Figure 3.44: Land Use in the Gordon Creek Sub-watershed

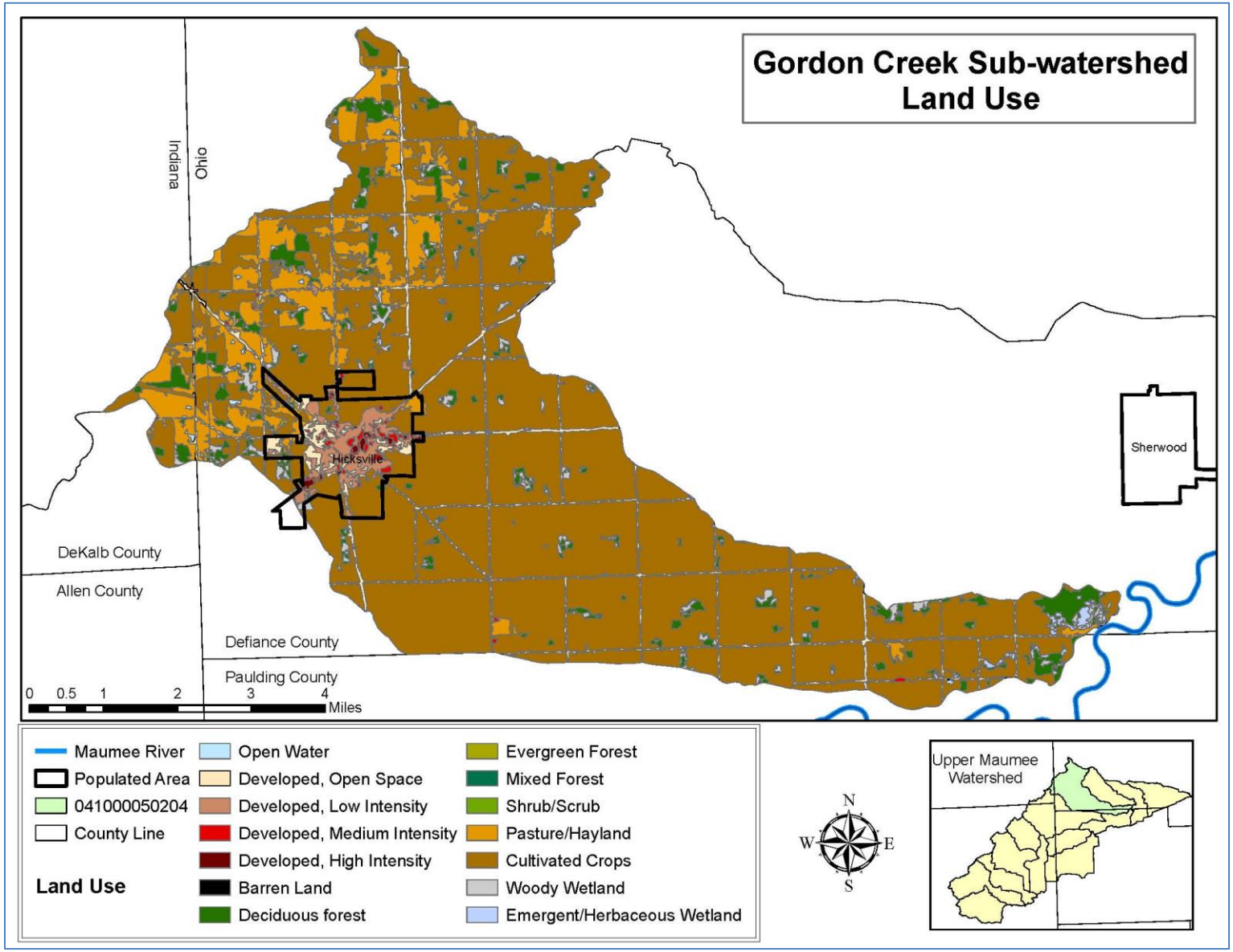


Figure 3.45: Windshield Survey Observations in the Gordon Creek Sub-watershed

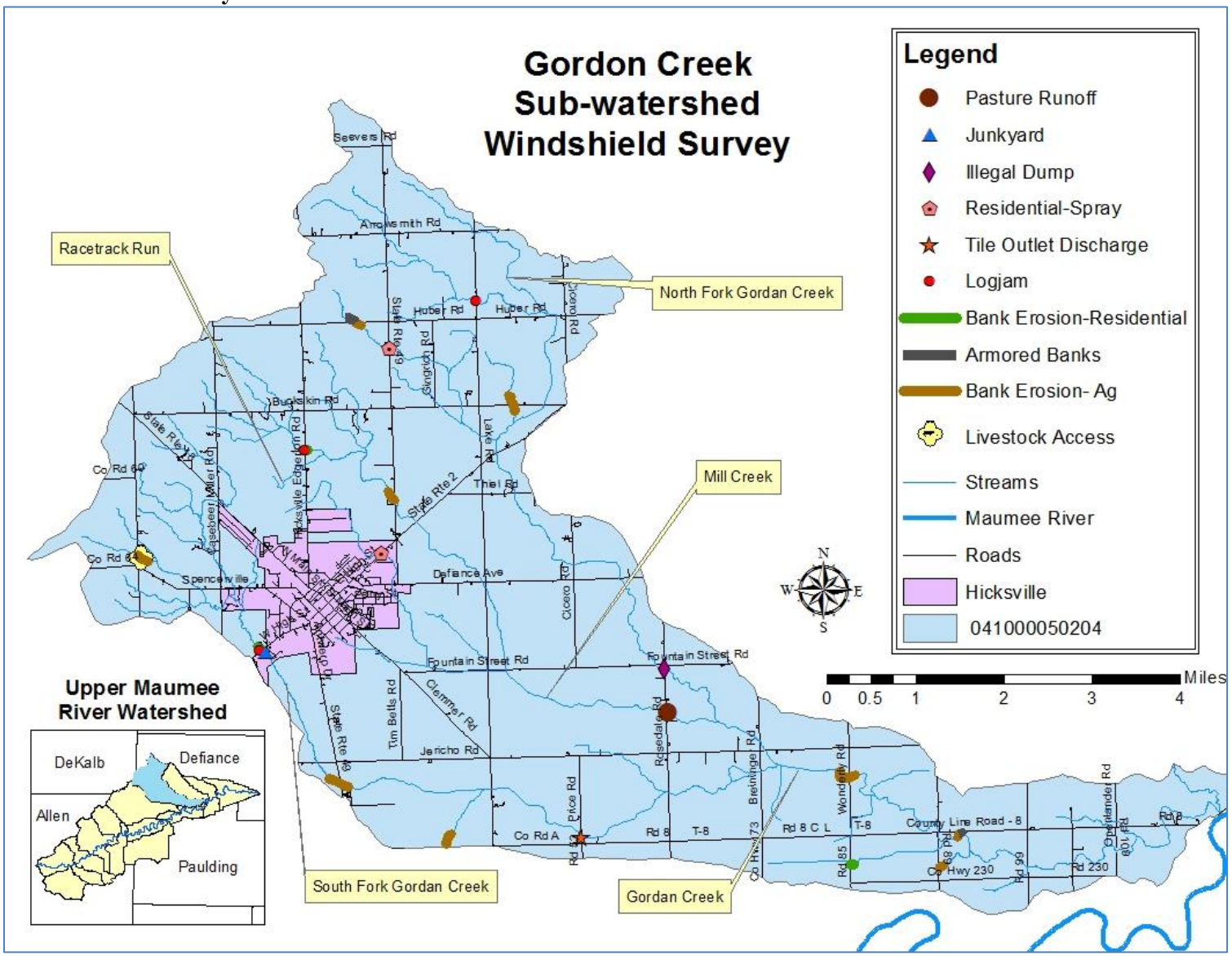
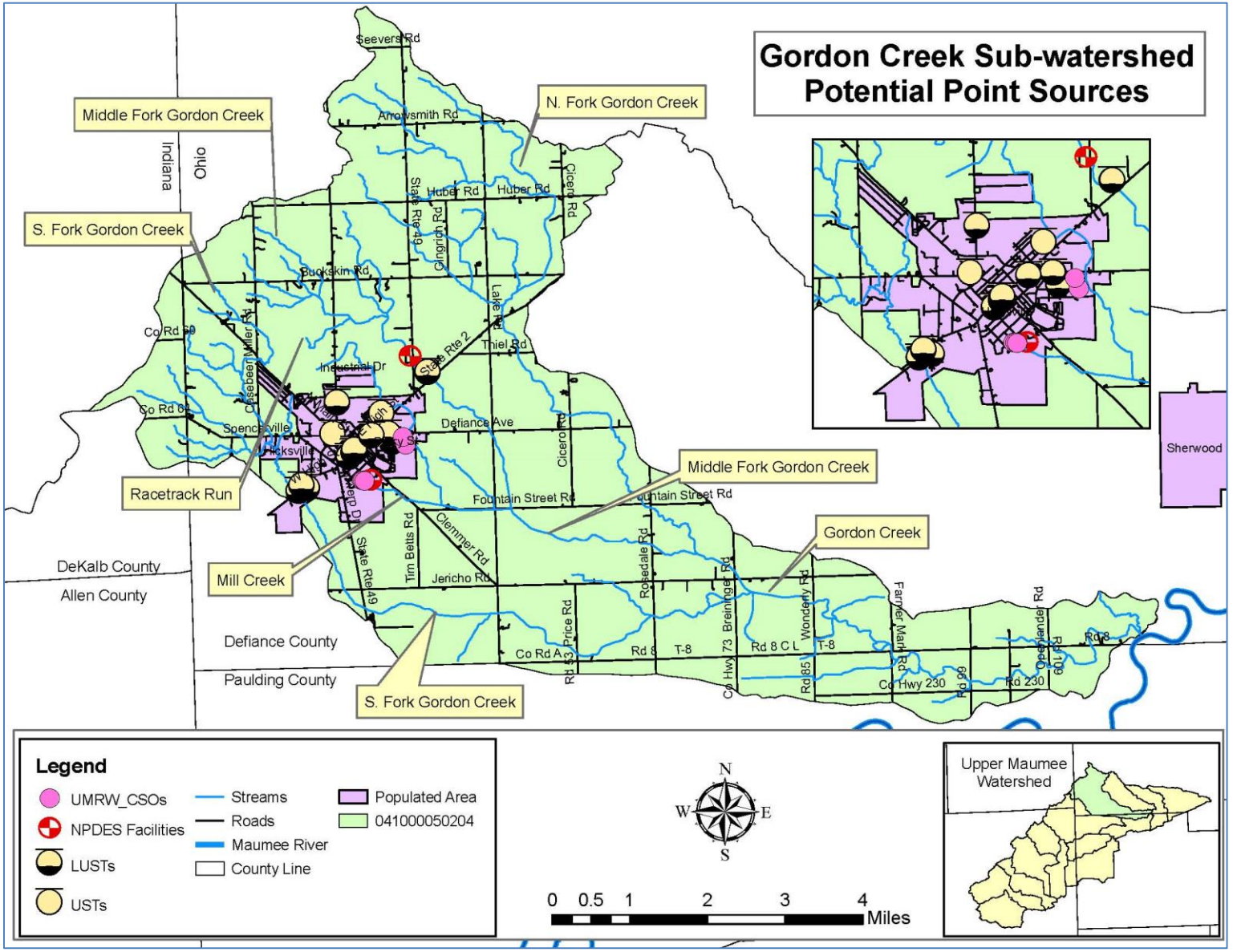


Figure 3.46: Potential Point Sources in the Gordon Creek Sub-watershed



3.4.11 Sixmile Cutoff Sub-watershed Land Use

The primary influence on water quality in the Sixmile Cutoff sub-watershed is agriculture with over 76% of the land use being classified as agricultural by the USGS. Table 3.79 shows the percentage of Sixmile Cutoff sub-watershed that is in each land use and Figure 3.47 is a map showing the delineation of land use in the sub-watershed. Using National Land Cover Data acquired from the USGS and analyzed in ArcGIS, approximately 76.28% of the land use in Sixmile Cutoff sub-watershed is in production with 75.61% used strictly for cultivated crops and the remaining percentage of land being pasture and/or hayland.

