

# *Toussaint River Watershed*

## Volume 1

- Background & Water Quality Data for the Toussaint River Watershed
- Land Use of the Toussaint River Watershed
- Status of Beneficial Use Impairments
- Watershed Maps (General, 14-digit HUCs, River Mile)

## Volume 2

- Packer Creek Watershed Projects Table
- Toussaint Creek/Toussaint River/Rusha Creek Watershed Projects Table

The Toussaint River Watershed is Hydrologic Unit 04100010 020. The Toussaint Creek/River is a small Black Swamp river that flows from northern Bowling Green in Wood County, through Luckey, Genoa, and Rocky Ridge, and into Lake Erie in Carroll Township of Ottawa County. The entire drainage area covers 143.1 square miles. Toussaint Creek is 96.3 square miles of the total drainage area. Packer Creek is the Toussaint’s primary tributary with 34 square miles of drainage. Rusha Creek enters the Toussaint River near the mouth with a drainage area of 12.8 square miles.<sup>1</sup>

Above its confluence with Packer Creek, the Toussaint is considered a creek; below it, the Toussaint widens to become a river as it reaches lake level. In this lower reach, there are two important natural areas. One is the Toussaint Creek Wildlife Area, managed by Ohio Department of Natural Resources, Division of Wildlife. Additional coastal marsh areas are located on private property owned by Toledo Edison at the Davis Besse Nuclear Power Station. More than 700 of the 900 acres of the station is dedicated as a wildlife preserve; an important migration route for waterfowl, including mallard ducks and Canada Geese.<sup>2</sup>

The Toussaint River watershed is a highly agricultural area; the largest town is Genoa, with a population of 2,230 in 2000. The watershed includes dolomite limestone quarries near Woodville, Genoa, Clay Center, and Rocky Ridge. The former Brush Beryllium plant site in Luckey is planned for a clean-up of contaminated soil by the US Army Corps of Engineers.<sup>3</sup> The Davis Besse Nuclear Power Station is located near the mouth of the Toussaint River.

**Toussaint River Watershed Use Attainment Data<sup>4</sup>**

River Mile	Sample Year	ICI Score	HELP Ecoregion ICI Criteria	Lacustrary ICI Score*	HELP Ecoregion Lacustrary ICI Criteria*	Modified Index of Well Being Score	HELP Ecoregion Miwb Criteria	IBI Score	HELP Ecoregion IBI Criteria	Lacustrary IBI Score*	HELP Ecoregion Lacustrary IBI Criteria*	QHEI Score	HELP Ecoregion QHEI Criteria
<i>Toussaint River/Creek</i>													
0.3	1995			30	42								
0.3	1995											44	60
0.3	2003					8.2	8.6			38	42		
0.6	1996			28	42								
1.4	1996			10	42								
1.7	2003					6.2	8.6			22.5	42		
2.5	1995											53	60
3.4	1995			12	42								
4.4	1995											34	60
4.7	2003			12	42								
10.45	2003	36	34			8.2	7.3	25	32			51.5	60
12.5	2003	32	34			5.7	7.3	28	32			34	60
13.9	1993											35	60
14	2003	24	34			5.9	7.3	27	32			50.4	60
18.4	2003	32	34			6.4	7.3	29	32			42	60
18.9	1993											56	60
19.7	2003	42	34			7.3	7.3	34	32			71.5	60
20	1987											44	60

River Mile	Sample Year	ICI Score	HELP Ecoregion ICI Criteria	Lacustrary ICI Score*	HELP Ecoregion Lacustrary ICI Criteria*	Modified Index of Well Being Score	HELP Ecoregion Miwb Criteria	IBI Score	HELP Ecoregion IBI Criteria	Lacustrary IBI Score*	HELP Ecoregion Lacustrary IBI Criteria*	QHEI Score	HELP Ecoregion QHEI Criteria
20	1999	24	34										
20.2	2003	42	34			6.9	7.3	33	32			57.5	60
20.3	1987											41	60
20.3	1993											51.5	60
28.55	2003					8	7.3	27	32			49.5	60
29.37	2003											42.5	60
29.4	2003	32	34			7.2	7.3	28	32			59	60
33.52	2003	38	34					30	28			42.5	60
36.46	2003												
36.5	2003							20	28			25.5	60
<i>Gust Ditch</i>													
2.8	2003							16	28			44.5	60
<i>Martin Ditch</i>													
0.2	2003							24	28			27.5	60
<i>Packer Creek</i>													
0.2	2002					7.4	8.6			23	42	26.5	60
3.45	2003	44	34			9.1	8.6	36	32			42	60
3.5	1993	36	34										
4.6	2003	36	34									51	60
4.7	1993	45	34										
6	1993	12	34										
6.9	1993	31	34										
11.3	1993	28	34										
11.3	2003	30	34									28	60
14.7	2003							32	28			27	60
15.6	2003							18	28			29	60
21.2	2003							21	28				
<i>Rusha Creek</i>													
4	2003					4.8	8.6			21	42	16	60
5	2003							18	28			29	60

