

Section 4: Habitats and Wildlife

Land Cover and Land Use (Map 14)

The **Land Cover and Land Use Map** provides a bird's-eye view of general habitat types, development, and land use patterns in the Town of East Greenbush based on remote sensing analysis of Landsat satellite imagery. It displays information at a 30-meter spatial resolution from the 2011 National Land Cover Dataset. Each 30x30m square displays a land cover or land use class. Overall accuracy for the 2011 assessments was 88%, with variations by geography and by identified class⁶¹. **Note that NLCD data are most reliable at regional scales and have important limitations at the municipal scale. The data are not necessarily accurate for all locations and do not distinguish many important habitat types.** Read more about the applications and limitations on the NLCD factsheet ⁶² One benefit of using NLCD is that the dataset is available for all municipalities nationally and facilitates comparison. **Table 3** provides a summary of the acreage and percentage of land in East Greenbush for each land cover or land use class. Definitions for land cover and land use classes shown on the map are as follows⁶³:

Nearly a third (31.6%) of East Greenbush is classified as developed, but the Town retains substantial undeveloped areas east of I-90 and on Papscaanee Island.

Open Water - areas of open water, generally with less than 25% cover of vegetation or soil.

Developed, Open Space - areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

Developed, Low Intensity - areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.

Developed, Medium Intensity - areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.

Developed High Intensity - highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.

61 Wickham, J., S. Stehman, L. Gass, J. Dewitz, D. Sorenson, B.J. Granneman, R.V. Poss, L.A. Baer. 2017. Thematic accuracy assessment of the 2011 National Land Cover Database (NLCD). *Remote Sensing of Environment*. 191. 328-341. 10.1016/j.rse.2016.12.026.

62 National Land Cover Database Fact Sheet. United States Geological Survey. 2012. <https://pubs.usgs.gov/fs/2012/3020/>

63 National Land Cover Database (NLDC). United States Geological Survey. <https://www.mrlc.gov/data/legends/national-land-cover-database-2011-nlcd2011-legend>

Deciduous Forest - areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.

Evergreen Forest - areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.

Mixed Forest - areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.

Shrub/Scrub - areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.

Grassland/Herbaceous - areas dominated by gramonoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.

Pasture/Hay - areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.

Woody Wetlands - areas where forest or shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

Emergent Herbaceous Wetlands - Areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

Table 3. Area and percent of East Greenbush represented by land cover and land use classes.

Land Cover/Use Class	Acres	Percent of Town
Open Water	143	0.9%
Developed, Open Space	1693	10.8%
Developed, Low Intensity	1414	9.0%
Developed, Medium Intensity	1494	9.5%
Developed, High Intensity	358	2.3%
Barren Land	19	0.1%
Deciduous Forest	4952	31.6%
Evergreen Forest	823	5.2%

Mixed Forest	210	1.3%
Shrub/Scrub	1074	6.8%
Herbaceous	41	0.3%
Hay/Pasture	2141	13.7%
Cultivated Crops	228	1.5%
Woody Wetlands	853	5.4%
Emergent Herbaceous Wetlands	238	1.5%
Total	15,681	100.0%

Nearly a third of East Greenbush is developed: 10.8% open space (e.g., lawns), 9% low intensity, 9.5% moderate intensity and 2.3% high intensity development for a total of 4,959 acres or 31.6% of the Town. The most intensely developed areas follow the Route 9 & 20 and Route 4 corridors. The Town still retains substantial forest and shrubland areas, hayfields, and meadows, especially east of I-90. In addition, large wetlands occur along riparian corridors and on Papscanee Island. Coastal habitats, floodplains, wetlands, large forests, and grassland and shrubland habitats are further described in subsequent sections of this report.

Discussion

Used in an appropriate manner, the land cover and land use data can be a helpful tool to understand general patterns of land cover and land use in the Town. This map can help to identify large connected habitat areas and to identify potential areas of concern where land uses may impact habitats or water resources.

Significant Ecological Features (Map 15)

The **Significant Ecological Features Map** highlights the most significant *known* ecological features in East Greenbush based on state, regional, and county-level assessments. The map and descriptions are based on limited existing information; more study is needed to better document the Town's natural features. Some of the overlapping layers in the map may be viewed in greater detail using the [Hudson Valley Natural Resource Mapper](#).⁶⁴

The Town of East Greenbush spans approximately 24.5 square miles including underwater lands in the Hudson River. All land in the Town ultimately drains to the Hudson River Estuary, a globally rare ecosystem that supports many rare species as well as regionally important fisheries. Tidal wetlands and shallow water habitats in the estuary and Papscanee Creek encompass some of the Town's most biologically significant habitats. The Upper Hudson River Estuary is identified as a Significant Biodiversity Area (SBA) by NYSDEC, including the Town's Hudson River shoreline and Papscanee Marsh and Creek. SBAs are locations of high concentration of biological diversity or value for regional biodiversity, and are described in the *Hudson River Estuary Wildlife and Habitat Conservation Framework*.⁶⁵

Freshwater tidal wetlands in the Hudson River Estuary are **globally rare** and provide critical nursery habitat for fish.

The Hudson River Estuary contains significant freshwater and brackish tidal wetlands, as well as other riverine and estuarine habitats, islands, riparian zones, and important tributaries. These habitats support a high diversity of fish, birds, and mammals... The open water, tidal wetlands, and tributaries in the upper reach of the Hudson are regionally important fish spawning habitats for anadromous fish, especially American shad, striped bass, Atlantic sturgeon and shortnose sturgeon, and provide habitat for all life stages of resident freshwater species. The numerous creeks and tidal freshwater marshes in this stretch serve as breeding, nursery, and migration corridors supporting waterfowl, shorebirds, herons, raptors, and passerine birds. Regionally and globally rare tidal communities include freshwater tidal swamp, freshwater tidal marsh, freshwater intertidal mudflats, and freshwater intertidal shore.

From a county-wide perspective, Rensselaer Land Trust's *Land Conservation Plan*⁶⁶ also highlights the Town's coastal resources and a few other resource targets and conservation priority areas. It states:

The tidal wetlands and floodplains along the Hudson River and Papscanee Creek are a high priority for water resources, agricultural areas, ecological resources (uncommon habitats, plants, and animals), and climate resiliency (this area will allow the migration of tidal wetlands as river

64 Hudson Valley Natural Resource Mapper. www.dec.ny.gov/lands/112137.html

65 Penhollow, M., P. Jensen, and L. Zucker. *Wildlife and Habitat Conservation Framework: An Approach for Conserving Biodiversity in the Hudson River Estuary Corridor*. New York Cooperative Fish and Wildlife Research Unit, Cornell University and New York State Department of Environmental Conservation, Hudson River Estuary Program, Ithaca, NY, 2006. <http://www.dec.ny.gov/lands/5096.html>

66 Winter, John, Jim Tolisano, Rick Lederer-Barnes, Michael Batcher, and Nick Conrad. *Rensselaer Land Trust Land Conservation Plan: 2018 to 2030*. Rensselaer Land Trust, Troy, NY, 2018.

Common Name	Scientific Name	General Habitat	NYS Conservation Status					Data Source
			<u>Hudson River Valley Priority Bird</u>	<u>Species of Greatest Conservation Need</u> xx = high priority	<u>Special Concern</u>	<u>Threatened</u>	<u>Endangered</u>	
Least Flycatcher	<i>Empidonax minimus</i>	forest	x					NYBBA
Northern Flicker	<i>Colaptes auratus</i>	forest	x					NYBBA
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	forest	x					NYBBA
Scarlet Tanager	<i>Piranga olivacea</i>	forest	x	x				NYBBA
Sharp-shinned Hawk	<i>Accipiter striatus</i>	forest	x	x	x			NYBBA
Veery	<i>Catharus fuscescens</i>	forest	x					NYBBA
Wood Thrush	<i>Hylocichla mustelina</i>	forest	x	x				NYBBA
Yellow-throated Vireo	<i>Vireo flavifrons</i>	forest	x					NYBBA
American Kestrel	<i>Falco sparverius</i>	grassland	x	x				NYBBA
Bobolink	<i>Dolichonyx oryzivorus</i>	grassland	x	xx				NYBBA
Eastern Meadowlark	<i>Sturnella magna</i>	grassland	x	xx				NYBBA
Belted Kingfisher	<i>Megaceryle alcyon</i>	stream	x					NYBBA
Chimney Swift	<i>Chaetura pelagica</i>	urban	x					NYBBA
American Goldfinch	<i>Spinus tristis</i>	young forest, shrubland	x					NYBBA
American Woodcock	<i>Scolopax minor</i>	young forest, shrubland	x	x				NYBBA
Blue-winged Warbler	<i>Vermivora pinus</i>	young forest, shrubland	x	x				NYBBA
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	young forest, shrubland	x					NYBBA
Eastern Kingbird	<i>Tyrannus tyrannus</i>	young forest, shrubland	x					NYBBA
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	young forest, shrubland	x					NYBBA
Field Sparrow	<i>Spizella pusilla</i>	young forest, shrubland	x					NYBBA

Common Name	Scientific Name	General Habitat	NYS Conservation Status					Data Source
			<u>Hudson River Valley Priority Bird</u>	<u>Species of Greatest Conservation Need</u> xx = high priority	<u>Special Concern</u>	<u>Threatened</u>	<u>Endangered</u>	
Prairie Warbler	<i>Dendroica discolor</i>	young forest, shrubland	x	x				NYBBA
Ruffed Grouse	<i>Bonasa umbellus</i>	young forest, shrubland	x	x				NYBBA
Willow Flycatcher	<i>Empidonax traillii</i>	young forest, shrubland	x					NYBBA

Reptiles								
Common Snapping Turtle	<i>Chelydra s. serpentina</i>	wetlands, coastal		x				NYARA

Amphibians								
Four-toed Salamander	<i>Hemidactylum scutatum</i>	wetlands		xx				NYARA

Fish								
Alewife	<i>Alosa pseudoharengus</i>	coastal		x				NYSDEC
American Eel	<i>Anguilla rostrata</i>	stream		xx				NYSDEC
American Shad	<i>Alosa sapidissima</i>	coastal		xx				NYSDEC
Blueback Herring	<i>Alosa aestivalis</i>	coastal		x				NYSDEC
Brook Trout	<i>Salvelinus fontinalis</i>	stream		x				NYSDEC
<u>Shortnose Sturgeon</u>	<i>Acipenser brevirostrum</i>	coastal		x			US NY	NYNHP

Historical Records								
<u>Alewife Floater</u>	<i>Anodonta implicata</i>	coastal		xx			US NY	NYNHP
<u>Bog Turtle</u>	<i>Glyptemys muhlenbergii</i>	wetlands		xx		US	NY	NYNHP
<u>Least Bittern</u>	<i>Ixobrychus exilis</i>	wetlands	x	x		NY		NYNHP
<u>Ostrich Fern Borer Moth</u>	<i>Papaipema sp. 2 nr. pterisii</i>	stream						NYNHP
<u>Yellow</u>	<i>Lampsilis cariosa</i>	coastal		x				NYNHP

Common Name	Scientific Name	General Habitat	NYS Conservation Status					Data Source
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<u>Lampmussel</u>								

Table 5. County-Rare Plants in East Greenbush, NY

The following table is comprised of rare plant species observed within the Town of East Greenbush. The observations were made by various surveyors between 2003 and 2016 and were compiled into a report by Dr. David Hunt for the Rensselaer County Biodiversity Greenprint Project. Dr. Hunt prepared this list in a 3 July 2018 memo for the Town of East Greenbush Natural Resources Inventory. “General Habitats” are based on the habitat where each species was observed, as noted in Dr. Hunt’s memo. “Rarity Ranking” categorizes each species by its observed abundance at county, state and global scales. State and global ranking terminology is defined by the New York Natural Heritage Program and county terminology follows the same format. “Survey Location(s)” identify sites where each species was observed.