Nearly 10.6% of the Sixmile Cutoff sub-watershed is considered to be developed though the majority of the developed land (7.44%) has less than 20% impervious cover. The small village of Cecil, OH (population – 187) is located within the Sixmile Cutoff sub-watershed.

There were five locations identified as potential problems during the windshield survey conducted in 2012 in the Sixmile Cutoff sub-watershed. Two of the locations, totaling nearly 374 feet, are eroding stream banks surrounded by agriculture land with the one located on Co. Hwy 206 being a prime location for the installation of a two-stage ditch to prevent future erosion of the streambank and restore the floodplain. There are also two locations totaling 96.49 ft of stream bank erosion surrounded by manicured, residential lawns. Finally, there was one location where a tile outlet was identified leaking a black fluid to an unnamed tributary to the Maumee River, this could be possible septic system discharge. Table 3.80 lists the windshield observations and Figure 3.48 is a map showing the approximate location of each of the potential problem sites.

There are six potential point sources of pollution in the Sixmile Cutoff sub-watershed. There are three USTs, with all of those being considered LUSTs by the state overseeing agency. These sites pose a threat to both ground and surface water. If the contents held in any of the facilities leak it can leach through the soil and reach groundwater contaminating drinking water wells of local residents, or leach into surface waters and decrease water quality and affect aquatic life. Table 3.81 is a list of the LUSTs located within the Sixmile Cutoff sub-watershed, the tank contents (if known) and their current status.

There are three NPDES permitted facilities that discharge into the Maumee River located within the Sixmile Cutoff sub-watershed. Table 3.82 lists the NPDES permitted facilities located within the watershed. As can be seen in the table, all of the facilities discharge directly into the Maumee River and each of the facilities has had at least one enforcement action and multiple times of effluent exceeding the permit limit in the last three years. Figure 3.49 shows the location of all potential point sources in Sixmile Cutoff sub-watershed.

Table 3.79: Land Use in the Sixmile Cutoff Sub-watershed

Open Water	Dev. Open Space	Dev. Low Intensity	Dev. Medium and High Intensity	Barren Land	Deciduous Forest	Grassland/ Herbaceous	Pasture/ Hayland	Cultivated Crops	Woody and Emergent/ Herbaceous Wetlands	Total	Unit
466.0	746.3	296.67	19.31	6.83	667.88	96.42	66.87	7,589.37	82.86	10038.54	Acres
4.64%	7.44%	2.96%	<1%	<1%	6.65%	<1%	<1%	75.61%	<1%	100%	%

Table 3.80: Windshield Survey Observations in the Sixmile Cutoff Sub-watershed

Observation	Bank Erosion (Agriculture)	Bank Erosion (Residential)	Tile Outlet
Number	373.89 ft	96.49 ft	1

Table 3.81: Leaking Underground Storage Tanks in the Sixmile Cutoff Sub-watershed

UST FACILITY ID	INCIDENT NUMBER	NAME	STREET ADDRESS	CITY	STATE	COUNTY	TANK CONTENTS	DESCRIPTION
63009828	N00001	C&J Country Market	17746 SR 127	Cecil	OH	Paulding	Gasoline	Active
63006974	N00001	Vagabond Village	13173 US Rt 24	Cecil	OH	Paulding	Gasoline, Diesel, or Kerosene	NFA-Closed
	N00002							No Closure Report Letter Sent
63009826	N00001	18 Wheeler Truck Stop	133886 US Rt 24	Cecil	OH	Paulding	Unknown	Active

Table 3.82: NPDES Permitted Facilities in the Sixmile Cutoff Sub-watershed

Permit Name	Permit #	County Name	Street Address	City	State Code	State Water Body Name	Effluent Exceedances - 3 yrs (Substance)	Enforcement Actions (I=informal; F=formal) (5 yrs)
Brentwood MHP	OH0130061	Paulding	North of US 24, 1mile	Cecil	OH	Maumee River	8 (BOD, NH3, TSS)	1 (I)
Cecil WWTP	OH0029238	Paulding	17228 CR 105	Cecil	OH	Maumee River	60 (BOD, Chlorine, Fecal coliform, E. coli, NH3, TSS)	4 (I) 1(F)
Vagabond Village	OH0132462	Paulding	13173 US 24	Cecil	OH	Maumee River	109 (BOD, Fecal coliform, NH3, DO, TSS)	4 (I)

Figure 3.47: Land Use in the Sixmile Cutoff Sub-watershed

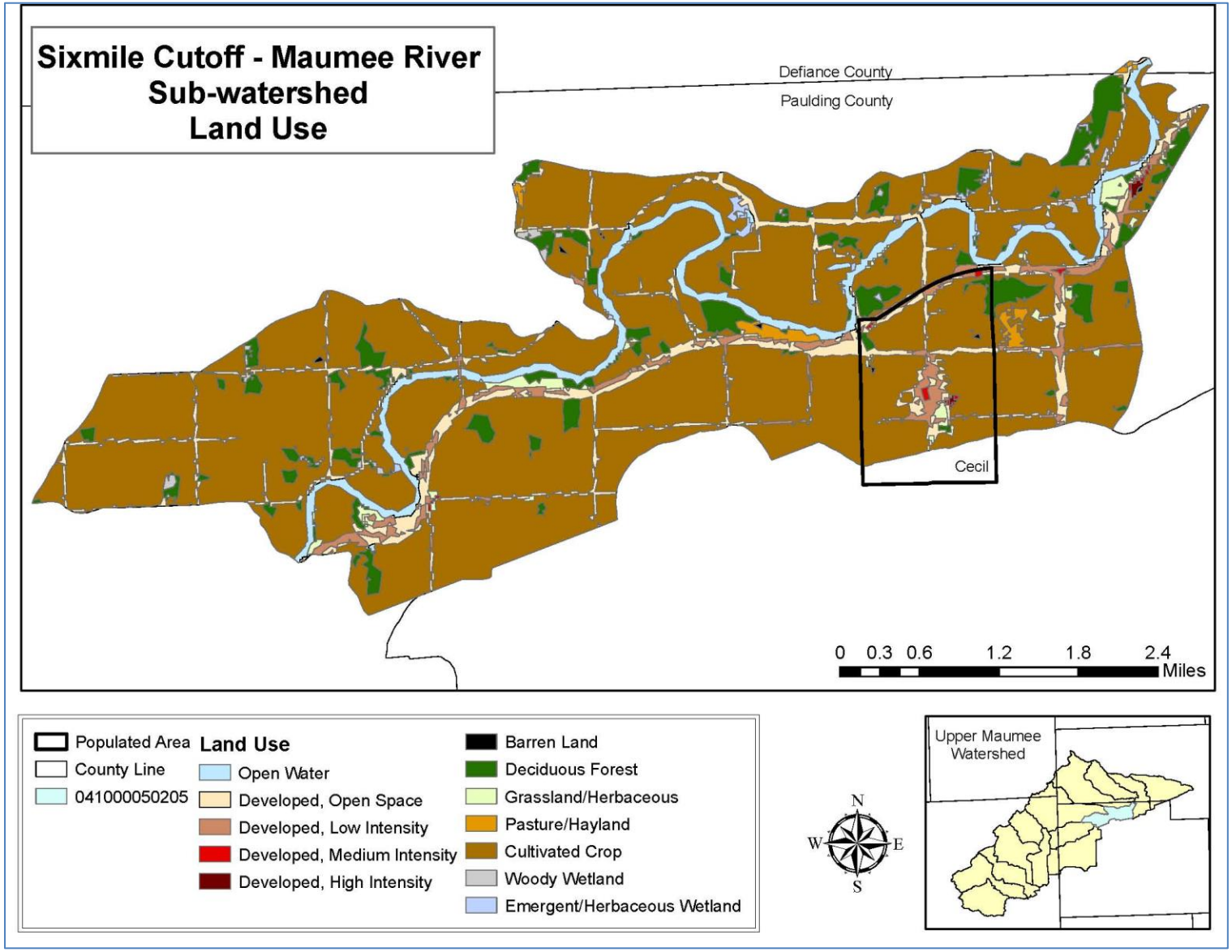


Figure 3.48: Windshield Survey Observations in the Sixmile Cutoff Sub-watershed

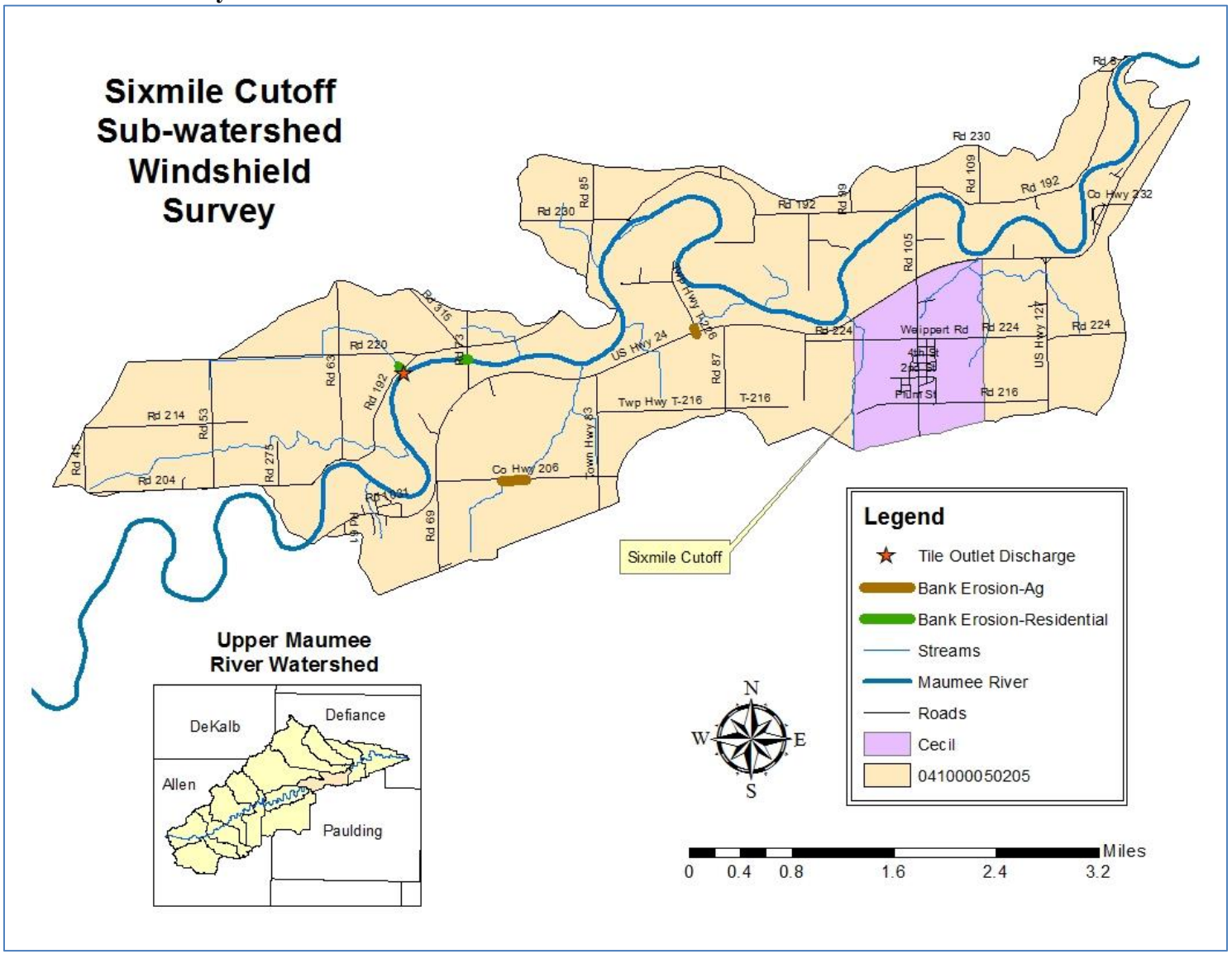
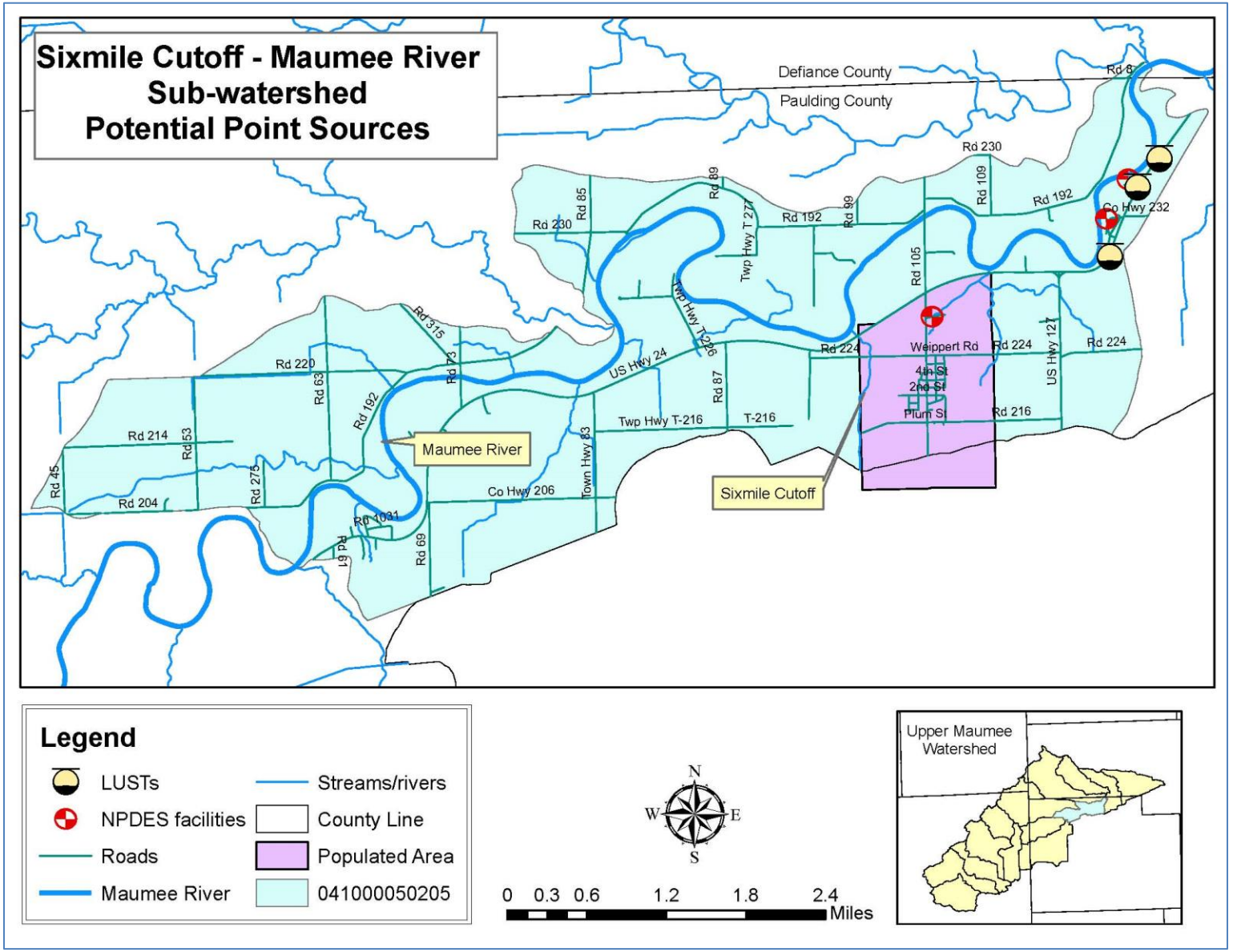