\* The double horizontal line represents the lacustrary divide of the Toussaint River/Creek, although it is noted that lacustrary lengths are approximate and fluctuate with lake levels and wind direction.<sup>5</sup>

### Toussaint River Watershed DELT Data<sup>6</sup>

River Mile	Sample Year	Percent DELT Anomalies	Percent Deformities	Percent Eroded Fins	Percent Lesions	Percent Tumors	Relative Number of Fish Collected	Relative Number of Species Collected	Relative Number of Fish Minus Tolerants	Relative Weight of Fish Collected (in grams)
0.3	1995	6.45	1.08	1.08	4.3	0	186	17	144	42.142
0.3	1995	3.23	0	0	3.23	0	434	19	416	22.142
2.5	1995	9.68	0	0	9.68	0	62	9	22	58.926
2.5	1995	0.66	0	0.33	0.33	0	604	17	566	43.329
4.4	1995	8.64	0	0	7.41	1.23	162	14	92	92.603
4.4	1995	2.62	0.36	0.25	2.02	0	794	17	608	153.08

River Mile	Sample Year	Percent DELT Anomalies	Percent Deformities	Percent Eroded Fins	Percent Lesions	Percent Tumors	Relative Number of Fish Collected	Relative Number of Species Collected	Relative Number of Fish Minus Tolerants	Relative Weight of Fish Collected (in grams)
13.9	1993	17.0588	0	17.06	0	0	127.5	11	42	4.148
18.4	1987	0	0	0	0	0	156	10	88.5	0.518
18.4	1987	0	0	0	0	0	688.5	11	255.02	1.806
18.9	1993	5.929	0	5.93	0	0	459	16	154.5	70.28
19.8	1987	3.3019	0.24	0	3.07	0	636	18	259.49	33.824
19.8	1987	0	0	0	0	0	667.5	16	259.52	44.868
20	1979	0	0	0	0	0	198	8	65.99	34.315
20	1987	1.3072	0	0	1.31	0	229.5	14	100.5	56.981
20	1987	1.2766	0.3	0.65	0	0.32	493.5	17	293.98	21.169
20.2	1979	0	0	0	0	0	375	13	282	0.609
20.3	1987	0.3521	0	0	0.18	0.18	852	8	366.02	7.459
20.3	1993	2.3473	0	2.35	0	0	304.39	10	114.32	0.879

\* The double horizontal line represents the lacustrary divide of the Toussaint River/Creek, although it is noted that lacustrary lengths are approximate and fluctuate with lake levels and wind direction.<sup>7</sup>

### Toussaint River/Creek Watershed Impairments Causes and Sources of Impairments<sup>8</sup>

Segment	Miles Assessed & Aquatic Life Use Designation <sup>#</sup>	Causes of Impairment*	Sources of Impairment*	Comments
Packer Creek	21 (RM 0.2-21.2)	Siltation Nutrient and Organic enrichment	Ag-row crop Ag-NPS runoff Channelization Failing septic systems	Toussaint TSD 2005: RM 0.2, 15.6, and 21.2 were classified in non-attainment; RM 3.5, 4.6, 11.3, and 14.7 were in full attainment
Toussaint Creek	26 (RM 10.5-36.5) WWH	Channelization Habitat alterations Nutrient and Organic enrichment Siltation	Ag-row crop Channelization Failing septic systems Genoa Quarry Luckey WWTP Riparian removal Unknown source	Toussaint TSD 2005: RM 12.5, 13.9, 28.6, 36.5 were classified in non-attainment; RM 18.4 was in partial attainment; RM 10.5, 19.7, 20.2, 29.4, and 33.5 were in full attainment
Toussaint River	4.4 (RM 0.3-4.7) WWH	Siltation Nutrient enrichment	Ag-row crop	Toussaint TSD 2005: RM 1.7 and 4.7 were classified in non-attainment; RM 0.3 was in full attainment
Rusha Creek	2 (RM 3-5) MWH	Siltation Nutrient enrichment	Ag-row crop Channelization	Toussaint TSD 2005: RM 3.0 and 5.0 were in non-attainment

\*Magnitude of that cause or source of impairment: H=high, M=moderate, S=slight, T=identifies a threat

