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ENVIRONMENTAL FEATURES

Topography (see Maps 6 and 7)

Lewis County's settlement pattern, economy and social structure are largely defined by its topography. The county is composed of three primary regions: the Tug Hill Plateau (421 square miles), the Black River Valley (308 square miles), and the Adirondack Foothills (561 square miles). These three regions offer drastically different topographies that have shaped how the land has been utilized since the first settlers arrived at the end of the 18th century (see Figure 3 on page 11). Map 6 shows the contiguous topography of the county, while Map 7 depicts elevation contours and highlights the location of steep slopes. More specifically, slopes are broken out into three categories – five to 15 percent, 15 to 25 percent, and greater than 25 percent. As a general rule, housing should be constructed on slopes no greater than 20 to 25 percent, septic field sites should not exceed slopes of 10 to 15 percent, and croplands are generally limited to slopes less than 18 percent.



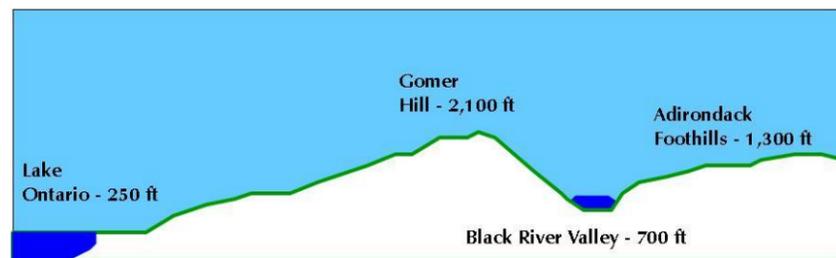
The Black River flowing north from Lyons Falls

The Black River Valley bisects the county nearly in half with a broad alluvial plain that varies from three to five miles in width. The river valley plain is extremely flat, dropping only 15 feet from the downstream side of Lyons Falls to Carthage in Jefferson County. The flat topography of this region is prone to flooding, yet also provides the productive alluvial soils that are the basis of Lewis County's agricultural strength.

Tug Hill Plateau

The Tug Hill region is characterized by the steep escarpment that forms the western boundary of the Black River Valley, and covers more than 32 percent of the county. The top of the plateau is relatively flat and represents the pinnacle of this landform's rise from Lake Ontario 38 miles to the west. As shown in Figure 15 and Maps 6 and 7, the slopes along the descent of the plateau to the Black River are extremely steep, forming a natural barrier that is relatively impenetrable with few roads leading from the valley up to the hilltop. On the western side of the escarpment is a relatively flat region near the pinnacle of the formation at Gomer Hill in the west corner of the Town of Turin. At approximately 2,100 feet above sea level, this location is more than 1,400 feet above the Black

Figure 15: Tug Hill Plateau Cross Section



River, and 800 feet above the Adirondack Foothills. Overall, the Tug Hill region within Lewis County ranges from approximately 1,200 to 2,100 feet above sea level. The inaccessibility of this region due to the escarpment, along with its remoteness in the North Country and remarkable snowfall totals has led to little to no development in these areas and a sparse population.

Adirondack Foothills

The Adirondack Foothills in Lewis County represent the 'front door' to New York's Adirondack Park. This region differs from the valley plain and the plateau by offering dramatic changes in elevation as the numerous stream valleys empty the mountains of the Adirondacks into the Black River. The directional east to west flows of these streams has formed collections of peaks and valleys that stretch along the entire length of Lewis County from north to south. While slopes in most areas do not rival the steepness of those found along the Tug Hill escarpment,



View of the Adirondack Foothills

the topography of the Adirondack Foothills forms an expansive zone of inaccessibility from the edge of the Black River Valley eastward into Herkimer County, greatly hindering the development potential of this region.

Waterbodies (see Map 8)

Rivers, Streams & Creeks

While Lewis County is defined by its topography, its topography is greatly shaped by the watercourses that run along the land, eroding, cutting and moving the earth en route to their final destination in the Atlantic Ocean. As discussed previously, the Black River is the primary waterbody within Lewis County. Meandering across a broad, flat alluvial plain, this watercourse flows tranquilly across Lewis County from Lyons Falls to Carthage. Despite its size, however, the Black River is only one of many

major rivers and creeks present within the county, with others including: Moose River, Independence River, Beaver River, Deer River, and Fish Creek. For a more informative understanding of where rivers, streams and creeks drain and flow, see Map 9.

Lakes & Ponds

The North Country region within New York State is well known for its thousands of lakes and ponds that occupy the low, flat spaces amongst the many hills and mountains. Lewis County has many lakes and ponds located primarily in the Adirondack Foothill and Tug Hill Plateau regions. The largest of these include: Brantingham Lake, Copper Lake, Chase Lake, Beaver Lake, Soft Maple Reservoir/Effley Falls Pond, Long Pond, and Lake Bonaparte. These and the hundreds of other named/unnamed lakes and ponds connect to the county's system of rivers, streams and creeks, forming watersheds and subwatersheds that move ground and surface waters into, through and out of Lewis County.