Figure 3.49: Potential Point Sources of Pollution in the Sixmile Cutoff Sub-watershed



3.4.12 Platter Creek Sub-watershed Land Use

The primary influence on water quality in the Platter Creek sub-watershed is agriculture with nearly 89% of the land use being classified as agricultural by the USGS. Table 3.83 shows the percentage of Platter Creek Sub-watershed that is in each land use and Figure 3.50 is a map showing the delineation of land use in the sub-watershed. Using National Land Cover Data acquired from the USGS and analyzed in ArcGIS, approximately 88.49% of the land use in Platter Creek sub-watershed is in production with 87.87% used strictly for cultivated crops and the remaining percentage of land being pasture and/or hayland primarily used for livestock rearing.

Nearly 5.5% of the Platter Creek sub-watershed is considered to be developed though the majority of the developed land (4.72%) has less than 20% impervious cover indicating mostly turf lawns. Mark Center, a very small, unincorporated populated area is located in Platter Creek sub-watershed which likely accounts for the small percentage of developed land in the watershed. There is not a centralized sewer system within Mark Center, therefore this is likely a concentrated area of onsite sewage treatment systems situated on soil that is considered "very limited" for septic placement.

There were fifteen locations identified as potential problems during the windshield survey conducted in 2012 in the Platter Creek Sub-watershed. Seven of the sites, totaling over 3,753 feet, are eroding stream banks surrounded by agriculture land. One site also had horse access to the stream along with the barnyard sloping down into the stream with no vegetation present on the banks. The streambank erosion site on Jericho Rd to the east of Openlander Rd may be an ideal location for a two-stage ditch to be installed to prevent continual stream bank erosion at this site. There is also streambank erosion taking place within a forested riparian area, however this is likely due to the log jam in the stream. There is one site of streambank erosion adjacent to a residential lawn that is mowed directly to the streambank which may contribute to the 100 ft of erosion present. There is one location where rip rap was placed along the road to direct runoff to the ditch, however the rip rap appears to be ineffective as erosion is present at this site. One site with very high algae in the stream was observed during the survey. This site was adjacent to a residential, manicured lawn that was mowed directly up to the streambank. The high algae may indicate an issue with septic leachate or excessive fertilizer use. Finally, a location was identified during the windshield survey where rock and dirt was piled in front of a road culvert to keep water from entering the crop field. This practice may cause erosion and flooding downstream. Table 3.84 lists the windshield observations and Figure 3.51 is a map showing the approximate location of each of the potential problem sites.

There are six potential point sources of pollution in the Platter Creek sub-watershed. There are two USTs, both of which are considered LUSTs by the state overseeing agency. These sites pose a threat to both ground and surface water. If the contents held in any of the facilities leak it can leach through the soil and reach groundwater contaminating drinking water wells of local residents, or leach into surface waters and impair water quality and affect aquatic life. Both of

the LUSTs have been closed and are no longer leaking. Table 3.85 is a list of the LUSTs located within the Platter Creek sub-watershed, the tank contents (if known) and their current status.

There is one NPDES permitted facility that discharges into Platter Creek, a tributary to the Maumee River. Table 3.86 lists the NPDES permitted facility located within the Platter Creek sub-watershed. As can be seen in the table, Vissers Dairy, a CAFO, is the only permitted facility and submitted an incomplete DMR to the regulating state agency. It should be noted that not all CFOs are issued a NPDES permit; only those facilities that will be discharging a regulated substance into open water.

There are a total of three animal feeding operations in the Platter Creek sub-watershed. Two of the facilities are not required to have an NPDES permit as they are regulated by the Ohio Department of Agriculture only. Table 3.87 lists the AFOs, the type of facility it is, what animals are housed at the facility and the number of animals at the facility. Figure 3.52 shows the location of all potential point sources in Platter Creek sub-watershed.

It is important to note that Hillandale Farms, a chicken operation, has applied for and was granted permission by the state of Ohio to build a chicken house that will hold 4 million layers in Platter Creek. Construction on the building has not begun, however road improvements leading to the farm have been made. This CAFO will be regulated by the Ohio Department of Agriculture and will not need an NPDES permit as the farm will have large impoundments to hold all waste until it can be utilized on farmland as fertilizer, and will not discharge to the waters of the State.

Table 3.83: Land Use in the Platter Creek Sub-watershed

Open Water	Dev. Open Space	Dev. Low Intensity	Dev. Medium and High Intensity	Barren Land	Deciduous Forest	Grassland/ Herbaceous	Pasture/ Hayland	Cultivated Crops	Woody Wet-land	Emergent Herbaceous Wetlands	Total	Unit
1.12	654.1	60.08	27.76	0.24	584.52	1.23	86.55	12,179.55	228.56	37.64	13861 .36	Acres
<1%	4.72%	<1%	<1%	<1%	4.22%	<1%	<1%	87.87%	1.65%	<1%	100%	%

Table 3.84: Windshield Survey Observations in the Platter Creek Sub-watershed

Observation	Bank Erosion (Agriculture)	Bank erosion (Natural)	Bank Erosion (Residential)	Livestock Access	Barnyard Runoff	Log Jam	Earthen Barrier /Dam	High Algae	Armored Banks
Number	3,753.50 ft	482.57 ft	100.23 ft	1	1	1	1	1	224.54 ft

Table 3.85: Leaking Underground Storage Tanks in the Platter Creek Sub-watershed

UST FACILITY ID	INCIDENT NUMBER	NAME	STREET ADDRESS	CITY	STATE	COUNTY	TANK CONTENTS	DESCRIPTION
20000397	N00001	Mark Store	10422 Farmers Mark Rd	Mark Center	OH	Defiance	Unknown	NFA-Closed
20003625	N00001	Central Local School	100075 Farmers Mark Rd	Mark Center	OH	Defiance	Deisel	NFA-Closed

Table 3.86: NPDES Permitted Facilities in the Platter Creek Sub-watershed

Permit Name	Permit #	County Name	Street Address	City	State Code	State Water Body Name	Effluent Exceedances (3 yrs)	Enforcement Actions (I=informal; F=formal) (5 yrs)
Vissers Dairy	OH0137979	Defiance	09711 Breininger Rd	Mark Center	OH	Platter Creek	incomplete DMR	

Table 3.87: Animal Feeding Operations in the Platter Creek Sub-watershed

Operation	Sub-watershed	Designation	Animal Type	Animal #
5 C Farms	Platter Creek	CAFF	Beef	3,350
Pheasant Run Farms	Platter Creek	CAFF	Swine	7,100
Vissers Dairy, LLC	Platter Creek	CAFO	Dairy	1,600

CAFF-Concentrated Animal Feeding Facility regulated by the Ohio Department of Agriculture
CAFO-Concentrated Animal Feeding Operation regulated by the Ohio Environmental Protection Agency