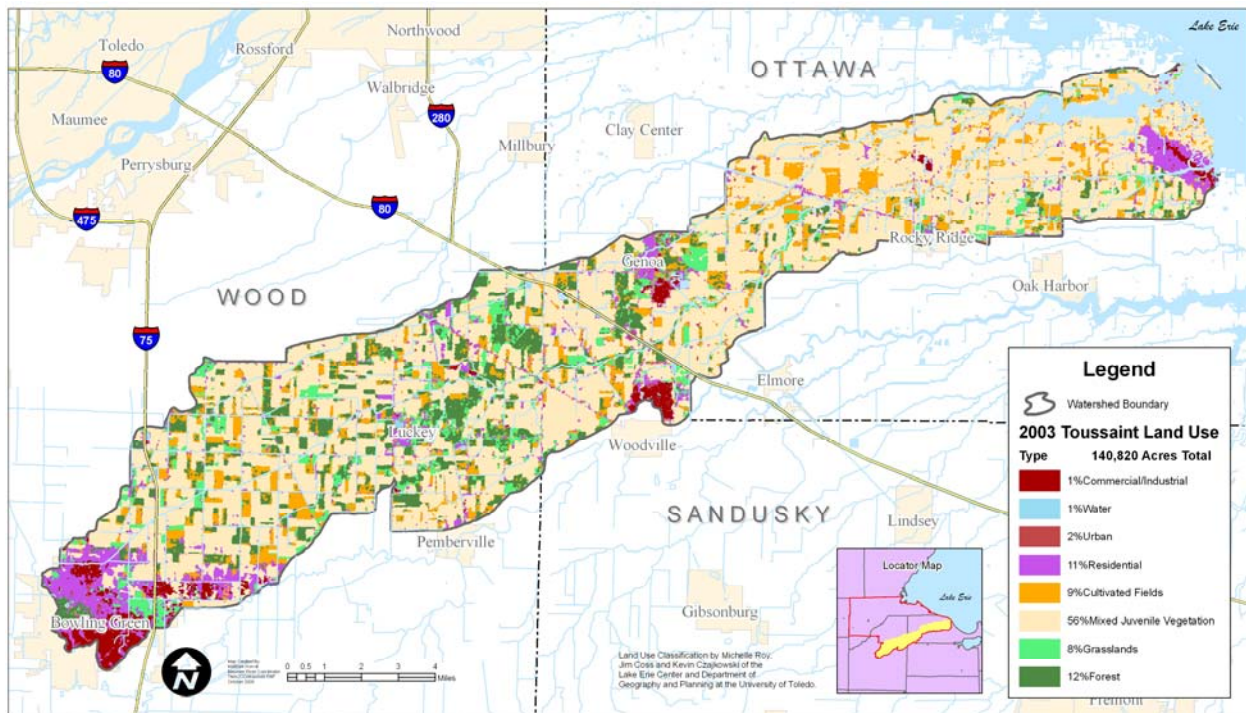
<sup>#</sup>Aquatic Life Use Designation: WWH=Warm Water Habitat, MWH=Modified Warm Water Habitat, LRW=Limited Resource Water

## Land Use of the Toussaint River Watershed

In 2003 land use classifications produced by The University of Toledo for the Toussaint River watershed showed 56 percent of the land used by mixed juvenile vegetation. This vegetation type can be row crops in an early stage of growth, tracts of open space or yards. Forest and grassland account for 12 percent and 8 percent respectively, and 9 percent is in cultivated fields.

Approximately 11 percent of the watershed has been developed for residential use, 2 percent for urban uses, and 1 percent for commercial/industrial uses.

### 2003 Land Use in the Toussaint River Watershed



There have been two Clean Water Act Section 319 watershed implementation grants that positively changed the land use and agricultural practices in the Toussaint and Packer watersheds.