Common Name	Scientific Name	General Habitat	Rarity Ranking			Survey Location(s)
			<u>County</u>	<u>State</u>	<u>Global</u>	
Bergamot	<i>Monarda sp.</i>	Island	C1C2-	-	-	Papscanee Island & Vicinity
Narrowleaf Willow	<i>Salix exigua</i>	Island	C1C2-	S4	G4	Papscanee Island & Vicinity
Red Mulberry	<i>Morus rubra</i>	Island	C1C2N?	S5	G5	Papscanee Island & Vicinity
Erect Knotweed	<i>Polygonum erectum</i>	Island	C1C2	S2S3	G5	Papscanee Island & Vicinity
Sleepy Catchfly	<i>Silene antirrhina</i>	Island	C2C3	S5	G5	Papscanee Island & Vicinity
Switch Grass	<i>Panicum virgatum</i>	Island	C2C3-	S5	G5T5	Papscanee Island & Vicinity
Three-square bulrush	<i>Schoenoplectus pungens</i> var. <i>pungens</i>	Island, Wetlands	C2	S5	G5	Papscanee Island & Vicinity; Mill Creek
Ambiguous Sedge	<i>Carex amphibola</i>	Island	C2C3-	S3	G5T4Q	Papscanee Island & Vicinity
Naiad	<i>Najas sp.</i>	Island	C2C3	-	-	Papscanee Island &

Common Name	Scientific Name	General Habitat	Rarity Ranking			Survey Location(s)
			County	State	Global	
						Vicinity
Water Celery	<i>Vallisneria americana</i>	Island	C2C#	S5	G5	Papscanee Island & Vicinity
Large Solomon's Seal	<i>Polygonatum commutatum</i>	Island	C2C3	-	-	Papscanee Island & Vicinity
Wild Black Currant	<i>Ribes americanum</i>	Island	C2C3	S5	S5	Papscanee Island & Vicinity
Virginia Stickseed	<i>Hackelia virginiana</i>	Island	C2C3/C3	S5	-	Papscanee Island & Vicinity
Giant Ragweed	<i>Ambrosia trifida</i>	Island	C3d	S4	-	Papscanee Island & Vicinity
Estuary Beggar Ticks	<i>Bidens bidentoides</i>	Creek	C1C2	S3	G3G4	Papscanee Island & Vicinity
Southern Wild Rice	<i>Zizania aquatica</i>	Creek	C2	S5	G5	Papscanee Island & Vicinity
Spreading-beaked sedge	<i>Carex squarrosa</i>	Forest	C1C2	S5	G4G5	Mannix Road Woods
Wild Bergamot	<i>Monarda fistulosa</i>	Forest	C1C2	S5	G5	Mannix Road Woods
Black Walnut	<i>Juglans nigra</i>	Forest	C2NC3E	S5	G5	Mannix Road Woods
Flowering Dogwood	<i>Cornus florida</i>	Forest	C2C3	S3S5	-	Mannix Road Woods
Pitch Pine	<i>Pinus rigida</i>	Forest	C2C3	S5	-	Mannix Road Woods
Horse Nettle	<i>Solanum carolinense</i>	Forest	C2C3	S5	-	Mannix Road Woods
New Jersey Tea	<i>Ceanothus americanus</i>	Forest	C1C2	S5	G5	Mannix Road Woods
White Trillium	<i>Trillium grandiflorum</i>	Forest	C1C2>C2	S5	G5	Mannix Road Woods
Yellow Star Grass	<i>Hypoxis hirsuta</i>	Forest	C2C3/C2	S5	G5	Mannix Road Woods
Mountain Laurel	<i>Kalmia latifolia</i>	Forest	C2C3/C2	S5	-	Mannix Road Woods
Canada Lily	<i>Lilium canadense</i>	Forest	C2C3-	S5	G5T4?	Mannix Road Woods
Dutchman's Breeches	<i>Dicentra cucullaria</i>	Forest	C2C3	S5	G5	Mannix Road Woods
Scarlet Oak	<i>Quercus coccinea</i>	Forest	C2C3	S5	G5	Mannix Road Woods
Rue Anemone	<i>Thalictrum thalictroides</i>	Forest	C2C3	S5	G5	Mannix Road Woods
-	<i>Heteranthera sp.</i>	Forest	C2-	-	-	Mannix Road Woods

Common Name	Scientific Name	General Habitat	Rarity Ranking			Survey Location(s)
			County	State	Global	
Deerberry	<i>Vaccinium stamineum</i>	Forest	C3d	S5	-	Mannix Road Woods
Great Water Dock	<i>Rumex orbiculatus</i>	Uplands	C1C2	S5	G5	Mill Creek
Great Blue Lobelia	<i>Lobelia siphilitica</i>	Uplands	C2C3	S5	G5	Mill Creek
Bitternut Hickory	<i>Carya cordiformis</i>	Uplands	C3d	S5	G5	Mill Creek
Agrimony	<i>Agrimonia parviflora</i>	Wetlands	C1	S3	G5	Mill Creek
Red-rooted Flat Sedge	<i>Cyperus erythrorhizos</i>	Wetlands	C1	S3	G5	Mill Creek
Ditch Stonecrop	<i>Penthorum sedoides</i>	Wetlands	2/C2C3	S5	G5	Mill Creek
Green-headed Coneflower	<i>Rudbeckia laciniata</i>	Wetlands	C2C3	S5	G5	Mill Creek

Discussion

East Greenbush retains a rich natural heritage including high quality habitats and populations of rare or declining species of plants and animals. Identifying potential habitat concerns early in the planning process will help to more proactively avoid or minimize impacts to sensitive resources and maintain connected habitats. Developing local checklists for site plan and subdivision reviews that incorporate mapped significant ecological features can help to standardize reviews and ensure consideration of this information. Critical Environmental Area designation or the establishment of conservation overlay districts are possible tools to formally recognize significant habitat areas in the Town. Habitat assessment by a qualified biologist can provide local agencies with information about potential habitat for species of conservation concern in the context of SEQR reviews. The New York Natural Heritage Program can provide any existing records of rare animals or significant natural communities for proposed development sites.

Large Forests (Map 16)

The **Large Forests Map** shows forests greater than 200 acres in size, which provide numerous benefits including wildlife habitat, clean water, climate moderation, and forest products. In general, larger forests provide higher quality habitat and greater benefits than smaller ones. Across the region, however, many large forests have been divided into smaller forest patches through the process of fragmentation. Forest fragmentation often occurs through clearing for new roads or development and is linked to decreased habitat quality and health, disruptions in wildlife movement, and the spread of invasive species. These impacts are greatest at forest edges but can extend for hundreds of feet into forest patches, often displacing sensitive species that avoid human disturbance. Conserving East Greenbush's large forest areas and connections between them will help sustain the Town's rich diversity of forest plants and animals and the numerous other benefits that forests provide residents.

Forest fragmentation is the process of dividing a large forest into smaller areas, and causes:

- decline in habitat quality
- loss of forest interior species
- disrupted wildlife movement
- spread of invasive species

The **Large Forests Map** provides a bird's-eye view of large, contiguous forests in East Greenbush. The forest patches were identified by the NYSDEC Hudson River Estuary Program and Cornell University based on 2010 land cover data.⁷⁷ Land cover categories considered "forest" for this analysis included deciduous forest, evergreen forest, mixed forest, and palustrine forested wetland. Roads were buffered and removed from forest patches to show results of development-related fragmentation. Interstate roads were buffered by a total of 300 feet and state and county roads by 66 feet. Forest patch size classifications follow the Orange County Open Space Plan.⁷⁸

East Greenbush's forests are small compared to rural parts of Rensselaer County; however, sizeable patches of forest habitat persist in the more undeveloped parts of the Town, as well as small patches and street trees that contribute to a better quality of life in suburban areas. Intact forest patches ranging from 200-1,000 acres remain throughout East Greenbush, primarily along Route 9J and east of the I-90 corridor. "Stepping stone" forest patches such as these may provide habitat for some forest interior species as well as relatively broad corridors for wildlife movement and plant dispersal. They enable a large array of species to move from one habitat to another across a landscape fragmented by roads and developed areas. Forested stream corridors are particularly favored travel routes for many species of wildlife and help protect water quality and habitat. The North Branch Moordener Kill retains a relatively intact forest corridor highlighted as an **Important Aquatic Network** in the Stream Habitat Map. The East Greenbush Town Park is a protected portion of a stepping stone forest along this corridor, and supports many woodland plant species and mixed-age forest stands which include large, older trees.⁷⁹

77 National Oceanic and Atmospheric Administration. *Land Cover data for the Coastal Change Analysis Program*. NOAA Coastal Service Center, Charleston, SC, 2010, <https://coast.noaa.gov/dataregistry/search/collection/info/ccapregional>

78 Orange County, NY Open Space Plan, 2004. Available at <https://www.orangecountygov.com/301/Open-Space-Plan>

79 Schmitt, C. and N. Miller. *Natural Areas of Rensselaer County, New York*. Rensselaer-Taconic Land Conservancy, Troy, NY, 1994.

Although rare species and significant habitats have not been documented in the park, it was identified as having biodiversity value through the Rensselaer Land Trust's community values meetings for the *Land Conservation Plan*.