Figure 3.50: Land Use in the Platter Creek Sub-watershed

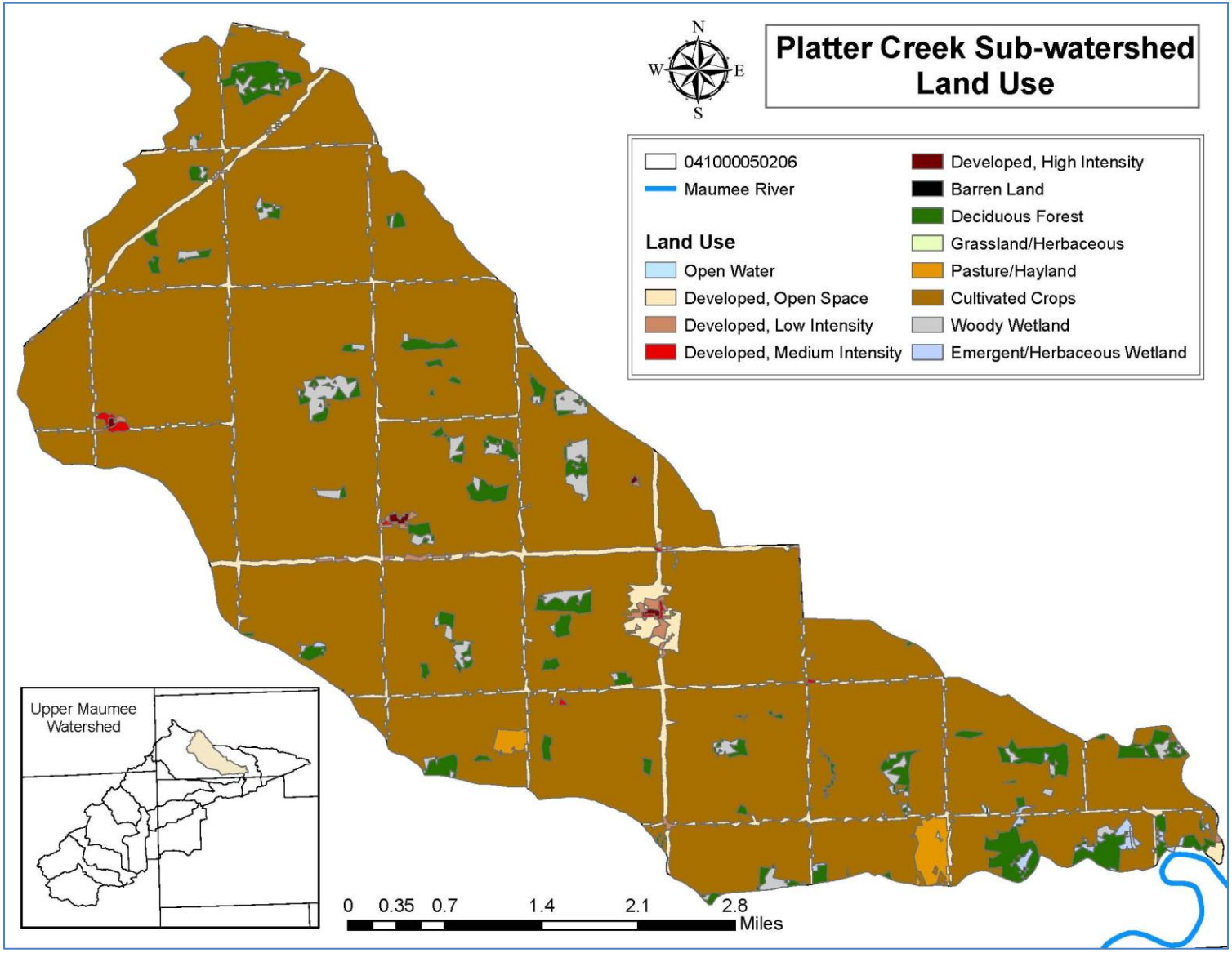


Figure 3.51: Windshield Survey Observations in the Platter Creek Sub-watershed

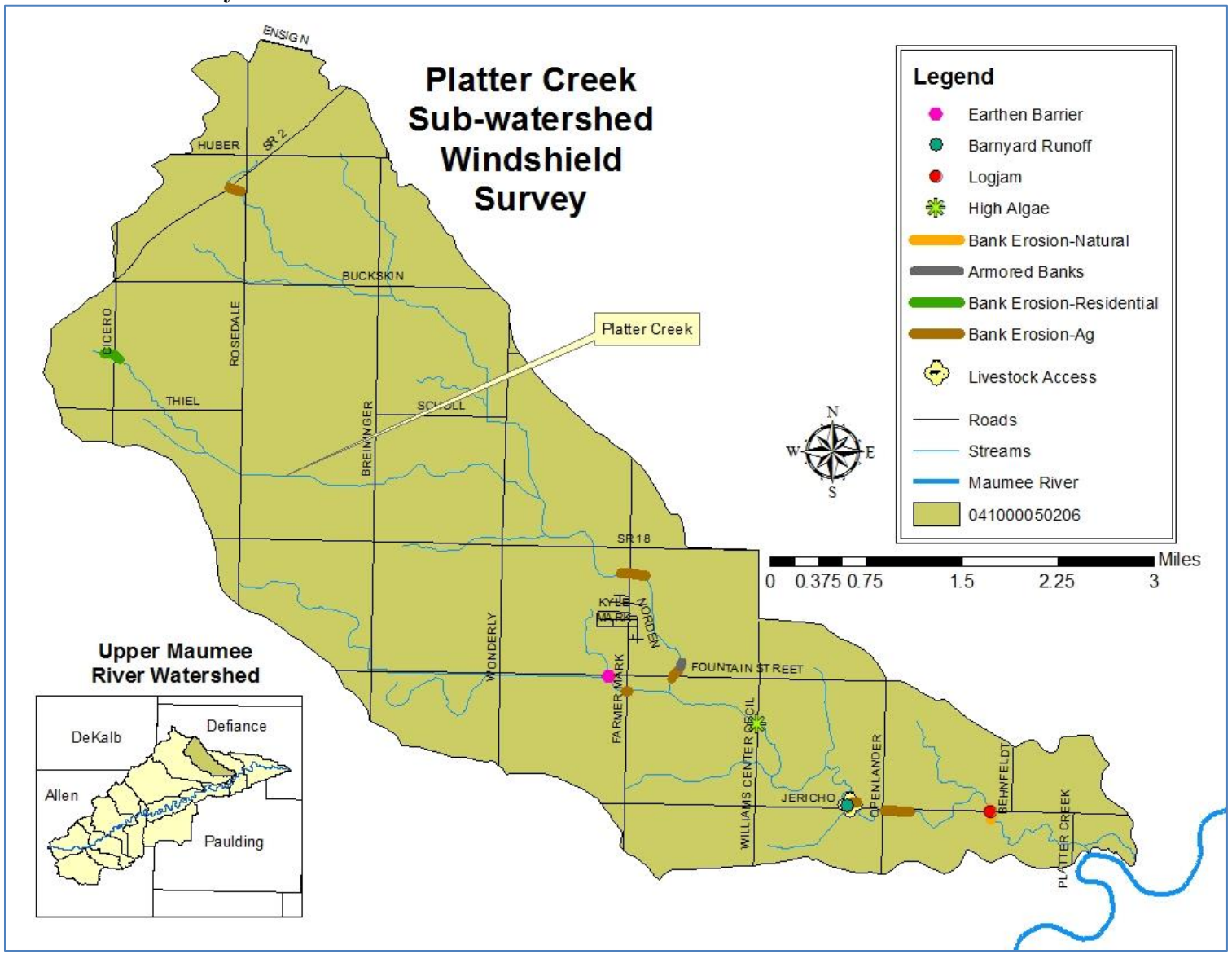
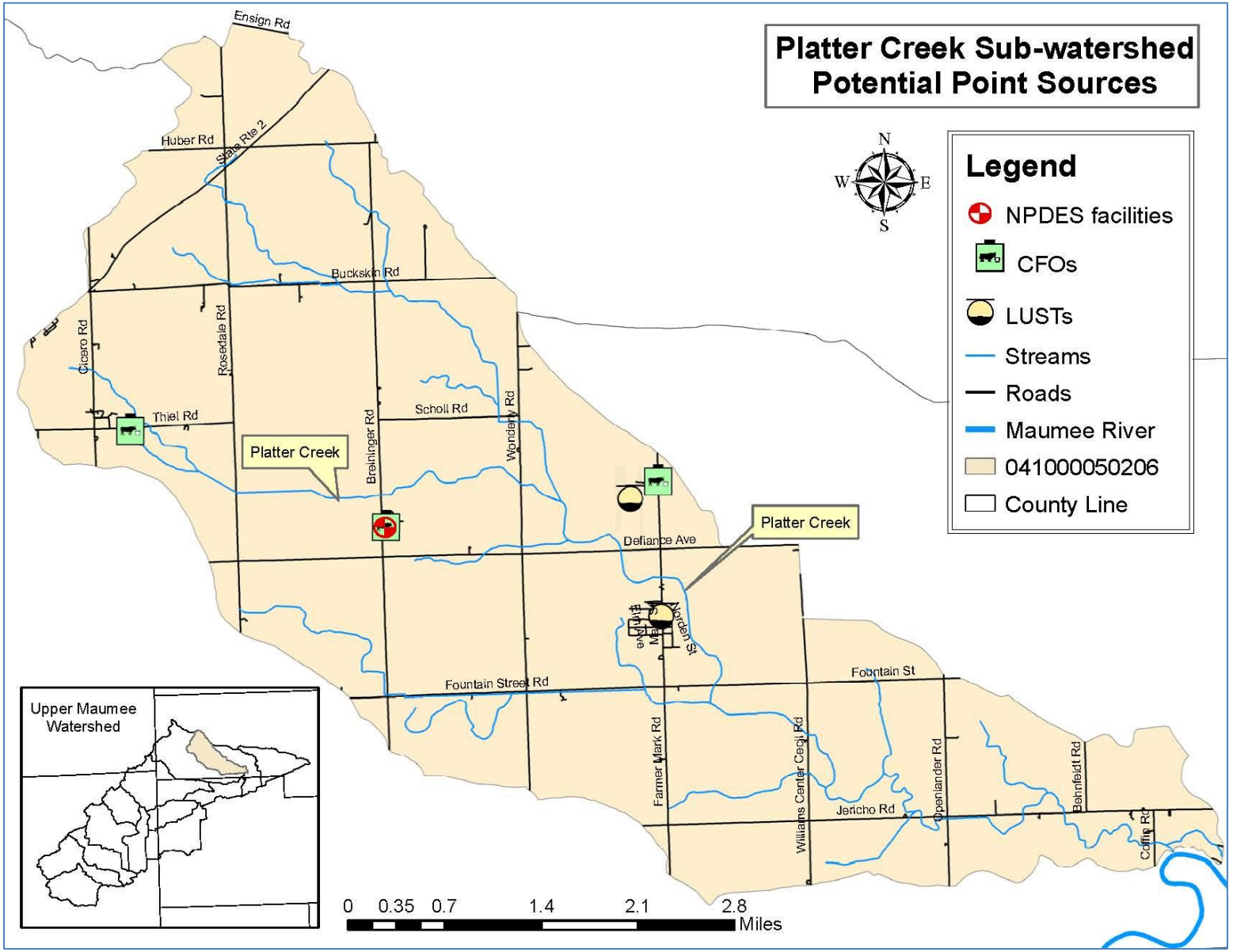


Figure 3.52: Potential Point Sources of Pollution in the Platter Creek Sub-watershed



3.4.13 Sulphur Creek Sub-watershed Land Use

The primary influence on water quality in the Sulphur Creek sub-watershed is agriculture with 83.10% of the land use being classified as agricultural by the USGS. Using National Land Cover Data acquired from the USGS and analyzed in ArcGIS, approximate percentages of each type of land use was determined and is shown in Table 3.88. Figure 3.53 shows the delineation of each type of land use within the Sulphur Creek sub-watershed.

Over 7.5% of the Sulphur Creek sub-watershed is considered to be developed though the majority of the developed land (5.23%) has less than 20% impervious cover indicating mostly turf lawns, parks or cemeteries. The Village of Sherwood is located within the Sulphur Creek sub-watershed and had a population of 823 in 2011. Sherwood has four small parks within the village boundaries which may account for the percentage of land considered to be developed, open space. Sherwood does have a centralized sewer system so septic discharge within the Village limits should not be an issue.

There were fifteen sites identified as potential problems during the windshield survey conducted in 2012 in the Sulphur Creek Sub-watershed. Three of the sites, totaling over 831 feet, are eroding stream banks surrounded by agriculture land. One residential site had nearly 223 feet of stream bank erosion possibly due to very little to no riparian buffer present. There were two large log jams observed, both of which resulted in additional bank erosion. There was one location where rip rap from under the bridge had come loose and fallen into stream which may disrupt the aquatic ecosystem. There was also a small horse farm that had the potential for runoff from the pasture field to reach open water due to its proximity to the streambank. A common practice seen throughout the agricultural community in Paulding County is digging a large ditch/gully through crop land to transport stormwater away from fields. These sites are marked on the map in Figure 3.54 as “Gully Erosion”. A grassed waterway may be better suited to effectively move stormwater from the fields, to conserve soil and prevent polluted runoff from the fields. Table 3.89 lists the observations that were made during the windshield survey and the approximate number of feet, where applicable, that will need to be remediated to improve water quality in the Sulphur Creek sub-watershed.

There are fourteen potential point sources of pollution in the Sulphur Creek sub-watershed including thirteen USTs and one NPDES permitted facility. Most of the point sources of pollution are in or directly adjacent to the village of Sherwood. Seven of the USTs are considered to be leaking by the regulating state agency and have been closed. One site was suspected to be leaking, but that suspicion was disproved. If the contents held in any of the USTs leak it can leach through the soil and reach groundwater contaminating drinking water wells of local residents, or leach into surface waters and decrease water quality and affect aquatic life. Table 3.90 is a list of LUSTs located within Sulphur Creek, the tank contents and their current status.