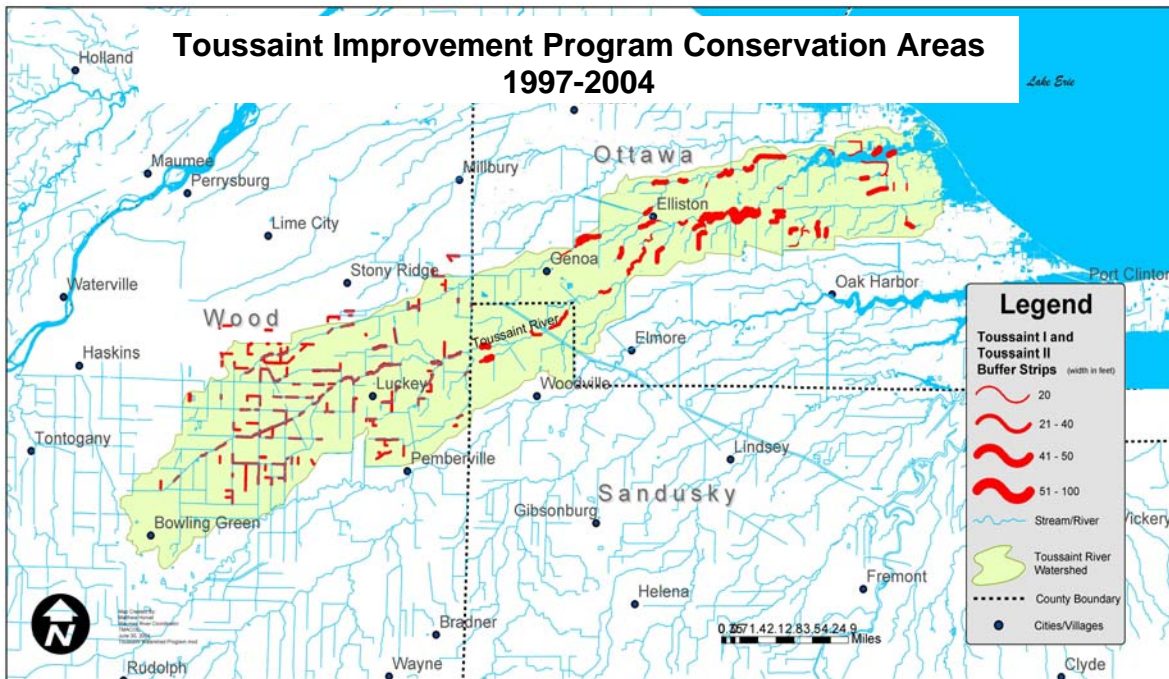
The TMACOG, Ottawa, Wood and Sandusky Soil and Water Conservation Districts, and Maumee RAP worked to restore the riparian corridor in the Toussaint River watershed. Phase I of the Toussaint Incentive Improvement Program began in 1997 with a concentrated focus on land adjacent to the main stem of the Toussaint River. Landowners were offered financial incentives to adopt agricultural conservation practices such as conservation tillage, setting aside flood plains, and establishing buffers in concentrated flow areas and along stream banks along the 37 mile corridor.

Phase II of the Program continued these conservation buffer incentives, extending the project area to include all streams in the Toussaint watershed including Packer Creek and Rusha Creek. This second grant provided funds for the Wood and Ottawa County health departments to develop Home Sewage Treatment System (HSTS) Plans to identify critical areas for repair and replacement of rural septic systems that degrade water quality. The grant also offered homeowner education on maintenance of HSTSs, and partial rebates on septic tank pumping for over 100 households.

Over the course of the seven years of grant activities, nearly 75 miles of stream bank in the watershed have been protected with buffers that will reduce sediment and nutrient runoff and improve the water quality and instream habitat. Over 300 contracts for conservation practices were



signed with landowners in Ottawa, Wood, and Sandusky counties. The majority of flood plain set aside was accomplished on the lake plains alluvial soils in Ottawa County. Landowners in the small tributaries and headwaters of the Toussaint and Packer installed filter strips along nearly 346,000 lineal feet of stream bank. In Wood County, the Commissioners offered an additional one time



incentive of \$20 per acre to landowners who signed up for other state and Federal buffer programs in 2001. In addition to the 319 filter strips, there was a good response to Conservation Reserve Enhancement Program (CREP), which was introduced in the Western Basin Lake Erie in 2000 and the ongoing CRP buffer programs in all three counties.

**Status of Beneficial Use Impairments**

When the Maumee Area of Concern was defined in the late 1980s, the Maumee RAP Public Advisory Council determined which beneficial uses were impaired based on the entire AOC. This was done because the only way of delisting an AOC was a comprehensive one; all listed or all delisted. Now that there are alternative methods for incrementally delisting an AOC by watershed or impairment, the Maumee RAP needed to determine the BUIs by watershed. This was done using data and resources that were available before 1990. The two tables below summarize the BUIs impacting the Toussaint River Watershed in 1990 and 2004.

Following the BUI Summary Tables are maps of this watershed, including the jurisdictions, 14-digit HUCs, and custom-digitized river mile maps made specifically for the Maumee AOC watersheds.

The heart of this plan, the Watershed Project Tables (WPTs), is found in Volume 2. As explained in the Introduction, the WPTs are the living portion of the report that will change and grow, as projects are implemented and goals are attained. These tables have been organized by Causes and Sources and include Projects, Potential Project Partners, Funding Sources, Timeline, Status, Performance/Environmental Measures, HUC/Stream Segment Addressed, and indicate the Beneficial Use Impairment (BUI) that could be effected by the project. Also incorporated into the table (where

applicable) is a reference to the ODNR Coastal Management Measures that may benefit from the implementation of an identified project.

There are differing levels of detail in the WPTs, often depending on how soon a project will be implemented, what source will be funding it, or by the amount of data available for that watershed. The status of projects in the WPTs has been organized and color-coded as follows: **In Progress**, **Planning**, **Concept**, **Ongoing**, and **Complete**.