The 200-acre threshold is often considered a minimum size for intact forest ecosystems. Smaller forests have limited habitat value for forest interior bird species and suffer greater impacts from development. Forest edge disturbances dominate small forests, such as invasive species, increased predation levels, and micro-climatic differences. Many of the larger forest patches mapped in East Greenbush appear to have considerable edge habitat, and are in fact divided by local roads, driveways, or small-scale development. These forests nevertheless serve a critical ecological function as buffers to the Town's streams and help to protect steep slopes, promote groundwater infiltration, and reduce flood damage. Regardless of size or habitat values, all forests and trees in the Town help to manage stormwater, moderate temperature, and improve air quality, among other ecosystem benefits. The General Land Cover and Land Use Map shows approximate location of forests of all sizes in the Town.

Wildlife records confirm the availability of high-quality forest habitat in East Greenbush. The *2000-2005 NYS Breeding Bird Atlas*⁸⁰ documented several forest-interior bird species of conservation concern in the Town, including NY-Species of Greatest Conservation Need such as Scarlet Tanager, Sharp-shinned Hawk, and Wood Thrush (Table 4). Audubon New York's website has specific guidance on managing habitat for forest birds.⁸¹

Important Interior Forest Habitat. Rensselaer Land Trust's *Land Conservation Plan*⁸² identifies a few mostly or relatively undisturbed interior forest habitat areas in East Greenbush, which occur east of Route 9J, along the Mill Creek corridor, and north of Best Road. These large forest areas far from roads and development are the most likely places in the Town to support populations of forest-interior nesting birds and other sensitive wildlife species.

One of the greatest threats to forests in East Greenbush today is the introduction of tree diseases, forest pests, and other invasive species inadvertently brought in by people through landscaping and international commerce. Hemlock Woollyadegid and Emerald Ash Borer have already done much damage in nearby towns, and are expected to eventually kill most large trees of these common species in the region. Also, oak wilt, a fungal disease which can quickly kill oak trees, is in nearby Schenectady County. The DEC Division of Lands and Forests has further information about Forest Health Issues and preventative measures to reduce the spread of pests, such as using locally-sourced firewood.⁸³ The Capital/Mohawk Partnership for Regional Invasive Species Management⁸⁴ (PRISM) works to promote education, prevention, early detection and control of invasive species and is helping communities to prepare for and respond to this threat. Guiding future development to minimize forest fragmentation and loss will help minimize the spread of invasive species into interior forests and conserve important habitats in the Town.

80 *New York State Breeding Bird Atlas*. <http://www.dec.ny.gov/animals/7312.html>

81 *Managing Habitat for Forest Birds*. <http://ny.audubon.org/managing-habitat-forest-birds>

82 Winter, John, Jim Tolisano, Rick Lederer-Barnes, Michael Batcher, and Nick Conrad. *Rensselaer Land Trust Land Conservation Plan: 2018 to 2030*. Rensselaer Land Trust, Troy, NY, 2018.

83 *Forest Health*. <https://www.dec.ny.gov/lands/4969.html>

84 *Capital/Mohawk Partnership for Regional Invasive Species Management*. <http://www.capitalmohawkprism.org/>

Discussion

The Town should seek ways to alert project sponsors to the significance of large forests and forest interior habitat areas. Critical Environmental Area designation or the establishment of conservation overlay districts are possible tools to formally recognize specific areas. Site plan and subdivision reviews provide an opportunity to evaluate potential impact of proposed development to forest cover and fragmentation. Habitat assessment by a qualified biologist can provide local agencies with information about forest habitat quality in the context of SEQR reviews. A forestry local law should be considered in order to give clear guidance to forest land owners, encourage sustainable forest management practices, and protect water quality.

Grasslands, Shrublands, and Young Forests (not mapped)

Recently disturbed sites, such as hayfields, abandoned farm fields, or forest clearings, can provide important habitat for species that require grasslands, shrublands, and young forests. These successional habitat types are transitional and relatively short-lived, and typically require periodic maintenance to avoid becoming more densely vegetated, eventually developing a canopy and becoming forest. We can infer from the **Aerial View** maps and **Land Cover and Land Use Map** as well as from breeding bird records that valuable grasslands, shrublands, and young forests occur in East Greenbush (see Table 4).

Many wildlife species depend on grasslands, shrublands, and young forests – common habitats that have declined region-wide due to urbanization and farm abandonment.

Grassland or meadow habitat can support a variety of life, including rare plants, butterflies, reptiles, and birds, in addition to providing agricultural uses and scenic values. The quantity and quality of grasslands for wildlife have rapidly decreased in the Northeast during the last century due to increased human population, changes in agricultural technology, and abandonment of family farms. This continuing trend threatens populations of grassland birds that have adapted to the agricultural landscape. East Greenbush is largely forested or developed today, but the General Land Cover and Land Use map indicates that approximately 15% of the Town is in herbaceous land cover (hay, pasture, or cropland). The *2000-2005 NYS Breeding Bird Atlas* documented breeding by three grassland bird Species of Greatest Conservation Need in the East Greenbush area, including Eastern Meadowlark, Bobolink, and American Kestrel.

Shrublands and young forests are characterized by few or no mature trees, with a diverse mix of shrubs and/or tree saplings, along with openings where grasses and wildflowers grow. They can occur in recently cleared areas and abandoned farmland and are sometimes maintained along utility corridors by cutting or herbicides. These habitats are important for many wildlife species declining throughout the region because former agricultural areas have grown into forests, and natural forest disturbances that trigger young forest growth, such as fires, have been suppressed. Records from the *NYS Breeding Bird Atlas* support the presence of 10 species of conservation concern in East Greenbush that prefer young forest and shrubland habitat, including American Woodcock, Ruffed Grouse, and Blue-winged Warbler.

Discussion

These types of open habitats are often overlooked during environmental reviews but support many species of plants and animals as well as pollinators. Even small patches of early successional habitat may be important, but patches greater than ten acres in size are more likely to support grassland- and shrubland-breeding birds. Audubon New York offers guidance on managing habitat for grassland birds⁸⁵ and for shrubland and young forest birds.⁸⁶

85 Managing Habitat for Grassland Birds. <http://ny.audubon.org/managing-habitat-grassland-birds>

86 Managing Habitat for Shrubland and Young Forest Birds. <http://ny.audubon.org/managing-habitat-shrub-birds>

Stream Habitats (Map 17)

From cold, medium gradient, headwater streams like Mill Creek to the large, warm Hudson River Estuary, East Greenbush supports a variety of streams and rivers illustrated in the **Stream Habitats Map**. The Town's streams store freshwater and support diverse aquatic life, as well as recreational activities like fishing and boating.

Mill Creek supports wild Brook Trout, New York's native trout species. Brook Trout require cold, clear streams and are very sensitive to pollution.

Stream Habitats

The Nature Conservancy has mapped and classified stream habitats across the Northeast region based on four attributes: size (the area drained by the stream; the primary classification variable), gradient (the steepness of the stream channel), geology (influence on water pH), and temperature (the mean summer water temperature).⁸⁷ The following stream habitat descriptions are based on TNC's accompanying aquatic habitat guides.⁸⁸ **Note:** the stream habitat classification system was developed based on remote assessment at a regional scale, and has not been field verified. Nevertheless, the general habitat information can provide a starting point for understanding the diversity of stream conditions and associated aquatic communities the Town.

Medium gradient, cold, headwaters and creeks (Examples: Mill Creek)

Cold, moderately fast-moving, headwaters and creeks of hills and gentle slopes. These small streams of northern regions or high elevations occur on hills and slopes at moderate to high elevations in small watersheds (< 39 sq mi). They have cold moderately fast-moving waters with good oxygenation. Instream habitats are dominated by riffle-pool development. Permanent cold-water temperatures in these streams means coldwater fish species, such as Brook Trout and Slimy Sculpin likely represent over half of the fish community.

Medium gradient, cool, headwaters and creeks (Example: Papscanee Creek tributary)

Similar to medium gradient, cold, headwaters and creeks, but with a higher proportion of cool and warm water species such as Smallmouth Bass and White Sucker relative to coldwater species.

Low gradient, cool, headwaters and creeks (Example: Moordener Kill)

Cool, slow-moving, headwaters and creeks of low-moderate elevation flat, marshy settings. These small streams of moderate to low elevations occur on flats or very gentle slopes in small watersheds. The cool slow-moving waters may have high turbidity and be somewhat poorly oxygenated. Instream habitats are dominated by glide-pool and ripple-dune systems with runs

87 Olivero, A.P., and M.G. Anderson. *Northeast aquatic habitat classification*. The Nature Conservancy Eastern Regional Office, Boston, MA, 2008. <http://www.conservancygateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/reportsdata/freshwater/habitat/Pages/Northeast-Stream-Classification.aspx>

88 Anderson, M.G. M. Clark, C.E. Ferree, A. Jospe, A. Olivero Sheldon and K.J. Weaver. *Northeast Habitat Guides: A companion to the terrestrial and aquatic habitat maps*. The Nature Conservancy, Eastern Conservation Science, Eastern Regional Office. Boston, MA, 2013. <http://nature.ly/HabitatGuide>.

interspersed by pools and a few short or no distinct riffles. Bed materials are predominantly sands, silt, and only isolated amounts of gravel. Cool and warm water species predominate.

Tidal, low gradient, cool, headwaters and creeks (Example: Papscaenee Creek)

Slow-moving, shallow, tidally influenced creeks and headwater streams. These tidal creeks and streams connect directly to the ocean or to large tidal rivers estuaries and have small watersheds. The water flow and level in these streams is tidally influenced. Most tidal streams have moderately firm, sandy channel bottoms and vertical banks that are regularly eroded and slump into the creek bottom. These streams and their associated estuaries support a rich diversity of plants and animals and serve as the primary nursery area for many marine fishes. The ecological importance of small tidal streams has historically been undervalued, but recent research is showing their collective influence on estuarine ecosystem function may equal or exceed that of larger tidal rivers.

Tidal, low gradient, warm, large river (Example: Hudson River).

Slow moving, large, deep, tidally influenced rivers. These very large rivers connect directly to the ocean or to large estuaries and their water flow and level fluctuates with the tides. They have large upstream watersheds (>1000 sq mi) and are often over 300 feet wide. In the river there is a vertical salinity gradient (but note that the Upper Hudson River Estuary is entirely freshwater). Plant and wildlife communities found in and along the river are determined by both depth and salinity. These rivers and their associated estuaries support a rich diversity of plant and animals and serve as the primary nursery area for many marine, estuarine, and anadromous fishes.

Important Aquatic Networks. The Hudson River shoreline and the largely intact forested riparian corridor and headwaters of the North Branch Moordener Kill are highlighted as Important Aquatic Networks and described under Significant Ecological Features.

Riparian Areas. Riparian areas including streamside buffers, adjacent wetlands, and the 50-year flood zone are described under the **Floodplains and Riparian Areas map**.