The Village of Sherwood WWTP is the only NPDES permitted facility located within the Sulphur Creek sub-watershed. The WWTP has had 62 violations within the past three years but has only

received five informal enforcement actions. Many of the violations were for not submitting reports, however, the WWTP did have a limit violation for pH every quarter. There were also significant violations for NH3, BOD, and TSS. Table 3.91 lists the NPDES permitted facility located within the Sulphur Creek sub-watershed. Figure 3.55 shows the location of all potential point sources in Sulphur Creek sub-watershed.

Table 3.88: Land Use in the Sulphur Creek Sub-watershed

Open Water	Developed, Open Space	Developed, Low Intensity	Developed, Medium Intensity	Barren Land	Deciduous Forest	Grassland/ Herbaceous	Cultivated Crops	Woody Wetland	Total	Unit
173.94	609.59	250.71	25.73	9.8	635.11	51.09	9,677.06	212.27	11645.3	Acres
1.49%	5.23%	2.15%	<1%	<1%	5.45%	<1%	83.10%	1.82%	100.00%	Percent

Table 3.89: Windshield Survey Observations in the Sulphur Creek Sub-watershed

Observation	Bank Erosion (Agriculture)	Bank Erosion (Residential)	Bank erosion (Natural)	Gully Erosion	Armored Banks	Pasture Runoff	Log Jam
Number	831.75 ft	222.78 ft	436.57 ft	869.57 ft	42.07 ft	1	2

Table 3.90: Leaking Underground Storage Tanks in the Sulphur Creek Sub-watershed

UST FACILITY ID	INCIDENT NUMBER	NAME	STREET ADDRESS	CITY	STATE	COUNTY	TANK CONTENTS	DESCRIPTION
20002657	N00001	Sherwood Marathon	542 Harrison St	Sherwood	OH	Defiance	Gasoline	NFA-Closed
	N00002							Release Disproved
20000070	N00001	Village Food	14023 St Rt 18	Sherwood	OH	Defiance	Kerosene	NFA-Closed
20000032	N00001	Lee's Market	09979 Openlander Rd	Sherwood	OH	Defiance	Gasoline	NFA-Closed
	N00002							
20000120	N00001	Mid City Products, Inc	St Rt 18	Sherwood	OH	Defiance	Used Oil	NFA-Closed

UST FACILITY ID	INCIDENT NUMBER	NAME	STREET ADDRESS	CITY	STATE	COUNTY	TANK CONTENTS	DESCRIPTION
20003627	N00001	Central Local School	405 N Harrison St	Sherwood	OH	Defiance	Gasoline	NFA-Closed
20010010	N00001	Friends and Neighbors in Home Heal	212 N Harrison St	Sherwood	OH	Defiance	Gasoline	NFA-Closed
20010012	N00001	Vacant Building	205 N Harrison St	Sherwood	OH	Defiance	Gasoline	NFA-Closed

Table 3.91: NPDES Permitted Facilities in the Sulphur Creek Sub-watershed

Permit Name	Permit #	County Name	Street Address	City	State Code	State Water Body Name	Effluent Exceedances - 3 yrs (Substance)	Enforcement Actions (I=informal; F=formal) (5 yrs)
Village of Sherwood	OH0020281	Defiance	Coy Rd south of the B&O	Sherwood	OH	Sulphur Creek	62 (BOD, NH3, DO, TSS, pH)	5(I)

Figure 3.53: Land Use in the Sulphur Creek Sub-watershed

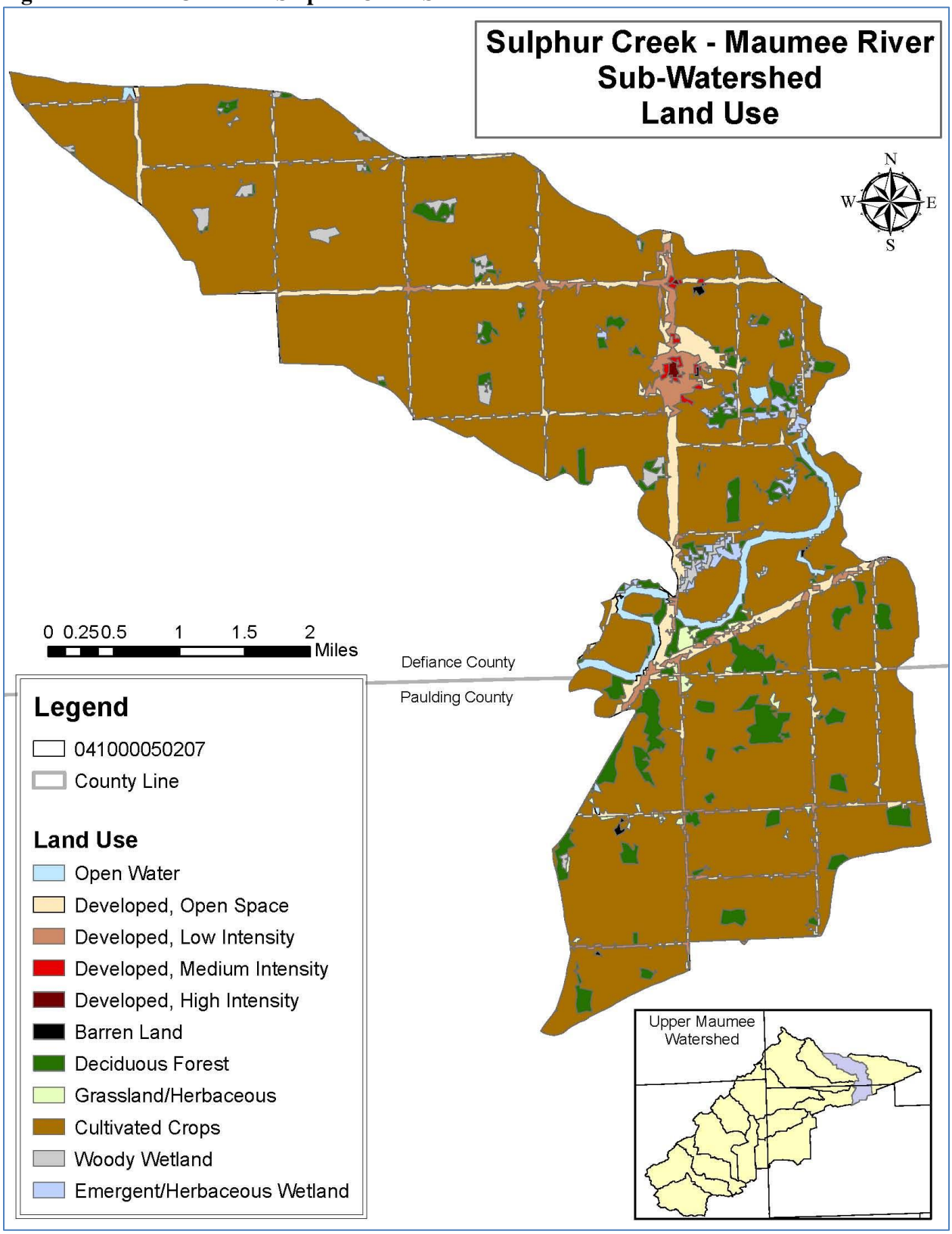


Figure 3.54: Windshield Survey Observation in the Sulphur Creek Sub-watershed

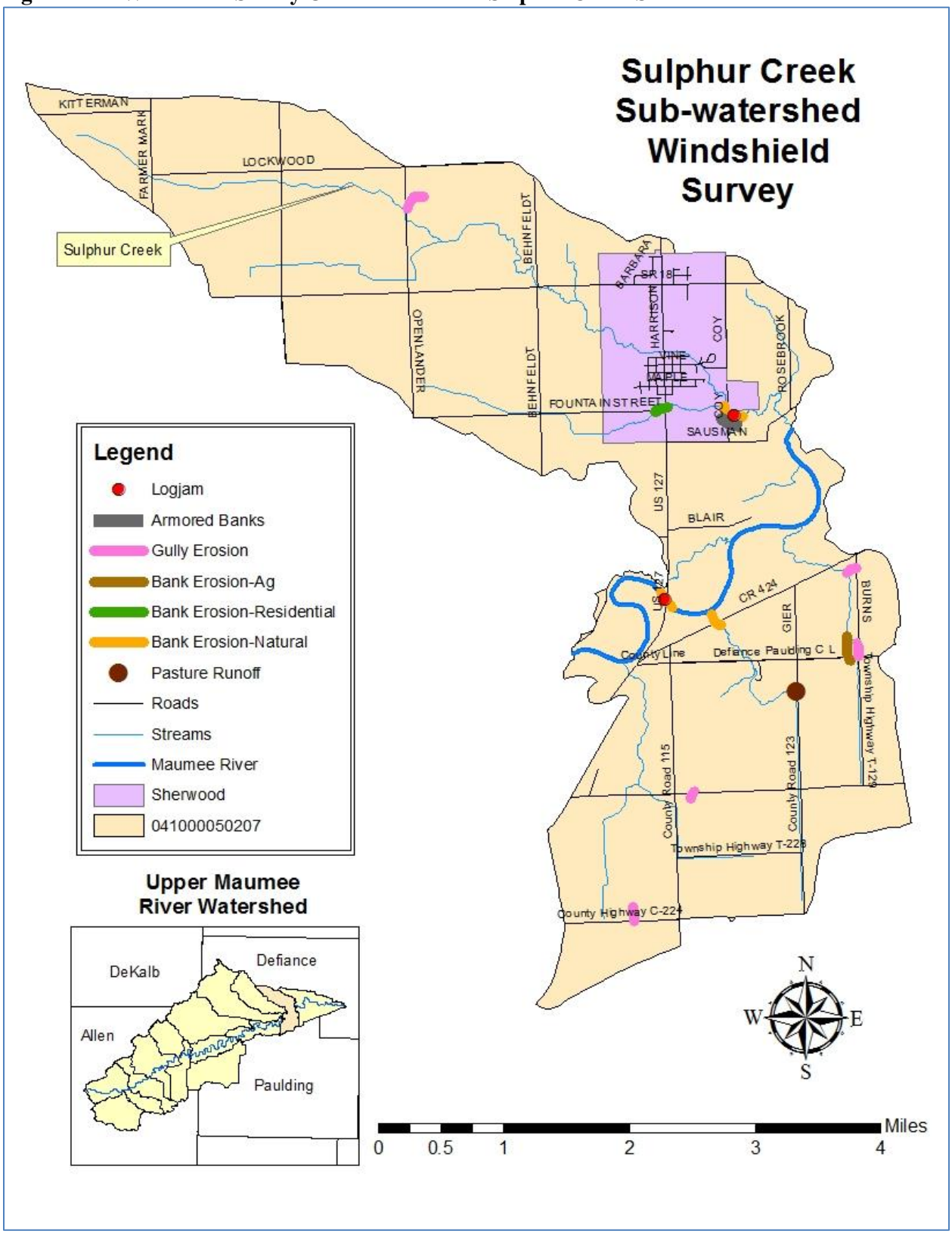
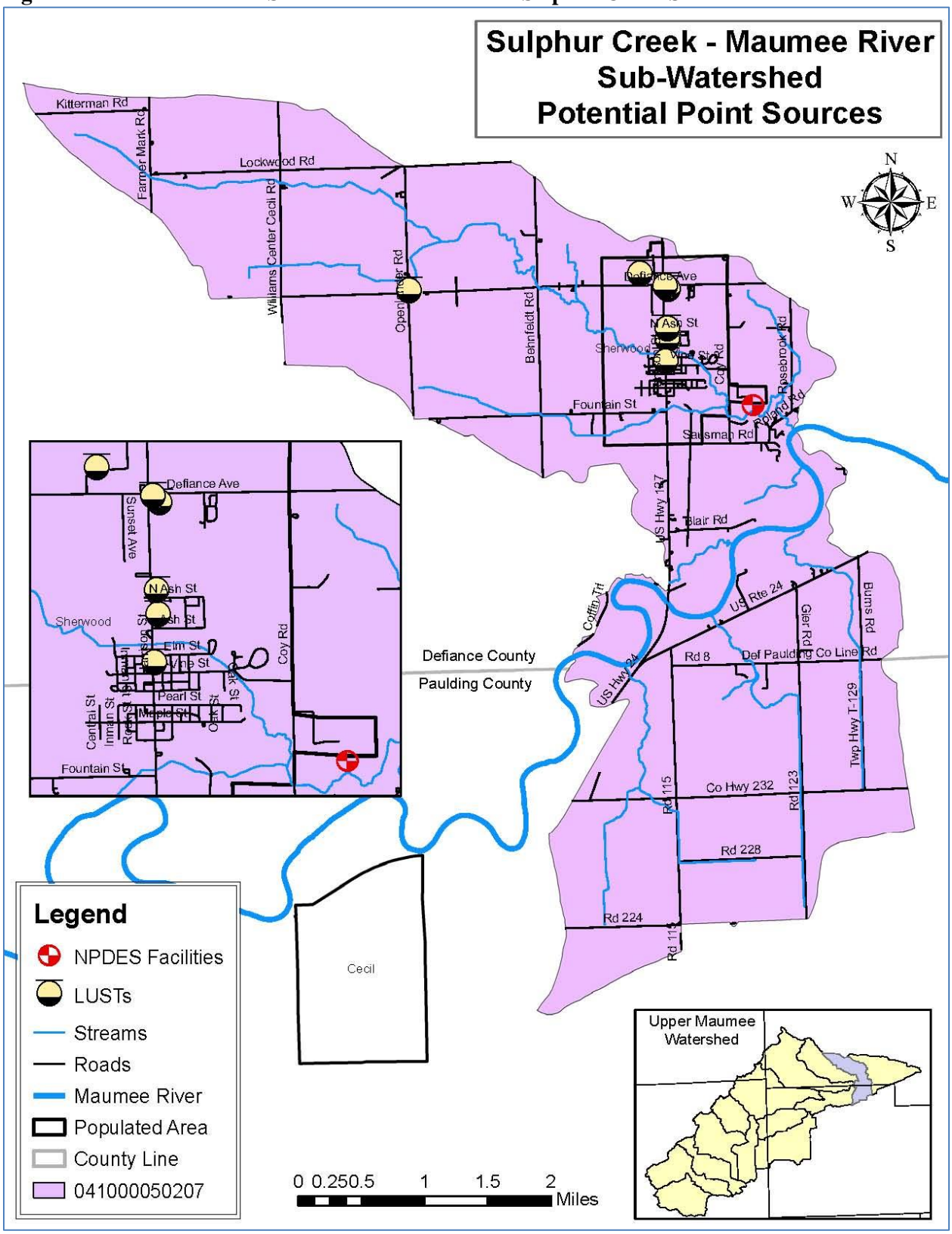