**Beneficial Use Impairments In 1990  
for the Toussaint River/Packer Creek/Rusha Creek**

*(as determined in 2002)*

<b>Beneficial Use Impairments</b>	<b>Toussaint River</b>	<b>Packer Creek</b>	<b>Rusha Creek</b>	<b>Reasons/Data Source</b>
<b>BUI 1: Restriction on fish and wildlife consumption</b>	Impaired	Impaired	Impaired	PCB & mercury throughout Lake Erie from RAP '93 rpt
<b>BUI 2: Tainting of fish &amp; wildlife flavor</b>	Not Impaired	Not Impaired	Not Impaired	RAP rpt '93 page 7-6
<b>BUI 3: Degradation on fish and wildlife populations</b>	Unknown	Unknown	Unknown	RAP rpt '93 page 7-7. Could see residual contamination in coastal marshes from bay sediments
<b>BUI 4: Fish tumors or other deformities</b>	Impaired	Unknown	Unknown	RAP rpt '93 page 7-7, 1994 305(b) rpt – appendix E DELT table
<b>BUI 5: Bird or animal deformities or reproductive problems</b>	Impaired	Unknown	Unknown	RAP rpt '93 page 7-7, isolated eagle hatch problems along coastal nesting zone in 91-92
<b>BUI 6: Degradation of benthos</b>	Impaired	Impaired	Not applicable	Contamination in sediments likely fro Luckey and Genoa CSO
<b>BUI 7: Restriction on dredging activities</b>	Not Impaired	Not applicable	Not applicable	RAP rpt '93 page 7-8, ordinance hazards at mouth of river
<b>BUI 8: Eutrophication or undesirable algae</b>	Impaired	Impaired	Impaired	RAP rpt '93
<b>BUI 9: Restrictions on drinking water consumption, or taste and odor</b>	Not Impaired	Not Impaired	Not Impaired	RAP rpt '93, not a source of public drinking water
<b>BUI 10: Beach closings</b>	Not applicable	Not applicable	Not applicable	
<b>BUI 11: Degradation of aesthetics</b>	Impaired	Impaired	Impaired	High debris and turbidity after storms, RAP rpt '93 page 7-9
<b>BUI 12: Added cost to agriculture and industry</b>	Unknown	Unknown	Unknown	
<b>BUI 13: Degradation of phytoplankton &amp; zooplankton populations</b>	Unknown	Unknown	Unknown	Davis Besse uses Lake Erie for cooling water source and steam generation. Intake may be affected by sedimentation
<b>BUI 14: Loss of fish and wildlife habitat</b>	Impaired	Impaired	Impaired	RAP rpt '93 page 7-9. Channel straightening, loss of riparian buffers