Trout and Trout Spawning Waters. DEC's Water Quality Standards and Classifications identify trout or trout-spawning presence along classified stream segments and suggest there is coldwater habitat suitable for trout in the North Branch Moordener Kill and for trout-spawning in Mill Creek starting just downstream of Route 151.

Dams and Culverts. Infrastructure in streams, such as dams and culverts, can isolate and severely limit the range of fish and other aquatic organisms that use stream corridors. Dams and culverts can present physical barriers to passage, and these structures can also become impassable by changing water quality (e.g. temperature) and quantity (e.g. high velocity). Dams can also lead to flow barriers, when the water in the impoundment behind the dam is used, consumed, or diverted for other purposes (e.g., drinking water supply), leading to lack of water downstream. In some cases, pollution and channel modifications can create the same kinds of barriers. Just as many forest-dwelling species are negatively impacted by forest fragmentation from roads and structures, stream barriers disconnect streams and decrease available habitat. Historically, as mills and road crossings were added to the streams of the Hudson

Valley, dams and culverts blocked off and cut up the habitat for organisms like Brook Trout and American Eel. In addition to impacts on fish and other aquatic life, stream barriers can also have serious effects on local flooding and water quality. Streams flowing into undersized culverts can flood upstream and, in some cases, overtake and wash out a road during heavy precipitation or snowmelt.

The Stream Habitats map displays the **New York State Inventory of Dams**. While the DEC tries to maintain an accurate inventory, this data should not be relied upon for emergency response decision-making. NYSDEC recommends that critical data, including dam location and hazard classification, be verified in the field. The presence or absence of a dam in this inventory does not indicate its regulatory status. Note that assessments by the NYSDEC Hudson River Estuary Program in trial watersheds indicate that perhaps twice as many barriers exist than are recorded in the NYS Inventory of Dams.

Culvert data are provided from the [North Atlantic Aquatic Connectivity Collaborative](#) (NAACC), a network focused on improving aquatic habitat connectivity across the Northeast region. Only one culvert in East Greenbush has been formally assessed using this protocol (on Phillips Rd). It was identified as a significant aquatic barrier. The NYSDEC Hudson River Estuary Program is leading efforts in the Hudson Valley to assess road-stream crossings for aquatic passability and to mitigate significant barriers to increase aquatic habitat available for SGCN species such as Brook Trout and American Eel.

Discussion

Protecting and restoring vegetated streamside riparian buffers and restoring free-flowing streams where possible in the Town are the most effective actions to conserve and restore stream habitat. Bridges, open-bottom culverts and similar structures that completely span the waterway and associated floodplain/riparian area generally have the least potential impacts on stream hydrology, floodplains, and habitat. The Town should explore technical assistance and grants available from the NYSDEC Hudson River Estuary Program to assess and prioritize known aquatic barriers for removal or mitigation. Once aquatic barriers are identified, funding opportunities to replace these barriers are available through the NYSDEC Hudson River Estuary Program as well as the Green Innovation grant program through Environmental Facilities Corporation and NYSDEC Water Quality Improvement Program, both of which are available through the Consolidated Funding Application (CFA) process.

Coastal Habitats (Map 18)

Connections to upper watersheds, the Atlantic Ocean, and the changing tides make the coastal and shoreline zones of the Hudson River Estuary a dynamic area. The northern Hudson River estuary is entirely freshwater, supporting globally rare natural communities such as freshwater tidal marsh and swamp. **Coastal Habitats** along the tidal Hudson in the Town of East Greenbush are shown in **Map 18**. Potential tidal wetland migration pathways are shown in the **Sea Level Rise Map** (Map 19).

Significant Coastal Fish and Wildlife Habitats. Diverse coastal habitats occur in New York that provide critical habitat and feeding areas for animals as well as economic values. The NYSDEC has identified and evaluated coastal habitats throughout the state’s coastal regions, providing recommendations to the NYS Department of State (DOS) so that the most important or “significant” habitats may be designated for protection in accordance with the Waterfront Revitalization and Coastal Resources Act. The Significant Coastal Fish and Wildlife Habitats describe the highest quality habitats on the Hudson, outlining fish and wildlife values and activities that may have large impacts on the habitats. State and federal law requires that some projects may be reviewed for consistency with coastal policies on significant fish and wildlife habitat.

Papscanee Marsh and Creek is a designated significant coastal fish and wildlife habitat spanning approximately 700 acres along the west side of Route 9J in the towns of East Greenbush and Schodack. According to the DOS habitat rating form,⁸⁹

Papscanee Marsh ... is primarily a floodplain wetland area, encompassing a large tidal creek, emergent marshes, freshwater tributaries, old fields, submerged aquatic vegetation, mainly water celery, and young woodlands. The habitat also includes a one-mile segment of the Moordener Kill, which is a medium gradient, warm water stream, with a gravelly substrate and a drainage area of approximately 33 square miles.

Papscanee Marsh and Creek have been subject to considerable human disturbance as a result of navigation channel construction, agricultural use, nearby commercial and industrial developments, stream channel alterations, and the intrusion of invasive species including common reed, purple loosestrife and water chestnut.

Papscanee Creek and its tributaries, especially the Moordener Kill, are important spawning and nursery areas for a variety of coastal migratory fish species such as blueback herring, alewife, American eel, and American shad. In addition, the habitat is an important producer of forage fish (killifish, shiners) that are consumed by larger predatory fish species. Many resident estuarine and freshwater fish species are also found here, including white perch,

Papscanee Creek is an important spawning and nursery area for migratory fish species such as Blueback Herring, Alewife, American Eel, and American Shad.

89 New York State Department of State. 2012. *Papscanee Marsh and Creek. Coastal Fish and Wildlife Habitat Rating Form.*

https://www.dos.ny.gov/opd/programs/consistency/Habitats/HudsonRiver/Papscanee_Marsh_and_Creek_FINAL.pdf

white catfish, largemouth bass, and smallmouth bass. The submerged aquatic vegetation located within the habitat provides food for fish, invertebrates and waterfowl as well as refuge for fish and invertebrates.

Papscanee Marsh is also an important resting and feeding area for migratory waterfowl such as American Black Duck and a confirmed or probable breeding site for numerous bird species. See Table 4 for more information on the documented rare species associated with East Greenbush's coastal habitats.

Underwater (Subtidal) Habitats. Beds of submerged aquatic vegetation (SAV), primarily Water Celery, occur in shallow areas of the Hudson River along Papscanee Island. SAV improves water quality by trapping fine sediment and organic matter and adding oxygen to the water. It also provides essential habitat for organisms like insects, worms, and snails that feed fish and birds in the estuary, and serves as nursery habitat for young fish. Native species of SAV in the Hudson such as water celery currently compete for habitat with invasive, non-native Water Chestnut. Water Chestnut does not provide the same water quality benefit as native SAV because its floating leaves release oxygen into the air rather than into the water.

The map shows areas where SAV has been found since 1997. NYSDEC's most recent survey in 2014 found less than 0.1 acre of SAV along the Hudson River in East Greenbush, about 0.3% of the area documented with SAV in 2007. Extensive water chestnut has been documented in Papscanee Creek. A dramatic decline in SAV (90% loss) was seen throughout the Hudson River Estuary following Hurricanes Irene and Lee in 2011. The habitat loss was believed to be due to the large amount of sediment entering the estuary from the storms, which blocked light and prevented plant growth. Since 2016, signs of SAV recovery have been seen throughout the estuary. Even if SAV is not present today, the areas shown on the Coastal Habitat Map could support it in the future.

Tidal Hudson River Estuary Wetlands. The wetlands in Papscanee Creek are both freshwater and tidal, a globally rare ecosystem type. Tidal wetlands serve a very important purpose in the river, providing habitat for rare plants and young fish and other benefits for people like wastewater dilution/purification and protecting shorelines from waves and strong storms. The **Coastal Habitat Map** shows tidal wetlands mapping from a 2007 inventory by NYSDEC, which identified about 28 acres of tidal wetlands in East Greenbush in Papscanee Marsh and Creek. Dominant wetland vegetation types were Water Chestnut (8.5 acres), Cattail marsh (6.9 acres), and Common Reed (4 acres).



Hudson River Shoreline at Papscanee Nature Preserve

Tidal Shoreline Status. Natural shorelines are an important transition zone between water and land and provide habitat for diverse plants, fish and wildlife. Tidal shorelines comprise lands directly on the Hudson River as well as the shorelines of tidal wetlands, tidal tributaries, and coves, including both naturally vegetated and hard engineered shoreline. East Greenbush has approximately 3.2 miles of tidal shoreline directly along the Hudson River, in addition to unmapped shoreline along Papscanee Creek. The Coastal Habitat Map shows general shoreline type according to a 2005 inventory of Hudson River shoreline status by NYSDEC and the Hudson River National Estuarine Research Reserve. The study identified 0.6 miles of hard

engineered shoreline in East Greenbush, primarily consisting of a bulkhead along the shoreline of Papscaene Island Park. The remaining 2.7 miles of natural shoreline support primarily woody vegetation or unvegetated rock, sand, and gravel.

Discussion

There are opportunities to conserve, restore, and manage coastal and shoreline habitats throughout the East Greenbush waterfront area. Parks, preserves, and regulated wetlands may offer a starting point to conserve or restore natural shorelines that will allow tidal wetlands to move with sea level rise. See the **Sea Level Rise Map** to view areas where tidal wetlands are predicted to move inland in the coming decades. Even along working waterfronts there are ways to improve the habitat value of bulkheads and rip-rap revetments. The Hudson River Sustainable Shorelines Project provides information and tools on enhancing the ecology of built shorelines as well as how to conserve natural shorelines.⁹⁰ The handbook *Managing Shore Zones for Ecological Benefits*⁹¹ offers practical suggestions for protecting shore zones and increasing the benefits they provide people.

90 Hudson River Sustainable Shorelines Project. <https://www.hrnerr.org/udson-river-sustainable-shorelines/>

91 Strayer, D. and L. Tumbelty. *Managing Shore Zones for Ecological Benefits*. Hudson River Sustainable Shorelines Project, 2016. <https://www.hrnerr.org/doc?doc=273743856>

Section 5: Climate

Climate and Sea Level Rise (Maps 19a and 19b)

As in most areas of the Northeast, East Greenbush experiences cold winters with snow and warm summers. According to data collected in the Albany by the National Weather Service, for the period of 1981-2010 the average temperature was 48 degrees and the average precipitation received was 39.35 inches. However, local data show steady and rapid changes in our climate that reflect global trends. It is vital for local decision-makers to understand these trends and the related climate hazards facing the region and to plan for future conditions. This section presents general climate information prepared for Hudson Valley communities by the NYSDEC Hudson River Estuary Climate Program.⁹²

Climate Projections

Responding to Climate Change in New York State (the ClimAID Report), written in 2011 and updated in 2014, is the current authoritative source for climate projections for New York State.⁹³ ClimAID translated Intergovernmental Panel on Climate Change (IPCC) scenarios into more robust regional-scale predictions incorporating local data inputs and expert knowledge. The ClimAID report divides the state into seven regions to link climate information with potential impacts, and East Greenbush is located within the ClimAID climate region 5. ***Note that models are inherently uncertain and simply present a range of possible scenarios to assist people and communities plan for the future.*** Future climate changes in East Greenbush could exceed or fall short of these projections.

