribs; < 0.30 mainstem	ppm

Windshield Survey – 6

- (1) Ag. – Field erosion; <10' buffer
- (1) Commercial- Slight bank erosion; <10' buffers
- (2) Single family – Mod. To Severe bank erosion
- (1) Forested – Severe bank erosion
- Buffers between 25 – 40'

NPDES facilities – 29

SWPP – 1 (Garrett)



Land Use	Acres
Open Water	406
Developed: Open Space	1081
Developed: Low Intensity	920
Developed: Med Intensity	829
Developed: High Intensity	245
Barren Land	79
Deciduous Forest	4155
Evergreen Forest	137
Mixed Forest	146
Shrub/Scrub	100
Herbaceous	35
Hay/Pasture	3965
Cultivated Crops	10505
Woody Wetlands	1948
Emergent Herbaceous Wetlands	166
	24717