Figure 3.55: Potential Point Sources of Pollution in the Sulphur Creek Sub-watershed



3.4.14 Snooks Run Sub-watershed Land Use

The primary influence on water quality in the Snooks Run sub-watershed is agriculture with 72.84% of the land use being classified as agricultural by the USGS with over 70% of that being solely in row crops and the rest being classified as pasture/hayfield. Using National Land Cover Data acquired from the USGS and analyzed in ArcGIS, approximate percentages of each type of land use was determined and is shown in Table 3.92. Figure 3.56 shows the delineation of each type of land use within the Snooks Run sub-watershed.

Approximately 8.77% of the Snooks Run sub-watershed is considered to be developed though the majority of the developed land (6.46%) has less than 20% impervious cover indicating mostly turf lawns, parks or cemeteries. The most western portion of the City of Defiance (population 16,622) is located in the Snooks Run sub-watershed. However, the portion of Defiance within the watershed boundaries is mostly small clusters of homes and industry.

Defiance does have a centralized sewer system so septic discharge within the city limits should not be an issue. However, Defiance does have CSOs that discharge into the Lower Maumee River Watershed. So, while a portion of the City of Defiance is located within the Upper Maumee River Watershed boundaries, much of the stormflow discharges downstream through the municipal combined sewer system. Therefore, it is important to educate the urban community on urban water management. The Defiance County MS4 coordinator has been working within the community to educate the public on urban stormwater issues, and to encourage the use of urban BMPs and therefore, could be an ideal partner with this project.

There were fifteen sites identified as potential problems during the windshield survey conducted in 2012 in the Snooks Run Sub-watershed. Five of the sites, totaling over 807 feet, are eroding stream banks surrounded by agriculture land. Two sites were identified in Snooks Run that had moderate sized gullies present possibly due to conventionally tilled crop fields. Three sites were identified where it appeared that livestock had access to open water. One location was a very limited access site, though erosion was still present and other options are available to completely eliminate livestock access to open water. There was also one site with a moderate sized log jam which could result in bank erosion and two sites had rip rap thrown along the banks to try to prevent erosion, though these sites were beginning to erode since the bank armor was not maintained. There were two locations where a high amount of algae was observed which can be more common during drought years due to the fact that the water is stagnant. Both sites were located in streams surrounded by row crops and one site had a visible tile drain discharge point into the stream. Table 3.93 shows the observations that were made during the windshield survey and the approximate number of feet, where applicable, that will need to be remediated to improve water quality in the Snooks Run sub-watershed.

There are nine potential point sources of pollution in the Snooks Run sub-watershed including eight USTs, seven of which were considered to be leaking by the state regulating agency and have been closed. Underground storage tanks can pose a threat to both ground and surface

water. If the contents held in any of the facilities leak it can leach through the soil and reach groundwater contaminating drinking water wells of local residents, or leach into surface waters and decrease water quality and affect aquatic life. Table 3.94 is a list of LUSTs located within Snooks Run sub-watershed, the tank contents, and their current status.

Table 3.92: Land Use in the Snooks Run Sub-watershed

Open Water	Dev. Open Space	Dev. Low Intensity	Dev. Medium and High Intensity	Barren Land	Deciduous Forest	Evergreen Forest	Grassland/ Herbaceous	Pasture/ Hayland	Cultivated Crops	Woody Wetland	Total	Unit
442.6	1029.6	273.12	95.31	7.17	2092.45	6.28	69.92	387.33	11,227.11	314.61	15945.53	Acres
2.78%	6.46%	1.71%	<1%	<1%	13.12%	<1%	<1%	2.43%	70.41%	1.97%	100.%	%

Table 3.93: Windshield Survey Observations in the Snooks Run Sub-watershed

Observation	Bank Erosion (Agriculture)	Gully Erosion	Armored Banks	High Algae	Log Jam	Livestock Access
Number	807.07 ft	699.57 ft	50.70 ft	2	1	3

Table 3.94: Leaking Underground Storage Tanks in the Snooks Run Sub-watershed

UST FACILITY ID	INCIDENT NUMBER	NAME	STREET ADDRESS	CITY	STATE	COUNTY	TANK CONTENTS	DESCRIPTION
20000048	N00001	ODOT Defiance County Garage	2340 N Baltimore	Defiance	OH	Defiance	Kerosene	NFA-Closed
	N00002							NFA-Closed
20000074	N00001	Ohio State Highway Patrol Post	2351 N Baltimore	Defiance	OH	Defiance	Gasoline	NFA-Closed
20000217	N00001	GH Voigt Co	1050 Atlantic St	Defiance	OH	Defiance	Gasoline	NFA-Closed
20000054	N00001	Coca-Cola Bottling Co	2100 Baltimore	Defiance	OH	Defiance	Unknown	NFA-Closed

UST FACILITY ID	INCIDENT NUMBER	NAME	STREET ADDRESS	CITY	STATE	COUNTY	TANK CONTENTS	DESCRIPTION
20000147	N00001	BP Oil Co #69265	2003 Baltimore	Defiance	OH	Defiance	Gasoline	NFA-Closed
20009974	N00001	Reagle Auto Serv	1990 Baltimore	Defiance	OH	Defiance	Unknown	NFA-Closed
20008735	N00001	Pag Realty	1640 Baltimore	Defiance	OH	Defiance	Used Oil	NFA-Closed
20005214	N00001	City of Defiance St Dept	1450 Baltimore	Defiance	OH	Defiance	Unknown	NFA-Closed