Looking towards the future there are three prominent climate trends that will affect East Greenbush and the region: increasing temperatures, shifting precipitation patterns, and sea level rise (SLR).

Temperature. New York has experienced particularly rapid changes to the regional climate in the last century and this trend is projected to continue through the 21st century. Global average temperature has been rising in unison with increasing input of insulating greenhouse gases, driving changes to regional and local climate. Warming atmospheric temperature alters the water cycle, leading to more extreme precipitation, short-term drought and severe storms. Since 1970 East Greenbush has seen a 2°F increase in average annual temperature and a 5°F winter temperature increase. These increases are above both the national and global increase in annual temperature during the same period. Current projections see an additional increase of about 4-6°F in the coming decades and up to 11°F by 2100.

92 Zemaitis, Libby. *Working Toward Climate Resilience: General Climate Information Prepared for Hudson Valley Communities*. NYSDEC Hudson River Estuary Program, 2018.

93 Horton, R., D. Bader, C. Rosenzweig, A. DeGaetano, and W. Solecki. *Climate Change in New York State: Updating the 2011 ClimAID Climate Risk Information*. New York State Energy Research and Development Authority (NYSERDA), Albany, NY, 2014.

Increasing annual temperatures will lead to more frequent, intense, and long-lasting heat waves during the summer, posing a serious threat to human health and increased electricity demand from air conditioning. Heat waves are a particular concern in more urbanized areas of East Greenbush, where the urban heat-island effect can further exacerbate high temperatures. By mid-century, East Greenbush could annually experience three to 10 days above 95 degrees, and five to seven heat waves that last one to two days longer than average. Increasing temperature not only affects human health and ecosystems but can impact the electrical needs of a community putting strain on both budgets and the grid while creating more challenges in agriculture and other industries. Higher temperatures could stress coldwater stream habitats in Mill Creek and the North Branch Moordener Kill and could exacerbate weed growth in Hampton Manor Lake.

HEAT WAVE PROJECTIONS FOR REGION 5

	Baseline 1971-2000	2020s	2050s	2080s	2100
# Days per year above 90°F	10	26 - 31	39 - 52	44 - 76	*
# Days per year above 95°F	1	2 - 4	3 - 10	6 - 25	*
# Heat waves per year	1	3 - 4	5 - 7	6 - 9	*
Average # days of each heat wave	4	5	5 - 6	5 - 7	*
# Days per year ≤ 32°F	155	127 - 136	104 - 119	84 - 109	*

*Projections not available at this time

Precipitation. Precipitation has become more variable and extreme, whereas total rainfall has changed only marginally. The amount of rain falling in heavy downpour events increased 71% from 1958 to 2012 in the Northeast.⁹⁴ Projections indicate total annual precipitation could increase as much as 12% by mid-century and 21% by 2100. Overall, New York State models project more dry periods intermixed with heavy rain and decreased snow cover in winter. However, climate projections for precipitation are considered more uncertain since they are difficult to model. In addition to elevating flood risk, infrastructure such as roads and the Town’s wastewater system could become strained during heavy rains.

PRECIPITATION PROJECTIONS FOR REGION 5

	Baseline 1971-2000	2020s	2050s	2080s	2100
Total annual precipitation	51"	52" - 54.5"	53" - 57"	53.5" - 58.5"	53.5" to 61.5"
% Increase in annual precipitation	-	2 - 7%	4 - 12%	5 - 15%	5 - 21%
# Days with precipitation > 1"	10	14 - 15	14 - 16	15 - 17	*
# Days with precipitation > 2"	1	3 - 4	4	4 - 5	*

*Projections not available at this time

Sea Level Rise. Global sea level is rising due to various factors, including thermal expansion from

94 Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds. *Climate Change Impacts in the United States: The Third National Climate Assessment*. U.S. Global Change Research Program, doi:10.7930/J0Z31WJ2, 2014. <https://nca2014.globalchange.gov/>

warmer water temperatures and melting of land-based ice. The Hudson River is connected to and influenced by the sea; therefore, it experiences tides and is rising with global sea level. Since 1900, sea level in New York Harbor has risen 13 inches. More concerning, the water is rising faster and faster (from 2000 to 2014 the average rate was 6.8 millimeters per year compared to 4.6 millimeters per year from 1990 to 2014). East Greenbush is in the Mid-Hudson region, which is defined in regulation as north of Kingston to the Troy dam.⁹⁵ Projections for additional sea level rise along this portion of the Hudson River range from one to 9 inches by year 2020 and five to 27 inches by mid-century. It is possible that East Greenbush could experience as much as 71 inches of sea-level rise by the end of the 21st century if rapid ice melt from the Greenland Ice Sheet continues. Although this “high projection” scenario is considered very unlikely by NYSDEC, there is relative certainty that global sea level will ultimately rise at least six feet over current levels due to warming that is already locked in to the atmosphere.

SEA LEVEL RISE PROJECTIONS FOR THE HUDSON

	Baseline 1971-2000	2020s	2050s	2080s	2100
Mid-Hudson region	–	1 - 9"	5 - 27"	10 - 54"	11 - 71"
NYC/Lower Hudson region	–	2 - 10"	8 - 30"	13 - 58"	15 - 75"

The Community Risk and Resiliency Act (CRRA) was signed into law in New York in 2014 to advance planning for climate resilience. NYSDEC officially adopted sea-level rise projections (see Table 6) in 2017 and is developing guidance for natural and nature-based solutions. CRRA requires the NYS Department of State to develop model local laws to enhance community resiliency.

Table 6. New York State Sea-level Rise Projections for the Mid-Hudson region (6 NYCRR Part 490). “Low” signifies the lower end of model forecasts, while “high” signifies the upper end over the range of different model formulations and initialization scenarios.

Table 6.

Mid-Hudson region (from Troy south to Kingston)					
Time Interval	Low Projection	Low-Medium Projection	Medium Projection	High-Medium Projection	High Projection
2020s	1 inch	3 inches	5 inches	7 inches	9 inches
2050s	5 inches	9 inches	14 inches	19 inches	27 inches
2080s	10 inches	14 inches	25 inches	36 inches	54 inches
2100	11 inches	18 inches	32 inches	46 inches	71 inches

⁹⁵ NYS 6 NYCRR Part 490. <https://www.dec.ny.gov/energy/102559.html>

The **Sea Level Rise Map** shows the current water level and “100-year” flood zone with projections of potential Sea Level Rise (SLR) at 12, 30, 54 and 72 inches over current levels, as well as modeling for **tidal wetland pathways**. The **Sea Level Rise Detail Map** (Map 19b) shows the affected coastal area in greater detail. The sea level rise modeling comes from the non-profit group Scenic Hudson, which utilized high resolution LiDAR topography and local tidal datum research in a modified-bathtub approach to estimate current and future inundation zones.⁹⁶ It’s important to note that the modeling does not account for storm surge and wave action, and that estimates for future flood zones do not account for projected changes in precipitation patterns.

Projections for rapid sea level rise on the Hudson threaten waterfront development and infrastructure as well as the future of tidal wetlands. Along the Hudson River Estuary there are about 7,000 acres of tidal wetland, most of which occur north of the City of Kingston. With a projection of 36-72” (3-6 ft) of SLR by the end of the century, up to 4,000 acres of tidal wetland may be completely inundated in the estuary. Tidal wetlands along the Hudson River will disappear as water rises unless they can build up sediment in place (through the process of accretion; see Figure on left) or move horizontally to higher ground. However, wetlands bordered by steep shorelines, walls, or existing development may have no place to go. Potential tidal wetland loss threatens the health of the entire estuary. Wetlands are also one of the most important tools in flood control as they are able to absorb and slow movement of rising waters. A recent study by Scenic Hudson shows areas along the Hudson most likely to support tidal wetlands in the future as sea level rises.⁹⁷ The study predicts a significant expansion of tidal wetland acreage in East Greenbush by 2100.



The **tidal wetland pathways** show where tidal wetlands are likely to move by 2100 as sea level rises under the full range of sea level rise and accretion rates examined in the study. Tidal wetlands are projected to expand throughout the Papscaanee Island floodplain west of Route 9J. **The undeveloped floodplain lands of Papscaanee Island may be one of the most important opportunity areas in the estuary for new tidal wetlands to be established in the 21st century.**⁹⁸ Elsewhere in the estuary, steep

96 Scenic Hudson Sea Level Rise Mapper. <https://www.scenichudson.org/about-slr-mapper>

97 Tabak, Nava, and Sacha Spector. *Protecting the Pathways: A Climate Change Adaptation Framework for Hudson River Estuary Tidal Wetlands*. Scenic Hudson, May 2016, <https://www.scenichudson.org/sites/default/files/protecting-the-pathways.pdf>

98 See Figure 7 in Tabak, N.M., M. Laba, and S. Spector. *Simulating the Effects of Sea Level Rise on the Resilience and Migration of Tidal Wetlands along the Hudson River*. PLoS ONE 11(4): e0152437. doi:10.1371/journal.pone.0152437. 2016. <http://www.scenichudson.org/sites/default/files/tabak-et-al-2016.pdf>

shorelines, existing roads, railroads, and development pose a physical barrier to tidal wetland migration. The wetland pathways do not account for all the barriers that may be present; for example, bulkheads, revetment, and other hard engineered shorelines may be a barrier to inland wetland migration along sections of East Greenbush's Hudson River shoreline.