*Possible answers – Impaired, Not Impaired, Unknown, Not Applicable*



**Beneficial Use Impairments In 2005  
for the Toussaint River/Packer Creek/Rusha Creek**

*(last updated 12/1/05)*

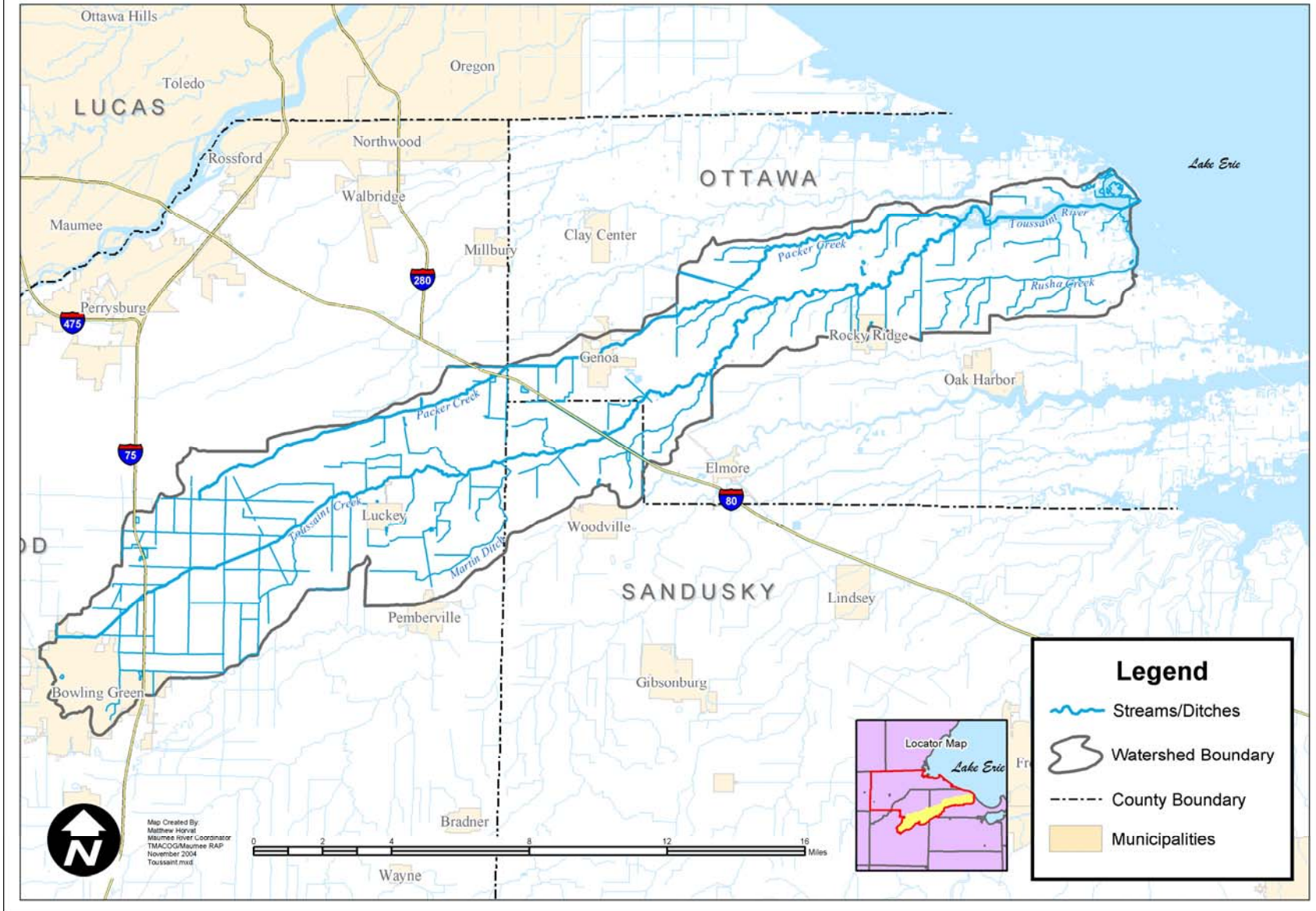
Beneficial Use Impairments	Toussaint River	Packer Creek	Rusha Creek	Reasons/Data Source
<b>BUI 1: Restriction on fish and wildlife consumption</b>	Impaired	Impaired	Impaired	No new data since RAP '93 report
<b>BUI 2: Tainting of fish &amp; wildlife flavor</b>	Not impaired	Not impaired	Not impaired	No data reported
<b>BUI 3: Degradation on fish and wildlife populations</b>	Impaired	Impaired	Unknown	2003 IBI / QHEI data for Toussaint: RM 36.5 = <u>20</u> / 25.5 ; RM 28.6 = <u>27</u> / 49.5 ; RM 13.9 = <u>27</u> / 50.5 ; RM 12.5 = 28/ 34 ; RM 1.7 = 22.5/ -- Rusha Ck @ RM 5.0 = <u>18</u> / 29.0 1979 IBI data for RM 20.3 = 36 1987 IBI data for RM 20.3 = 24 1993 IBI data for RM 20.3 = 16
<b>BUI 4: Fish tumors or other deformities</b>	Impaired	Unknown	Unknown	DELTS for Toussaint only 1979 DELT for RM 20.3 = 0.0(5) 1987 DELT for RM 20.3 = 0.4(3) 1993 DELT for RM 20.3 = 2.3(1)
<b>BUI 5: Bird or animal deformities or reproductive problems</b>	Impaired	Unknown	Unknown	
<b>BUI 6: Degradation of benthos</b>	Impaired	Impaired	Impaired	2003 ICI / QHEI data for Toussaint: RM 36.5 = Fair/ 25.5 ; RM 29.4 = 32/ 59.0 RM 13.9 = <u>24</u> / 50.5 ; RM 4.7 = <u>12</u> / -- Rusha Ck @ RM 5.0 = Fair/ 29.0 2003 ICI / QHEI data for Packer: All values were above 34 or in Good range
<b>BUI 7: Restriction on dredging activities</b>	Impaired	Not applicable	Not applicable	ACOE 2002-3 safety investigation
<b>BUI 8: Eutrophication or undesirable algae</b>	Impaired	Impaired	Impaired	2003 TMDL study – Nutrient enrichment from agricultural fertilizers and failed septic systems.
<b>BUI 9: Restrictions on drinking water consumption, or taste and odor</b>	Not applicable	Not applicable	Not applicable	Not a public drinking water supply
<b>BUI 10: Beach closings</b>	Not impaired	Not impaired	Not impaired	No bacteria impairments in 2003 TMDL assessment, however there are isolated locations with elevated bacteria levels.