Wetlands

The numerous valleys, lowlands and flats offer locations where waters collect and form wetlands. These waterbodies are loosely connected to the surrounding drainage patterns, only flowing into the surrounding creeks and streams during periods of high water. Wetlands provide numerous benefits to the environment, including the filtering of run-off and rain water, along with the provision of a breadth of plant and animal habitat not found in most ecological formations. Acting as a natural filtering system, wetlands are high value waterbodies in many locations, and are vigorously protected by both the New York State Department of Environmental Conservation (NYSDEC), as well as the US Army Corps of Engineers (USACoE).



Wetlands in the Town of Diana

Within Lewis County there are three primary areas of wetlands. The first is the Tug Hill Plateau. The relatively gently sloping western portions of this region have a heavy concentration of wetlands protected by both the NYSDEC and the USACoE. The second region is the broad alluvial flats flanking the Black River. These areas receive periodic inflows from river flooding and serve to protect the river by filtering incoming drainage. The third area is located in the broad plane located in the towns of Croghan and Diana. This area comprises the largest contiguous wetlands within Lewis County, with much of this region owned by the State for conservation and preservation purposes. It should be noted that National Wetlands Inventory (NWI) mapping is unavailable for a large portion of Lewis

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County. The NWI mapping service is currently updating maps for the region. NYSDEC mapping remains available for these areas; all wetlands mapped in Lewis County can be seen on Map 8.

Watersheds (see Map 9)

There are six primary watersheds and 25 subwatersheds that drain Lewis County and the surrounding areas. Subwatersheds are those areas from which groundwater and surface water drain and contribute to the flow of a larger watershed or drainage basin. The drainage from these watersheds primarily moves west and north into Lake Ontario and the St. Lawrence River, with a small portion of the county draining into the Mohawk River and ultimately into the Hudson River over 220 miles to the east (see Table 16 for watershed collection area information). Watershed protection and management is a primary concern in Lewis County due to the high level of agricultural activity, particularly dairy, taking place in the region. These types of activities are large single-point sources of pollution, greatly impacting downstream water quality. Currently, a Black River Watershed Management Plan is being developed that will provide guidance to county planners and landowners on best practices regarding the protection of the Black River.

Black River Watershed

As depicted in Map 9 and Table 16, the largest watershed within Lewis County drains into the Black River and covers 61 percent of the county. Its 12 subwatersheds vary in size and shape, relating directly to the underlying topographic regions. The subwatersheds in the Adirondack Foothills are narrow and relatively linear, stretching from east to west. The subwatersheds within the Black River Valley and along the Tug Hill Plateau are generally larger and less linear. The Black River Watershed drains into Lake Ontario at the Village of Dexter, and then into the St. Lawrence River on its way to the Atlantic Ocean.

Oneida Lake, Salmon River & Mohawk River Watersheds

These three separate watersheds drain the majority of the western extents of the county, together draining 21 percent of Lewis County. While these watersheds occupy a similar geographic area, they drain into drastically different basins en route to their final destinations. The Oneida Lake Watershed drains large portions of the Tug Hill Plateau into Fish Creek, flowing south to Oneida Lake and then into Lake Ontario via the Oswego River at the City of Oswego.

The Salmon River Watershed drains almost the entirety of the Town of Osceola and the southern portions of Montague on the Tug Hill Plateau. It's two subwatersheds drain into the Salmon River Reservoir en route to its destination in Lake Ontario at the Village of Pulaski.

The Mohawk River Watershed occupies the smallest distinct drainage area within Lewis County, covering just 6,370 acres. This represents the headwaters of the Mohawk River, traveling from its northern reaches in the Town of West Turin into the Mohawk River and onto Rome and points east, ultimately meeting up with the Hudson River at the City of Cohoes. From there it flows south via the Hudson into the Atlantic Ocean.

Indian River and Oswegatchie River Watersheds

These two watersheds drain the northern reaches of Lewis County. Representing 18 percent of the overall drainage area of the county, they cover vastly different geographies on their way to Lake Ontario. The Oswegatchie watershed has its origins in the Adirondack Mountains at Cranberry Lake and covers the northern portions of the Adirondack Foothills in Lewis County. Within Lewis County, the Indian River begins