Flooding at Papscanee Island Nature Preserve

The **Sea Level Rise Detail Map** shows the Town's coastal flood zone in greater detail with a projected 72" (6 ft) sea level rise. This is the high range projection, which will be achieved if rapid ice melt from the Greenland ice sheet continues at current rates. Even if it does not occur by 2100, there is relative certainty that it will occur in the 22nd century due to warming that is already locked in to the atmosphere. The map illustrates the vital need to plan for the potential of our changing

landscape and river system in the near future. The map shows the possibility of near complete inundation of the Papscanee Island floodplain and the possibility of future flooding past County Route 9J. Currently a portion (approximately shy of one quarter) of this area is designated as the Papscanee Island Nature Preserve. The remaining majority of the projected wetland pathways and inundation area are a mix of agricultural crop land, industrial and commercial properties, crossed by the Amtrak and CSX freight railroad lines. Sea level rise projections for the Town's waterfront can be viewed using Scenic Hudson's [Sea Level Rise Mapper](http://www.scenichudson.org/slr/mapper).⁹⁹

Discussion

Under the 2008 Comprehensive Zoning Law, approximately half of the Papscanee Island floodplain is located within the Coastal Industrial zoning district (see **Zoning and Tax Parcels Map**). According to the zoning, "The CI District is intended to permit and encourage the development of light manufacturing and warehousing uses appropriate along the waterfront which require access to the river, rail line or require large quantities of water." Much of this area remains vacant or in agricultural use (see **Tax Parcel Land Use Map**), with the potential for significant new development. Under the current zoning,

⁹⁹ <http://www.scenichudson.org/slr/mapper>

development plans are required to minimize conflict with adjacent agricultural operations by providing a 100' buffer. In light of the risks posed by sea level rise and coastal flooding, and in view of the current land use vision, under which a balance between resource conservation and development is desired, the Town should consider using the comprehensive plan update or a Generic Environmental Impact Statement to evaluate the potential cumulative impact of buildout in the Papscanee Island floodplain and identify mitigation options.

The Town should also consider strategies to conserve tidal wetland habitats in the face of projected changes. The most effective way to do this is to protect and manage the areas where wetlands may move. Minimizing future development in the pathways and designing public waterfronts to allow for these changes will ensure that tidal wetlands have room to adapt to rising sea levels. This strategy will also reduce risks to communities and property owners in the changing Hudson River flood zone. For more information, see [*Protecting the Pathways: A Climate Change Adaptation Framework for Hudson River Estuary Tidal Wetlands*](#).

While adapting to flood risks along the Hudson River, East Greenbush can also take steps to reduce potential for inland flood damage due to increased stormwater runoff by implementing green infrastructure strategies and limiting impervious surfaces where applicable. East Greenbush should also plan for increasing temperatures by expanding shaded areas in public spaces to offer relief. This could include tree planting and construction of shade structures. Riparian buffer restoration could also be beneficial to shade streams. The NYSDEC recommends developing or updating a heat emergency plan to provide a course of action during intense heat events. More information and resources on adapting to changing climate is provided in *Working Toward Climate Resilience*.¹⁰⁰

100 Zemaitis, Libby. *Working Toward Climate Resilience: General Climate Information Prepared for Hudson Valley Communities*. NYSDEC Hudson River Estuary Program, 2018.

Section 6: Land Use

Zoning and Tax Parcels (Map 20)

The **Zoning and Tax Parcels Map** illustrates land use regulations which apply to real property in the Town.

Zoning

Cities, towns and villages in New York State are authorized by state statutes (called “zoning enabling laws”) to regulate the use of land by enacting what is commonly referred to as “zoning.” Zoning governs the way land in a municipality is used and developed. Its goal is to carry out the municipality’s long-range land use objectives. Zoning regulates the uses to which property may be devoted, the siting of development on land, and the density of development on property. Typically, zoning laws divide the community into land use districts and establish building restrictions regarding building height, lot area coverage, the dimension of structures, and other aspects of building and land use.

Zoning regulates the uses to which property may be devoted, the siting of development on land, and the density of development on property

New York is a “home rule” state and municipalities have the choice of whether to implement zoning. The Town of East Greenbush has implemented the Comprehensive Zoning Law (CZL), Local Law # 1 of 2008 to implement zoning.¹⁰¹ The stated purpose is to divide the Town of East Greenbush “into zoning districts, and all land and building are regulated as to use, occupancy, location, construction and alteration for the purpose of protecting and promoting public health, safety, morals, comfort, convenience, economy, urban aesthetics, and the general welfare.”

The CZL designates permitted uses of land based on the fourteen (14) zoning districts. In addition, a Watercourse Management Overlay District overlay zone and a Planned Development District floating zone are also specified in the CZL. These zoning districts are shown on the Town’s Official Zoning Map and are reproduced on the **Town Zoning and Tax Parcels Map**. A detailed schedule of permitted uses, area and bulk standards, and other requirements for each zone, as well as the intent of each zone, can be found in Section 2 of the CZL.

101 A copy of the local law can be viewed by visiting the Town’s website:
https://www.eastgreenbush.org/application/files/4114/9081/6524/EGB_Zoning_Law_061108.pdf

Table X. Zoning Districts and Abbreviations

Zoning District	Abbreviation
<i>Residential Districts</i>	
Agriculture-Residential District	A-R
Residential-Open Space District	R-OS
Residential-Buffer District	R-B
Residence District	R-1
Residence District	R-1A
Residence District	R-2
Residence District	R-3
<i>Commercial and Industrial Districts</i>	
Personal/Professional District	PPB
General Business Mixed Use District	B-1
General Business District	B-2
Corporate Office Only District	O
Corporate Office/Regional Commercial District	OC
Corporate Office/Light Industrial District	OI
Coastal Industrial District	CI
<i>Overlay Districts and Floating Zones</i>	
Watercourse Management Overlay District	WMO
Planned Development District (floating zone)	PDD

The Town is roughly divided into Residential Districts and Commercial and Industrial Districts. The Hudson River shoreline to Route 9J is a combination of light industrial and agricultural zones. The area along the length of Routes 9 & 20 and along Route 4 north to Couse Corners is a combination of medium density residential (5 dwelling units per acre to a maximum of 12 units per acre in the R-3), commercial, and mixed-use districts. The area along Route 4 to the north and west of Couse Corners is easily accessible to the interstate and is designated for office and commercial uses. The area between Route 9J and Interstate 90 not along the major roadways is zoned low-density residential (1 unit per 1.5 acres) but higher densities (up to 2 units per acre) are permitted where access to public water and sewer is available. Most of the area east of Interstate 90 is a combination of low-density residential (with densities ranging from 1 dwelling unit per 5 acres to 1 dwelling unit per 1.5 acres), agriculture, and open space.

There are several Planned Development Districts (PDDs) which apply to specific areas in the Town and are a type of incentive zoning intended to encourage creative, compact development while fostering community amenities such as a usable open space system for residents and nearby neighborhoods throughout the Town. Performance, use, and other criteria specific to the PDD area become the basis for detailed design, review and control of subsequent development in those areas. The Watercourse Management Overlay District applies to a horizontal distance 50 feet from the high-water mark of ponds and lakes and from the nearest bank of streams and rivers. The waterbodies covered by the Watercourse

Management District have been classified by the New York State Department of Environmental Conservation (NYSDEC) as designated water classes "AA" through "D."

Tax Parcels

This map also includes property boundaries as reflected by tax parcel lines, which are used for tax collection purposes. State law requires local governments to prepare and maintain tax maps in accordance with standards established by New York State. The Town's tax map reflects the size, shape and geographical characteristics of each parcel of land in the assessing unit. The tax map is a graphic display of the Town's land inventory, and as such is the major source to the real property assessment roll. The working copy of the tax map is used by the Town Assessor to record and analyze property transfers and record other features pertinent to the valuation of land.¹⁰² Tax parcel data shown in the Natural Resources Inventory map series were published in March 2018 by the Rensselaer County Tax Services Department.

Discussion

Examining the zoning map and tax parcels in relation to other maps of the Natural Resources Inventory can provide insight into potential development scenarios which could affect the existing natural resource base, ecology, and other significant features. This map is also useful when placed in relation to the other NRI maps when making decisions about how to update the comprehensive plan and zoning districts.

102 Adapted from *Tax Mapping in New York State*. New York State Department of Taxation and Finance, www.tax.ny.gov/research/property/assess/gis/taxmap/. Accessed 3 Oct. 2018.

Existing Land Use (Map 21)

The **Existing Land Use Map** shows current land use patterns in Town as reflected by tax assessment property use data. This report includes an alternative map of current land use information, the National Land Cover Dataset (NLCD), which is gathered from remote sensing. For more information, see the **Land Cover and Land Use** section.

Existing Land Use Patterns

As shown on the map, the predominant uses in Town by land area are vacant land, residential, and agricultural. There are a mix of large and small residential uses, with the larger residential uses found

The predominant land uses in Town by land area according to tax assessment data are vacant land, residential, and agricultural.

primarily east of Interstate 90. There are agricultural uses found in nearly all portions of the Town except the area bounded by Route 4, Routes 9 & 20, and the Town boundaries with the City of Rensselaer and North Greenbush. Vacant land, which includes several utility rights-of-way, coincides with Mill Creek and areas situated away from major roadway corridors.

Commercial uses are found primarily along Routes 9 & 20, along Route 4 north of Couse Corners, and along Route 9J and the Hudson River. Industrial properties are also found across the portion of the Town west of Interstate 90 and include manufacturing and processing, product research, mining and quarrying, wells, and industrial product pipelines.

Community Services uses are found throughout the Town. This is a broad category that includes education, religious, healthcare, government, and cultural and recreational uses. In East Greenbush, the Town parks, cemeteries, library, and several assisted living facilities are shown. Public services include Town facilities, certain Town parks, and the Amtrak and CSX railroad lines.

A Note About Property Type Classification Codes

Property Type Classification Codes were originally developed for use by assessors to describe the primary use of each parcel of real property on a taxing entity's assessment roll. A single code intended to be the best description for the overall use of the property is assigned to each parcel. These codes form a uniform classification system which is in use by all New York State municipalities, including the Town. The system of classification consists of numeric codes in nine categories. Each category is composed of divisions, indicated by the second digit, and subdivisions (where required), indicated by a third digit.¹⁰³

This classification system is designed for a specific purpose and should be distinguished from other land use classification systems in the NRI, such as the zoning map and NLCD. Certain characteristics of these data may affect the accuracy of the resulting depiction of land use, depending upon the

103 Adapted from *Property type classification codes - Assessors' Manual*. New York State Department of Taxation and Finance, <https://www.tax.ny.gov/research/property/assess/manuals/prclas.htm>. Accessed 3 October 2018.

community. For example, it is not updated for non-taxed parcels (i.e., not-for-profit), and it is often incorrect in the type of agriculture. Parcels having more than one use (e.g., residential with agriculture) are often shown to be the highest taxable use.

Discussion

Examining the Existing Land Use map in relation to other maps of the Natural Resources Inventory can provide insight into the types of activities occurring on land in the Town and their locations. It can help suggest areas where certain types of resources, such as agriculture and open space, can be found. Examining land uses over time can provide insight into changes in the use of land and development patterns.