<b>Beneficial Use Impairments</b>	<b>Toussaint River</b>	<b>Packer Creek</b>	<b>Rusha Creek</b>	<b>Reasons/Data Source</b>
<b>BUI 11: Degradation of aesthetics</b>	Impaired	Impaired	Impaired	2003 TMDL study - Raw sewage CSOs on Toussaint near Luckey. Failed HSTSS throughout both watersheds
<b>BUI 12: Added cost to agriculture and industry</b>	Unknown	Unknown	Unknown	Davis Besse uses Lake Erie for cooling water source and steam generator. Quality of intake water may be degraded by sediment
<b>BUI 13: Degradation of phytoplankton &amp; zooplankton populations</b>	Not applicable	Not applicable	Not applicable	
<b>BUI 14: Loss of fish and wildlife habitat</b>	Impaired	Impaired	Impaired	Target still being determined

*Possible answers – Impaired, Not Impaired, Unknown, Not Applicable*

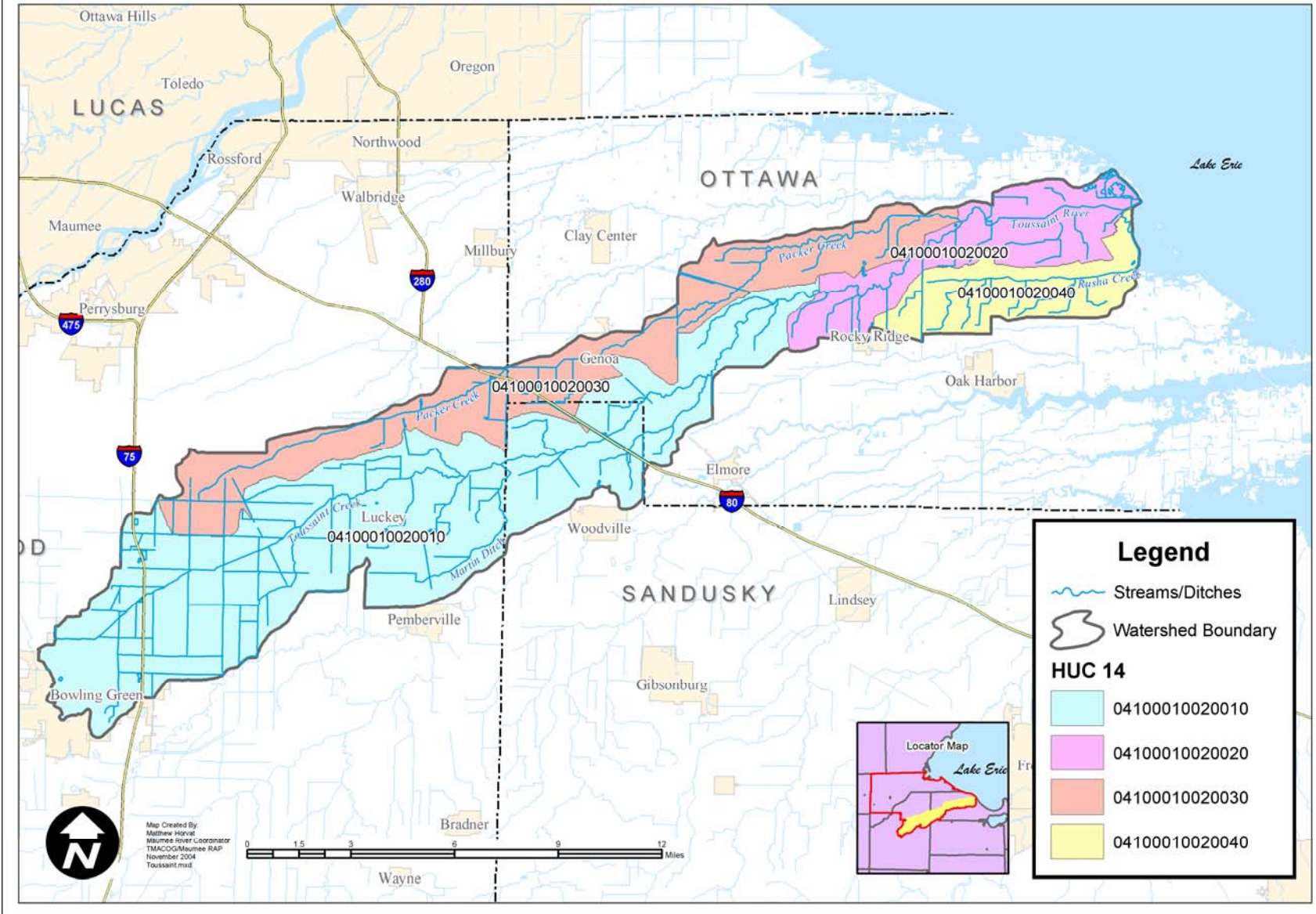
# Toussaint River Watershed including Rusha Creek and Packer Creek

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# Toussaint River Watershed including Rusha Creek and Packer Creek - 14 Digit Huc