Table 16: Lewis County Watersheds

Watershed ¹	Subwatershed ²	Area ³ (acres)	Total Area (acres)
Black River	Deer River	62,183	502,780
	Mill Creek	22,512	
	Upper Middle Brach Black River	84,885	
	Sugar River	38,181	
	Moose River	37,478	
	Fish Creek	14,966	
	Otter Creek	27,638	
	Independence River	31,562	
	Beaver River	72,182	
	Crystal Creek	17,085	
	Middle Black River	81,353	
	Lower Middle Black River	12,757	
Oneida Lake	East Branch Fish Creek	83,705	83,705
Salmon River	Upper Salmon River	41,120	85,971
	Salmon River Reservoir	19,738	
	Sandy Creek	3,594	
	South Sandy Creek	21,520	
Indian River	Black Creek	1,977	69,705
	Upper Indian River	59,243	
	Upper Middle Indian River	8,485	
Oswegatchie River	Upper West Branch Oswegatchie River	32,418	76,098
	Middle Branch Oswegatchie River	30,537	
	Lower West Branch Oswegatchie River	9,618	
	Matoon Creek	3,526	
Mohawk River	Delta Reservoir	6,370	6,370
		Total Area	824,631

1 HUC-8 Watersheds
2 HUC-11 Watersheds
3 Represents area within Lewis County

Source: USGS

in the Town of Croghan near Belfort, and drains a large area of the Lake Ontario plain north into St. Lawrence County. These two rivers meet just a few miles inland of the City of Ogdensburg, draining into the St. Lawrence River as the Oswegatchie River.

Plant and Animal Ecology

Lewis County is home to many ecological communities across its varied terrain. Within those communities exist a variety of rare, threatened, and endangered plant and animal species. Table 17 lists species protected by state and federal law within Lewis County.

Table 17: Lewis County Rare, Threatened, & Endangered Species*

Animals

Common Name	Scientific Name	Status
Barn Owl	<i>Tyto alba</i>	T
Clay-colored Sparrow	<i>Spizella pallida</i>	T
Golden Eagle	<i>Aquila chrysaetos</i>	E
Great Blue Heron	<i>Ardea herodias</i>	T
Henslow's Sparrow	<i>Ammodramus henslowii</i>	T
Least Bittern	<i>Ixobrychus exilis</i>	T
Northern Harrier	<i>Circus cyaneus</i>	T
Pied-billed Grebe	<i>Podilymbus podiceps</i>	T
Sedge Wren	<i>Cistothorus platensis</i>	T
Upland Sandpiper	<i>Bartramia longicauda</i>	T

Plants

Auricled Twayblade	<i>Listera auriculata</i>	E
Awned Sedge	<i>Carex atherodes</i>	E
Blunt-lobe Grape Fem	<i>Botrychium oneidense</i>	E
Broad-lipped Twayblade	<i>Listera convallarioides</i>	E
Brown Bog Sedge	<i>Carex buxbaumii</i>	T
Cloud Sedge	<i>Carex haydenii</i>	E
Cork Elm	<i>Ulmus thomasii</i>	T
Creeping Sedge	<i>Carex chordorrhiza</i>	T
Dragon's Mouth Orchid	<i>Arethusa bulbosa</i>	T
Dwarf Sand-cherry	<i>Prunus pumila var. depressa</i>	T
False Hop Sedge	<i>Carex lupuliformis</i>	R
Golden Corydalis	<i>Corydalis aurea</i>	T
Hill's Pondweed	<i>Potamogeton hillii</i>	T
Jacob's-ladder	<i>Polemonium vanbruntiae</i>	R
Marsh Horsetail	<i>Equisetum palustre</i>	T
Marsh Valerian	<i>Valeriana uliginosa</i>	E
Northern Bog Aster	<i>Symphyotrichum boreale</i>	T
Northern Bog Sedge	<i>Carex gynocrates</i>	E
Northern Running-pine	<i>Diphasiastrum complanatum</i>	E
Northern Wild Comfrey	<i>Cynoglossum virginianum var. boreale</i>	E
Pink Wintergreen	<i>Pyrola asarifolia ssp. asarifolia</i>	T
Puttyroot	<i>Aplectrum hyemale</i>	E
Ram's-head Ladyslipper	<i>Cypripedium arietinum</i>	T
Rattlebox	<i>Crotalaria sagittalis</i>	E
Rhodora	<i>Rhododendron canadense</i>	T
Rock-cress	<i>Draba arabisans</i>	T
Schweinitz's Flatsedge	<i>Cyperus schweinitzii</i>	R
Sheathed Sedge	<i>Carex vaginata</i>	E
Slender Marsh Bluegrass	<i>Poa paludigena</i>	E
Smooth Cliff Brake	<i>Pellaea glabella ssp. glabella</i>	T
Sparse-flowered Sedge	<i>Carex tenuiflora</i>	E
Striped Coralroot	<i>Corallorhiza striata var. striata</i>	E
Swamp Birch	<i>Betula pumila</i>	T
Wiegand's Sedge	<i>Carex wiegandii</i>	E
Wild Sweet-william	<i>Phlox maculata ssp. maculata</i>	E

Source: NYS Natural Heritage Program

* (R) Rare, (T) Threatened, (E) Endangered