Regulated Facilities and Industrial Land Use (Map 22)

The **Regulated Facilities and Industrial Land Use Map** shows the distribution in the Town of industrial land uses, waste management facilities, hydrocarbon storage facilities, mines, Superfund sites, and locations of point source discharges to groundwaters as well as surface waters regulated under the Clean Water Act. Information about individual permitted facilities identified on the map is available through the DECinfo Locator interactive online map at <https://www.dec.ny.gov/pubs/109457.html>. A complete list of the locations shown on this map is available in Appendix A.

The mapped locations include the following:

- SPDES Permit Sites – New York's State Pollutant Discharge Elimination System (SPDES) program is intended to control of surface wastewater and stormwater discharges in accordance with the Clean Water Act. Permits are required for constructing or using an outlet or discharge pipe (i.e. a "point source") discharging wastewater to surface waters or ground waters of the state and disposal systems such as a sewage treatment plant.¹⁰⁴ Several commercial and industrial uses along the Hudson River have SPDES permits, as does the Town-operated wastewater treatment plant.
- Regulated MS4 Area - Polluted stormwater runoff is commonly transported through municipal separate storm sewer systems (MS4s), and then often discharged, untreated, into local water bodies. An MS4 is a conveyance or system of conveyances that is: owned by a state, city, town, village, or other public entity that discharges to waters of the U.S., designed or used to collect or convey stormwater (e.g., storm drains, pipes, ditches), not a combined sewer, and not part of a sewage treatment plant, or publicly owned treatment works (POTW).¹⁰⁵ Small MS4s that are located within the boundaries of a Census Bureau defined "urbanized area"¹⁰⁶ are regulated under EPA's Phase II Stormwater Rule and must obtain a SPDES permit from NYSDEC. The MS4 boundary is shown on the map.

The location of certain regulated facilities in Town can be valuable to those looking to undertake land development projects in East Greenbush.

104 *State Pollutant Discharge Elimination System (SPDES) Permit Program*. NYSDEC, <https://www.dec.ny.gov/permits/6054.html>. Accessed 3 October 2018.

105 USEPA, *National Pollutant Discharge Elimination System (NPDES) - Stormwater Discharges from Municipal Sources*, <https://www.epa.gov/npdes/stormwater-discharges-municipal-sources>, Accessed 19 January 2019.

106 As the USEPA explains, "An urbanized area (UA) is a densely settled core of census tracts and/or census blocks that have population of at least 50,000, along with adjacent territory containing non-residential urban land uses as well as territory with low population density included to link outlying densely settled territory with the densely settled core." USEPA *Stormwater Phase II Final Rule Urbanized Areas: Definition and Description*, <https://www3.epa.gov/npdes/pubs/fact2-2.pdf>, Accessed 19 January 2019.

As a regulated MS4, the Town is required to develop a stormwater management program (SWMP) that describes the stormwater control practices that will reduce the amount of pollutants carried by stormwater during storm events to waterbodies to the "maximum extent practicable."¹⁰⁷ The goal of the program is to improve water quality and recreational use of waterways.¹⁰⁸ The Town does not contain any combined sewer overflows, any 303(d) listed waterbodies as identified in the General Permit, and is not located in a Watershed Improvement Strategy Area. As part of the SWMP, the Town has mapped 149 outfalls, or points of discharge from the MS4 to surface waters. Receiving waters within the MS4 boundary include: Papscanee Creek, Mill Creek, Moordener Kill, and Hampton Manor Lake.

- Petroleum Bulk Storage Facility – These locations are regulated under the NYS Petroleum Bulk Storage (PBS) program, which applies to facilities that store more than 1,100 gallons of petroleum in aboveground and underground storage tanks.¹⁰⁹ The majority of these facilities in the Town are gas stations.
- Chemical Bulk Storage Facility – These locations are regulated under the NYS Chemical Bulk Storage (CBS) program which applies to facilities that store a "hazardous substance" listed in 6 NYCRR Part 597 in an aboveground storage tank larger than 185 gallons, any size underground storage tank, with some exceptions, or in a non-stationary tank used to store 1,000 kg or more for a period of 90 consecutive days or more.¹¹⁰ CBS regulated facilities are located at sites in the Town used for manufacturing, research, and petroleum industrial land uses.
- Major Oil Storage Facility – These locations are regulated under the NYS Oil Spill Prevention, Control and Compensation Act, which requires regulation of all oil terminals and transport vessels operating in the waters of the State which have a storage capacity of 400,000 gallons or more.¹¹¹ These facilities are located along the Hudson River and are involved in the storage and distribution of various refined petroleum products.
- Salt Bulk Storage Facility – These facilities are locations where road salt and other materials used for snow and ice operations by public works and roadway agencies are stockpiled. Salt storage facilities are located at the DPW garage and NYSDOT Rensselaer County Residency.

107 <https://www.eastgreenbush.org/departments/planning-zoning/stormwater>

108 NYSDEC, *Stormwater MS4 Permit and Forms*, <https://www.dec.ny.gov/chemical/43150.html>, Accessed 19 January 2019.

109 *Bulk Storage of Chemicals, Petroleum, and Liquefied Natural Gas*. NYSDEC, <https://www.dec.ny.gov/chemical/287.html>. Accessed 3 October 2018.

110 *Bulk Storage of Chemicals, Petroleum, and Liquefied Natural Gas*.

111 *Regulation of Major Oil Storage Facilities*. NYSDEC, <https://www.dec.ny.gov/chemical/2644.html>. Accessed 3 October 2018.

- Active or Reclaimed Mine – These are regulated sites in the mining and oil and gas industries. There are five (5) such sites in the Town, which are primarily privately owned sand and gravel mines.¹¹²
- State Superfund Site - The NYS Superfund Program is an enforcement program whose goal to identify and characterize suspected inactive hazardous waste disposal sites and to ensure that those sites which pose a significant threat to public health or the environment are properly addressed. These are locations where presence of a consequential amount of hazardous waste has been confirmed and to which various tracking, remediation, environmental management and reporting requirements apply. There are six (6) such sites in Town.¹¹³
- Transfer Station and Former Landfill – The Town formerly operated a landfill for municipal solid waste disposal along Ridge Road which is now the site of the Town-operated Transfer Station.
- Industrial Land Uses – Industrial land uses, which are defined by property class data (see Map 21), are also found across the portion of the Town west of Interstate 90 and include manufacturing and processing, product research, mining and quarrying, wells, and industrial product pipelines.

Discussion

Examining the Regulated Facilities and Industrial Land Use map in relation to other maps of the Natural Resources Inventory can provide insight into the types of regulated and industrial activities occurring in Town and their locations relative to natural resources and other significant features. This map shows sites undergoing cleanup of contaminated sites, which can be valuable to those looking to undertake projects in Town. More information about facilities regulated under DEC permits is available online through the [DECinfo Locator](#) tool.¹¹⁴

112 *Mining and Reclamation*. NYSDEC, <https://www.dec.ny.gov/lands/5020.html>. Accessed 3 October 2018.

113 *State Superfund Sites*. NYSDEC, <https://www.dec.ny.gov/chemical/8439.html>. Accessed 3 October 2018.

114 DECinfo Locator. NYSDEC, <https://www.dec.ny.gov/pubs/109457.html>. Accessed 12 February 2019.

Agricultural Resources (Map 23)

The **Agricultural Resources Map** shows the distribution of soils, farm parcels, and state and local agriculture promotion programs in the Town.

Soils

Successful agriculture requires quality soils. High quality soils require small fertilizer and nutrients inputs, leading to lower costs and higher production rates. Prime Farmland Soils are defined by the USDA and New York State and considered the most productive soils for farming.¹¹⁵ Farmland Soils of Statewide Importance are soils that do not meet all criteria for Prime Farmland. Though not as productive as Prime Farmland, if managed properly, these soils can produce fair to good yields. There are soils conducive to agriculture found across the Town. The most productive soils are located west of Interstate 90 and have seen extensive development (see the **Existing Land Use Map**).

High quality soils contribute to successful agriculture because they require smaller fertilizer and nutrients inputs, leading to lower costs and higher production rates.

Tax Exemptions and Agricultural Districts

County agricultural district designation entitles landowners to a mix of incentives aimed at preventing the conversion of farmland to non-agricultural uses. Agricultural tax exemptions limit local property tax liability to a prescribed agricultural assessment value. According to the map, a significant proportion of the lands east of Interstate 90 either receive agricultural tax exemptions, are enrolled in an ag district, or both. There is a cluster of properties enrolled in these programs along the Hudson River, and several similar properties along Route 9 & 20 and along the southern border with the Town of Schodack.

Discussion

Large areas of farmland can promote a critical mass of farming which is important to the long-term viability of agriculture in Town and in the county. Understanding the distribution of these agricultural resources should be an important consideration in Town planning and development management processes. Growing food locally can benefit the local economy, the environment, and the health and welfare of the community if sustainable agricultural practices are used. In addition to providing the community with a local source of crops, livestock, and economic benefits, farmlands can also serve as an important source of food and cover for wildlife, and provided certain practices are used, can help control flooding and protect wetlands and watersheds. Farmland also contributes to scenic beauty and open space.

115 *Rensselaer County, NY: Agricultural and Farmland Protection Plan.*
https://www.farmlandinfo.org/sites/default/files/Keep_It_Growing-Rensselaer_Cty_NY_1.pdf. Accessed 3 October 2018.

Section 7: Cultural Resources

Conservation, Recreation & Scenic Areas (Map 24)

Access to parks and open space within a community brings substantial social, environmental, economic, and health benefits.¹¹⁶ These places help define our Town by giving residents opportunities to enjoy the natural beauty of the region and provide areas to promote relaxation and exercise. From nature preserves, to pocket parks, to biking and walking paths, the Town of East Greenbush has much to offer.

Parks and Protected Lands

A variety of parks, preserves, and other protected lands in the East Greenbush were identified from the NY Protected Areas Database (NYPAD), a spatial database of lands protected, designated, or functioning as open space, natural areas, conservation lands, or recreational areas. NYPAD uses the term “protected” broadly, including lands that may be public or private, open or closed to public use, permanently protected from development or subject to future changes in management. NYPAD was created by the NY Natural Heritage Program, and can be accessed through NYPAD.org, or through the Hudson River Valley Natural Resource Mapper.¹¹⁷



Six public recreation areas (Woodland's Eckman Park, Hampton Lake Park, Onderdonk Memorial Park, Ontario Park, Prospect Heights Park, and the Town Park) are maintained by the Town and described fully in *The Town of East Greenbush Amenities Plan, 2016-2017*.¹¹⁸ Each of these parks provides at least one, and often multiple, forms of recreation equipment, such as swing sets, basketball courts, or bocce courts. The Town Park, located off Elliot Road, is the largest recreation park in the Town and provides hiking trails, pavilions, ball fields, a dog park, views of the North Branch Moordener Kill, and more.