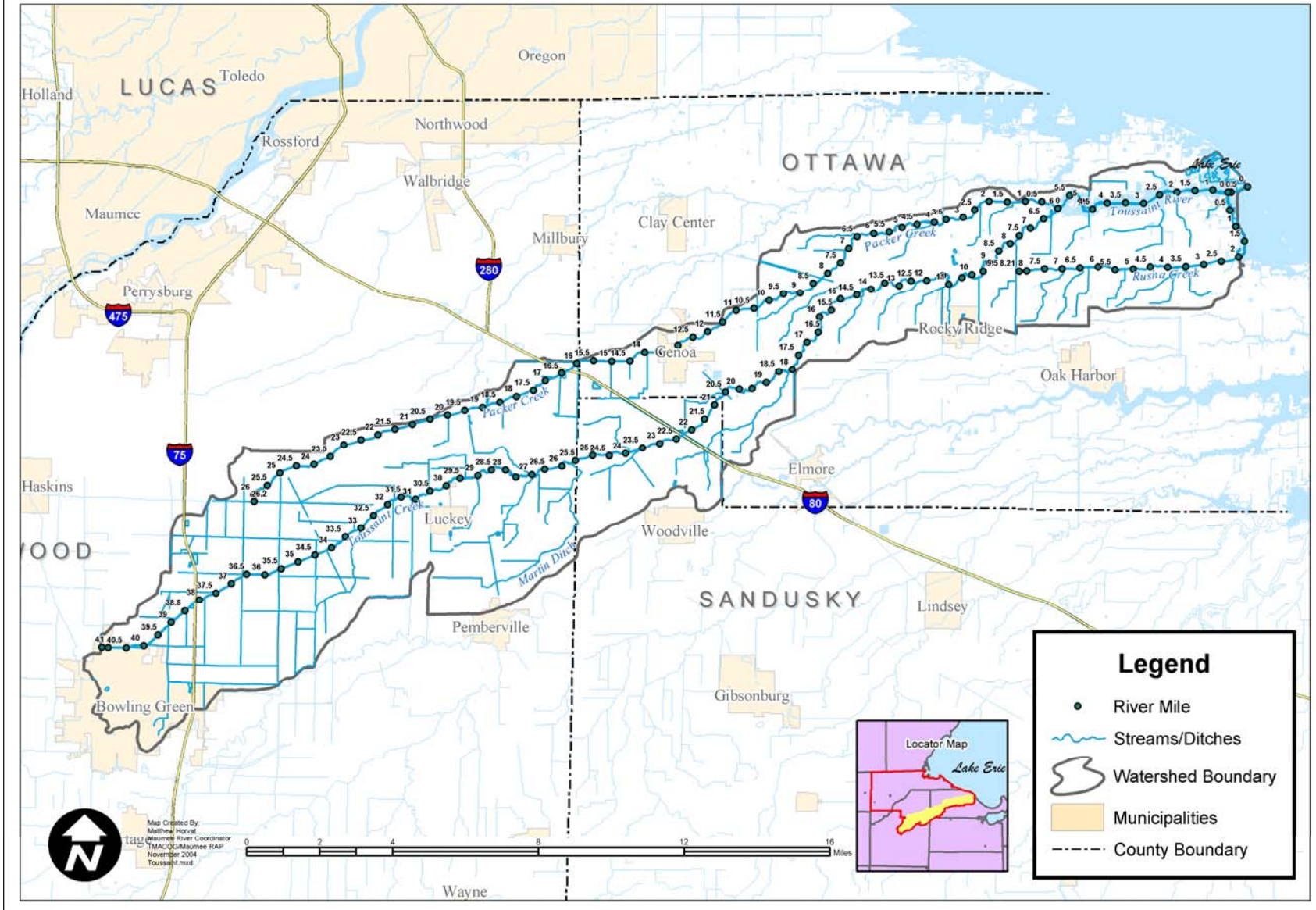
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# Toussaint River Watershed including Rusha Creek and Packer Creek - River Miles

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See Volume 2 for the:

- Packer Creek Watershed Projects Table
- Toussaint Creek/Toussaint River/Rusha Creek Watershed Projects Table



## **References**

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- <sup>1</sup> USDA Natural Resource Conservation Service website: <http://www.oh.nrcs.usda.gov/technical/>.
- <sup>2</sup> “Davis-Besse Nuclear Power Station,” brochure Toledo Edison/Centierior Energy Corporation, no date, p 13.
- <sup>3</sup> “Beryllium Cleanup Planned,” *Sentinel-Tribune*, June 14, 2003.
- <sup>4</sup> Ohio EPA, STORET Data, April 2004.
- <sup>5</sup> *Delisting Targets for Ohio Areas of Concern*, Ohio EPA, June 2005.
- <sup>6</sup> Ohio EPA, STORET Data, April 2004.
- <sup>7</sup> *Delisting Targets for Ohio Areas of Concern*, Ohio EPA, June 2005.
- <sup>8</sup> *Biological and Water Quality Study of the Toussaint River and Rusha Creek Basins*, Ohio EPA, April 2005.