Figure 3.56: Land Use in the Snooks Run Sub-watershed

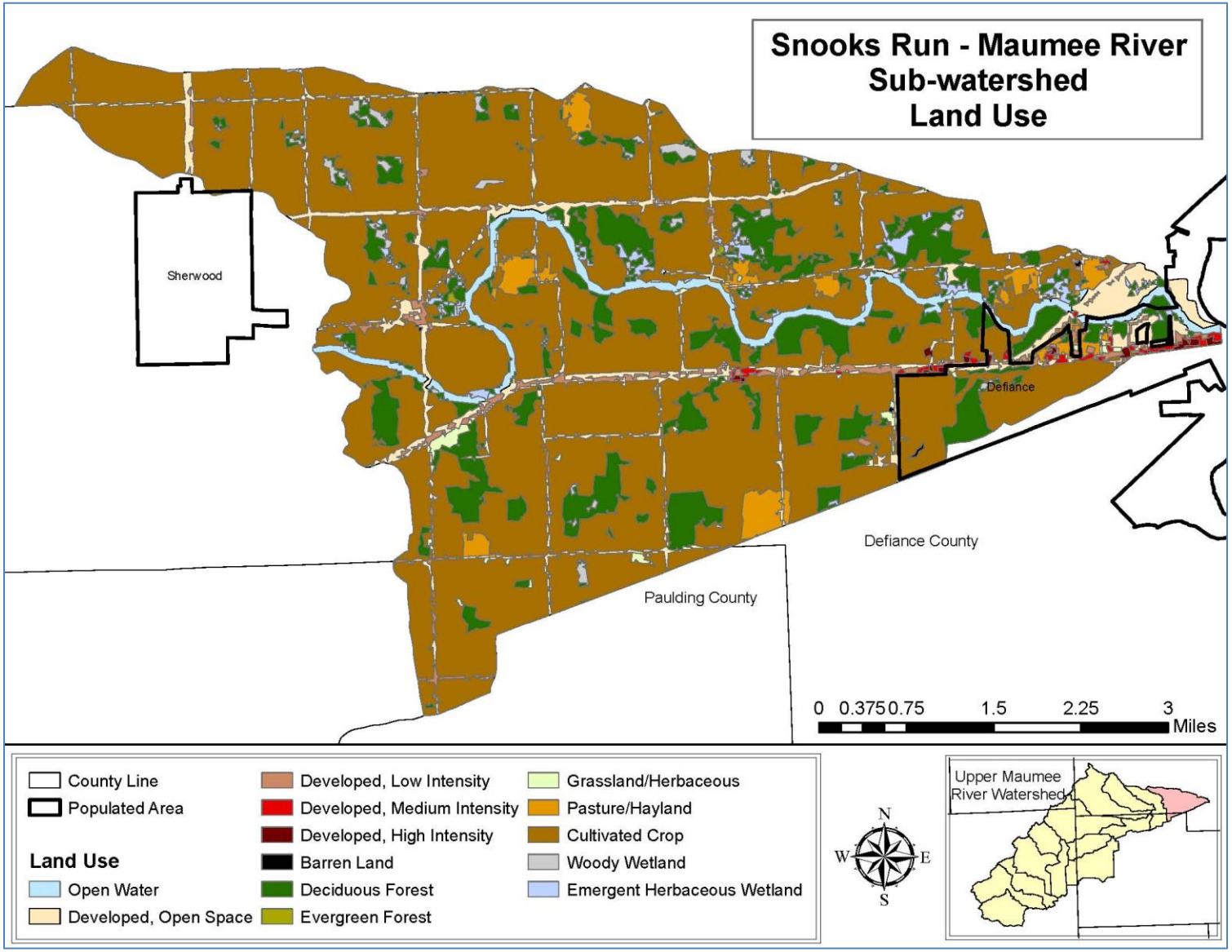


Figure 3.57: Windshield Survey Observations in the Snooks Run Sub-watershed

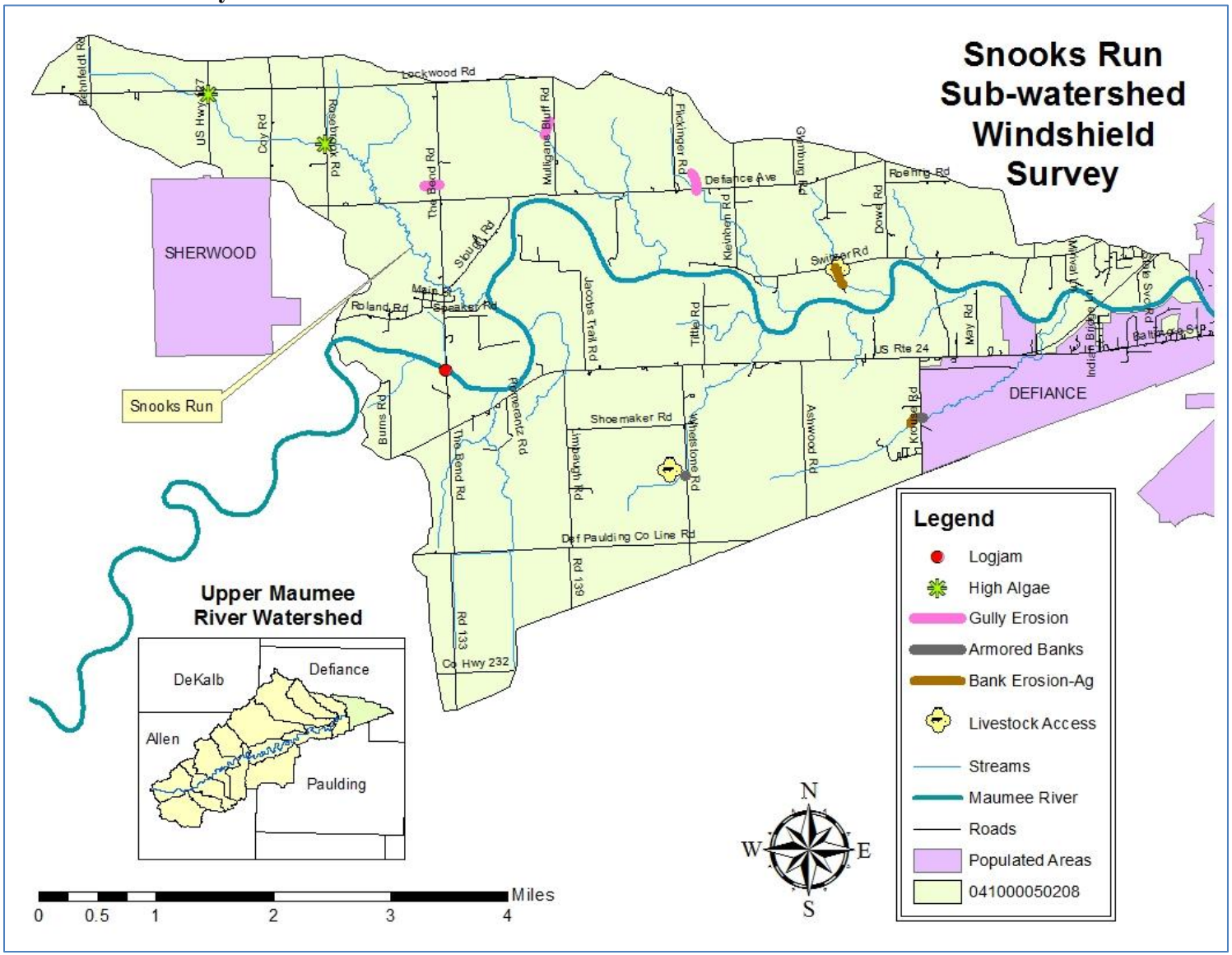
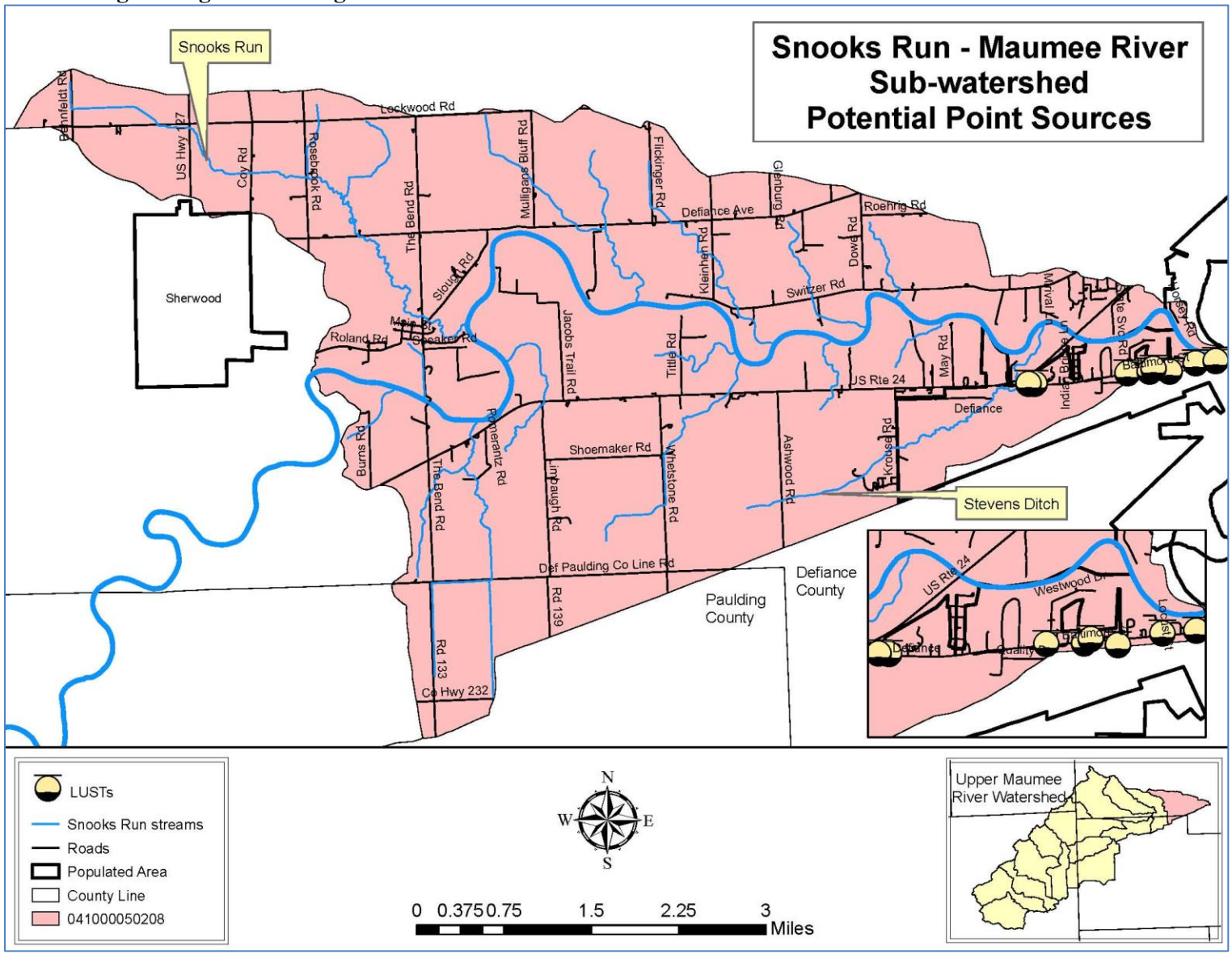


Figure 3.58: Leaking Underground Storage Tanks in Snooks Run Sub-watershed



3.5 Watershed Inventory Summary

To better understand the water quality problems in the Upper Maumee River Watershed and what influences may be contributing to those problems, a map was developed outlining the water quality issues in each sub-watershed, as well as showing the results of the land use inventory, specifically those sites that were identified during the windshield survey, as well as other points of interest that may be contributing to the degradation of water quality (Figure 3.59). As can be seen in the figure, *E. coli,* nutrients, and turbidity levels were elevated in nearly every sub-watershed that water quality samples were taken from. It should be noted that water quality samples taken in Ohio were all from the main stem of the Maumee River and therefore, may not show water quality problems that would be evident in smaller tributaries due to the volume of water in the Maumee that dilutes pollution. However, it is significant to note that all samples taken from the Maumee River indicate a problem with nutrients, and samples taken from North Chaney Ditch and Snooks Run indicate a sediment issue as well.

After examining water quality and land uses throughout the UMRW it can be determined that the problems and concerns contributing to water quality impairments within the watershed are fairly homogenous throughout the project area, with the exception of the larger urban areas with CSOs and high amounts of imperviousness.

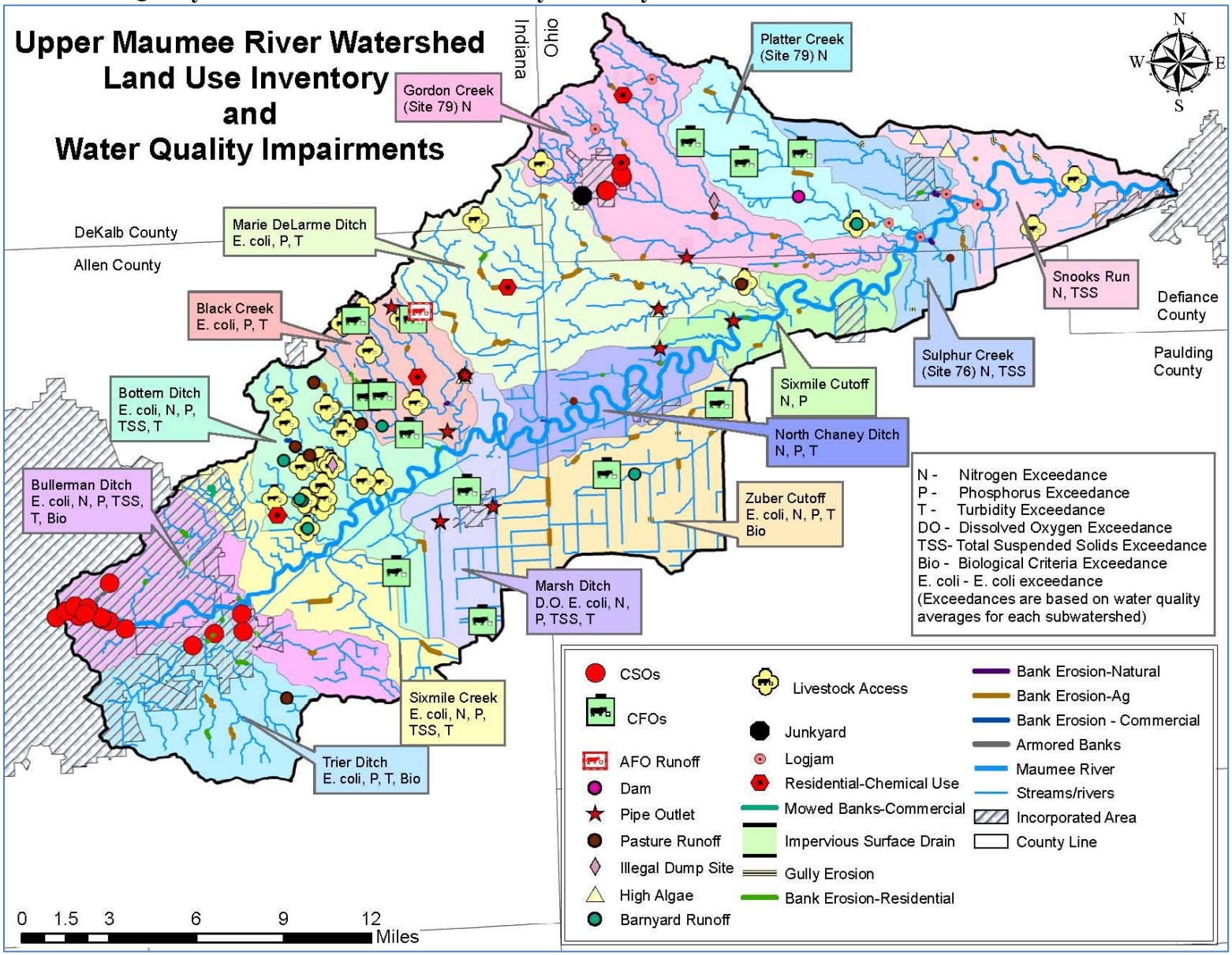
Land uses throughout the watershed are primarily row crops, and a few pasture fields. The soils within the project area are ideal for row crops as they are nutrient rich soils, however there is a significant amount of conventional tillage still being utilized which may explain the high turbidity levels found in water samples throughout the watershed. Since so much of the watershed is rural, it can be assumed that on-site sewage treatment is prevalent throughout the watershed. This poses a threat to water quality as 97% of the soils in the watershed are classified as not suitable for septic placement. Allen County Health Department's estimate of nearly 9,000 septic systems at risk of, or are, failing in the county further justifies the assumption that leaking septic systems may be contributing to bacteria, nutrient, and sediment contamination of water ways.

The windshield survey revealed several possible contributors to the degradation of water quality in the UMRW including mowed residential and commercial lawns that have little to no riparian buffer. Often times, stormwater runoff from urban areas can carry bacteria from pet waste and excess fertilizer and pesticides. There are also several golf courses and cemeteries located in the project area that may contribute to water pollution from fertilizer, pesticides, a lack of riparian buffer and wildlife waste. Some more direct sources of pollution identified during the windshield survey are; 31 sites where livestock have direct access to open water, 72,849.63 feet of streambank erosion within the agricultural community and 14,850.86 feet of streambank erosion within the urban community and 735.55 feet of streambank erosion within a commercial setting, 11 tile drains that were discharging during a drought season when all other tile drains were dry, and 20 sites of either barnyard or pasture runoff discharging to open water. Each of these sites and observations made during the windshield survey provide a direct

means for pollution to enter surface water and can be remediated with the implementation of BMPs.

A final and definite contributor to pollution in the Maumee River and its tributaries are the 21 CSOs that discharge into the Maumee River or its tributaries during wet weather events, as well as the additional 30 CSOs located upstream from the Maumee River in the St. Marys and St. Joseph Rivers. When the CSOs discharge they deposit storm water from urban areas which carry fertilizer, sediment, salt, pesticides, bacteria, oil, and a multitude of other urban pollutants, as well as raw sewage directly to surface waters.

Figure 3.59: Water Quality Concerns and Land Use Inventory Summary for the UMRW



3.6 Analysis of Stakeholder Concerns

Stakeholders in the Upper Maumee River Watershed expressed concerns regarding water quality and land uses during the public meeting held in 2012 and additional concerns were raised after performing the watershed inventory. These concerns are outlined in Table 3.95, as well as whether or not the concerns are supported by the collected data, quantifiable, outside the scope of this project, and whether or not the steering committee would like to focus on the concerns. A survey was disseminated to all members of the UMRW steering committee to form a general consensus on whether or not the concern was outside the scope of this project and whether or not the group would like to focus efforts on the concern in the WMP or in the future. Eight steering committee members responded to the survey and it was agreed that none of the concerns were outside of the scope of this project. However, the group decided to not focus efforts on, urban contamination sites, flooding issues or log jams as these issues are being addressed by other government agencies. Urban contamination sites in particular LUSTs, Brownfields, Superfund Sites, and most NPDES permitted facilities are regulated by its respective state agency and/or the US EPA and the steering committee felt that its efforts would be better spent focusing on non-point sources of pollution. However, it should be noted that the steering committee agreed that many practices that will address NPS issues, including reducing stormwater flow, will help with flood issues, as well as possibly decrease the frequency and size of log jams.

Table 3.95: Analysis of Stakeholder Concerns

Concerns	Supported by Data?	Evidence	Able to Quantify?	Outside Scope?	Group Wants to Focus On?
Flooding	Yes	All riparian areas of the Maumee River are considered to be high risk for flooding in IN and are considered to be located within the 100 year floodplain in OH. All incorporated areas within the watershed are located partially within a floodplain. Several log jams, which often contribute to flooding were observed during the windshield survey. Three major floods have taken place within the watershed over the past decade.	Yes	No	No
Log Jams	Yes	Seven log jams were observed during the windshield survey. Stakeholders have observed log jams throughout the watershed at different times.	Yes	No	No
Stream Bank Erosion	Yes	88,436 feet of eroded streambanks were observed through windshield and desktop surveys conducted in 2012. Nearly all of the sub-watersheds, with the exception of Gordon Creek, Platter Creek, Sixmile Cutoff, and Sulphur Creek, tested high for TSS and/or turbidity. High measurements of these parameters may indicate streambank erosion upstream of the sample site.	Yes	No	Yes
Lack of Riparian Buffer	Yes	Many streams and ditches scattered throughout the watershed observed during the 2012 windshield survey lacked an adequate buffer to properly filter out pollutants and slow storm flow. The Riparian Buffer desktop survey revealed that 71% of parcels in the agricultural community have a buffer of less than 60' with 57% of that being a buffer of less than 20'.	Yes	No	Yes

Concerns	Supported by Data?	Evidence	Able to Quantify?	Outside Scope?	Group Wants to Focus On?
Recreational Opportunities and Safety	Yes	There are only three boat launches managed by the DNR located within the Maumee River Watershed. There is one canoe launch at Moser Park managed by New Haven. There are a total of six parks in the watershed that are located near the river, however there is limited access for fishing, boating and general recreating on the river.	Yes	No	Yes
Segmented/ Lack of Forested Areas	Yes	Only 4.92% of the watershed is classified as forested. The land use map on page 38 shows how segmented the forested areas are. There are three species on the endangered species list for the four counties of the UMRW that rely on forested areas for their habitat and the continued segmentation of their habitat may have contributed to them being listed.	Yes	No	Yes
Lack of Water Education/Outreach	No	There was not an organization focused solely on the Upper Maumee River Watershed until the Upper Maumee Watershed Partnership was formed in 2009. As per State law each CSO community must develop a plan to educate the public on water quality and stormwater management. Those communities include Fort Wayne, New Haven, Hicksville, and Defiance. The Allen County Partnership for Water Quality provides education and outreach on water quality issues throughout Allen County. It is not clear how much of the water quality education reaches the public.	No	No	Yes
Rural regulated ditches	Yes	There are 534.35 miles of ditches managed by the county regulating agency. Several streams and ditches have been dredged and straightened and at least one stream was noted as being recently dredged with all vegetation removed from the riparian area during the 2012 windshield survey.	Yes	No	Yes

Concerns	Supported by Data?	Evidence	Able to Quantify?	Outside Scope?	Group Wants to Focus On?
Combined Sewer Overflows	Yes	Fort Wayne has 43 CSOs discharging to the St. Joesph, St. Marys, and Maumee Rivers, all of which eventually flow to the Maumee River. 16 of those 43 CSOs discharge into the Maumee River. New Haven has Four CSOs and Hicksville has five CSOs.	Yes	No	Yes
Need for Wetland Protection / Restoration	Yes	59% of the soils in the watershed are classified as hydric by the NRCS which is likely due to a large portion of the Great Black Swamp that was located within the Ohio portion of the watershed. The Ohio DNR estimates that 90% of the wetlands in Ohio have been drained and converted to farm land as currently only 3% of the watershed is classified as wetland.	Yes	No	Yes
Increase in Impervious Surfaces	Yes	The number of building permits issued in 2010 through 2012 has been on a steady decline. However, current trends indicate that construction is picking up which inevitably will increase imperviousness in the watershed.	Yes	No	Yes
Urban Contamination Sites	Yes	There are 19 NPDES permitted facilities, six brownfields, one superfund site, and 131 leaking underground storage tanks located within the UMRW. It should be noted that of the 19 NPDES permitted facilities, there were three facilities that have never had a compliance issue.	Yes	No	No
Need for More Water Quality Studies/ Planning Efforts	Yes	The US Army Corp of Engineers wrote a WMP for the Upper Maumee to provide watershed, city, and county planners with a tool to help restore, protect, and promote sustainable uses of water resources and the surrounding land within the Western Lake Erie Basin. However, the WMP was very vague and did not provide enough detail to properly address water quality issues adequately. The TMDL that was written by IDEM in 2006 is also very vague and is now outdated as the trends in the watershed are continuously changing. Finally, most other studies are federal requirements that address more point sources than the primary water quality concern of this project.	Yes	No	Yes

Concerns	Supported by Data?	Evidence	Able to Quantify?	Outside Scope?	Group Wants to Focus On?
Increasing Hypoxic Zone in WLEB	No	Federal interest in the Great Lakes has begun to move toward Lake Erie due to the growing algal bloom along the Western Lake Erie coast. DRP has not been sampled in the watershed though Total Phosphorus exceeded target levels in all sub-watersheds, except for those where samples were taken from the mainstem only. Sediment (Turbidity and/or TSS) exceeded the target level in all sub-watersheds except Gordon Creek, Platter Creek, and Sixmile Cutoff.	Yes	No	Yes
Increase in Dissolved Reactive Phosphorus	No	No samples have been taken to measure DRP by any organization as of May 2013.	No	No	Yes
Fish and Wildlife Habitat	Yes	There are nine species of fish, wildlife, and birds on the federal endangered species list. Excessive sediment was found in water quality samples in all sampled sub-watersheds except for Sulphur Creek and Sixmile Cutoff. Sediment can bury aquatic habitat, clog fish lungs, and smother eggs and nests on streambeds. There are 46 invasive species of fish, mussels, and vegetation found within the four counties of the UMRW which can use up resources and take over prime habitat that indigenous species rely on.	Yes	No	Yes
Soil Erosion and Sedimentation	Yes	Total suspended solids or turbidity were found to exceed target levels in all sampled sub-watersheds in the UMRW except for Gordon Creek, Platter Creek, and Sixmile Cutoff. Macroinvertebrate scores were low in Trier Ditch, Bullerman Ditch, and Zuber Cutoff. This may be due to sedimentation smothering their habitat. 88,436 feet of eroded streambanks, and 2,403.70 feet of gully erosion was observed through windshield and desktop surveys conducted in 2012. Approximately 36% of corn fields and 16% of bean fields are conventionally tilled which leads to soil loss and sedimentation of surface waters.	Yes	No	Yes

Concerns	Supported by Data?	Evidence	Able to Quantify?	Outside Scope?	Group Wants to Focus On?
Unbuffered Tile Inlets	Yes	A specific inventory of tile inlets was not conducted though many unbuffered tile inlets were observed during the 2012 windshield survey.	No	No	Yes
Structures within Floodplain	Yes	The entire UMRW is at some risk of flooding, though the area directly adjacent to the Maumee River in Indiana is considered to be at high risk of flooding which includes Fort Wayne and New Haven. Woodburn is surrounded by streams that are at a high risk of flooding. The land directly adjacent to the Maumee River and many of its tributaries in Ohio are considered to be within the 100 year flood plain. Antwerp, Hicksville, Sherwood, and Defiance are all located within the 100 year floodplain. Nearly all populated areas within the UMRW is located within a flood plain which poses a threat to water quality when structures are flooded and contaminants leach into the water.	Yes	No	Yes
Failing or Straight pipe Septic Systems	Yes	Four sites were observed during the 2012 windshield survey that may be direct discharge from a septic system. The Allen County Health Department estimates that nearly 9,000 (50%) of the septic systems in Allen County are, or are at risk of failing. It is estimated that 25%-30% of the septic systems in Ohio are failing. 96% of the watershed soils are considered to be very limited, and 1% of the soils are considered somewhat limited for the placement of septic systems.	Yes	No	Yes
Storm Water Control	Yes	There have been three major floods in the Maumee River Watershed within the past decade. There are Long Term Control Plans (LTCPs) in place in Fort Wayne, New Haven, Hicksville, and Defiance to separate sewers and to educate the public on storm water control methods. The number of CSO events have not decreased within the CSO communities since the development of the LTCPs)	Yes	No	Yes