Papscanee Island County Nature Preserve is the only formal preserve in the Town dedicated to conservation. Situated along the Hudson River, the preserve contains tidal and wetland aquatic habitats for rare species of plants and animals. This hotspot of biodiversity is described in further detail in the **Habitats and Wildlife** section of this report.

116 Sherer, Paul M. *Benefits of Parks: Why America Needs More City Parks and Open Space*. Trust for Public Land, 2006.

117 <http://www.dec.ny.gov/gis/hre/>

118 *The Town of East Greenbush Amenities Plan: 2016-2017*. Prepared by Behan Planning and Design. www.eastgreenbush.org/application/files/3714/9201/9187/Amenities_Plan_2016_Final_Draft.pdf

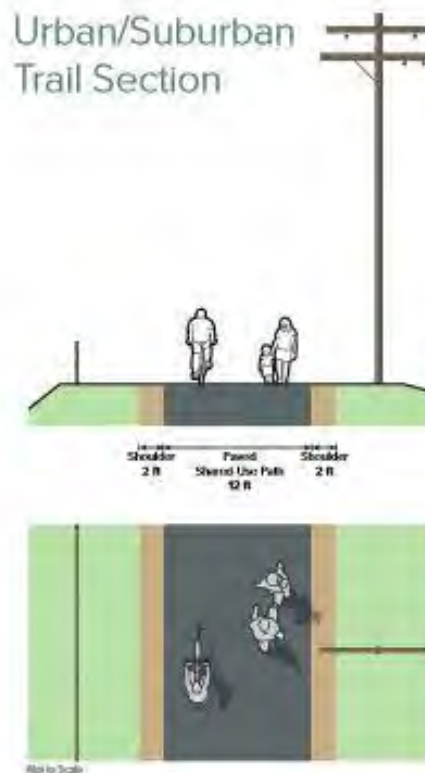
In addition to the Town’s publicly accessible parks and preserve, there are at least two privately-owned properties in Town that are protected under conservation easements held by the USDA Natural Resources Conservation Service (NRCS). These properties are not open to the public. A conservation easement is a voluntary legal agreement between a landowner and a land trust or government agency that permanently limits uses of the land in order to protect its conservation values. Landowners retain many of their rights, including the right to own and use the land, sell it and pass it on to their heirs.¹¹⁹ NRCS offers voluntary easement programs to landowners who want to maintain or enhance their land in a way beneficial to agriculture and/or the environment.¹²⁰ Local lands trusts, such as the Rensselaer Land Trust, also offer conservation easement programs that can help residents preserve their land for future generations.¹²¹

Pedestrian and Bicycle Access

Safe access for pedestrians and bicycles allows residents to use alternate forms of transportation, which helps reduce car congestion, increases overall health of the community, and provides economic benefits.¹²² In recent decades, shared-use bicycle and pedestrian paths have become a trademark of “livable” communities, making them more attractive to potential home buyers and businesses.

In 2020, The Town of East Greenbush will host a central piece of the Empire State Trail, a state-funded initiative to create a shared-use path from New York City to the Canadian border, and from Albany to

The **Albany-Hudson Electric Trail** will be a shared-use bicycling and pedestrian trail along the historic 35-mile Albany-Hudson Electric Trolley corridor from the cities of Hudson to Rensselaer. The route runs through East Greenbush parallel to Route 20, connecting neighborhoods, schools, shopping areas, and parks, providing recreation and linkage opportunities for many residents.



119 <https://www.landtrustalliance.org/what-you-can-do/conserving-your-land/questions>
 120 <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements>
 121 <https://www.renstrust.org/protect/landowner-information>
 122 <https://www.railstotrails.org/experience-trails/benefits-of-trails/>

Buffalo.¹²³ The Albany-Hudson Electric Trail is a 35-mile segment of this trail that will traverse Rensselaer and Columbia Counties, following the historic tracks of the Albany-Hudson Electric Trolley that operated from 1899 to 1929. Construction is expected to begin in 2019, with completion the following year. The detailed and most current route plans can be found at www.ahettrail.org.

Through East Greenbush, this path will be a mix of marked, on-road sections and separated off-road paths. The section from the City of Rensselaer to Southern Avenue of Hampton Manor will be on-road for cyclists, and on improved sidewalks along Route 9/20 for pedestrians. From the south end of Southern Avenue, a newly constructed shared-use path will continue until Point View Drive, at which point, an on-road route will be used until Greenwood Drive, and then the shared-use off-road path will resume until Old Miller Road.

Other Corridor Visions

The East Greenbush Amenities Plan also included a vision of other multi-use trails using National Grid utility corridors that crisscross the Town, possibly connecting key features such as Papsanee Island County Park with the center of Town. Approval from National Grid would be a necessary first step towards making official paths along the corridors. State Routes 9J and 151 are State Designated Bike Routes; however, neither appear to have any bicycle amenities. Route 9J has significantly wide shoulders. Some segments of Route 151 offer wide shoulders, while others are narrow and less suited to bicycling and walking. Many of the Town's major thoroughfares and more densely settled areas, such as the Route 9 & 20 corridor, portions of Route 4 and Route 151, do have sidewalks, although overall the network displays a number of gaps and needs.

Scenic Roadways and Views

The hilly terrain of East Greenbush and general westward aspect towards the Hudson River Valley, coupled with many forest and open field habitats, create opportunities for scenic vistas along many of the Town roads. The Town's 1993 Comprehensive Plan documented and described relatively intact aesthetic resources worthy of protection.¹²⁴ The Natural Resources Work Group determined that the 1993 inventory remains valid and worked with the project GIS intern to map the identified scenic roadways. Stretches along Ridge Road, I-90, Route 4 (between Mannix Road and the FedEx center), Hays Rd, Best Road, and Best-Luther Road are some examples of scenic roads within East Greenbush. In addition, the Natural Resources Work Group identified Old Best Road, Craver Road, and Werking Road as scenic. The following descriptions are provided from the 1993 Comprehensive Plan:

Route 4: The view westward from Route 4, between the Interstate Exit 9 ramp and the Albany International building [currently the FedEx distribution center, south of the Rensselaer County Plaza] is important to both tourists and commuters. This view is a panorama which includes Olcott and Rysedorph Hills, and the downtown Albany Government complex which includes the Nelson A. Rockefeller Plaza. Landcover types which are seen from the Route 4 at close and

123 www.ny.gov/programs/empire-state-trail

124 1993 Comprehensive Development Plan Update: Town of East Greenbush, NY.

medium range include small structures, wooded areas and open brushland. The distant view from Route 4 is of the Downtown Albany Government complex, a grouping of modern and historic buildings which form an interesting visual unit because of scale, texture, and color.



View towards Downtown Albany from Route 4

Town Park: The Town Park picnic and swimming area provides a greenspace setting for Town residents. The views from within Town Park are important to the overall quality of the recreational resource. Any new development in the area should respect the views both on the road leading into Town Park and views from the picnic and swimming area [Note: the swimming area is no longer open due to high bacterial counts].¹²⁵

Hudson River: Views associated with East Greenbush's Hudson River waterfront should be protected and enhanced. These views are predominated by the natural settings and include:

- Views looking west along Route 9J are wetlands adjacent to woods in close to medium range, with the woods forming the distant view. Both wetlands and woods provide seasonal color and textural changes and settings for wildlife.
- The view along the Hudson River, south of the King Fuel's Terminal is of the generally undeveloped river bank and residential structures along the west shore.
- The view from Hayes Road, from the descent of the hill west to 9J is a view of wetlands, wooded shore and the hills of the west side of the river.

Ridge Road provides short range views to the winding rural roads with deciduous trees and shrubs close to the road and long-range views of ravines and forest.

I-90: The view from I-90 is an important view for the Town. Many residents travel this route

¹²⁵ The pond historically has been used for public swimming and includes a beach area. However, due to high concentrations of fecal coliform, the beach has been closed to public swimming for several years by order of the Rensselaer County Health Department.

daily. For non-residents this is the only corridor which forms their impressions of East Greenbush. The existing right of way (ROW) along I-90 is relatively unobstructed with manmade landforms in the closer view. Additionally, there are open views of natural vegetation from many areas on I-90. This view is important for the quality of life for residents and for the positive impressions of the Town which it portrays to the passing motorist. View protection would preserve the rural suburban character of the Town and provide an attractive atmosphere for tourism and other economic development opportunities.

Best Luther Road: Views from Best Luther Road (Route 53) and portions of Best Road (Route 55) are generally of mixed deciduous forest on elevated topography in the medium to distant range, and brushland, and/or farms in the closer range. These views are significant because they portray the rural character which distinguishes the eastern portion of the Town.

The 1993 description of Best Luther Road and Best Road remains true in 2019. Despite additional residential development, the eastern part of Town is still dominated by views of field and forest. Best Luther Road, Best Road, Werking Road, and Luther Road delineate a rectangle of largely open space, framed by and enclosing wetlands, pasture, and the forested banks of the Moordener Kill. A number of 19th century barns and farmhouses dot this rural landscape, to which Old Best Road and Craver Road also belong. These roadways should be considered scenic resources in addition to the previously identified areas of the Town.

Discussion

The Conservation, Recreation & Scenic Areas map can help the Town consider how projects adjacent to parks, open space, and trails may impact the value residents gain from these areas, as well as ways to maintain habitat connectivity with preserves and other protected lands. This map can also help identify opportunities to grow and connect parks, preserves, paths, and trails as new projects arise. For example, the incoming multi-use path will provide a backbone of pedestrian and bicycle access to which other paths and sidewalks can connect and eventually provide a valuable network of safe linkages to many parts of Town. During site plan and subdivision review, the Town should consider creating and maintaining habitat connections for the movement of plants and animals. It should also consider creating new connections among parks and trails, and the potential to create connections among future trails, for pedestrian mobility and accessibility. (Creating connections for pedestrians can also advance habitat connectivity objectives.) In order to accomplish these objectives, land can be set aside and deed restricted, put under a conservation easement, or conveyed to the Town on site and subdivision plans for these purposes.

Locations of scenic roadways can inform planning and design of new development projects. The Town may consider adoption of design guidelines to maintain community character and minimize impacts to scenic resources

Historic Preservation Assets (Map 25)

A Thriving Past Civilization

The earliest known inhabitants of East Greenbush were members of a complex and thriving confederacy of Mohicans who inhabited the Hudson River Valley for thousands of years before the arrival of Europeans. Known to be advanced agriculturalists and successful hunters, these Native Americans became heavily involved in the Dutch fur trade in the mid-1600's. Mohican villages were fairly large, consisting of 20 to 30 mid-sized longhouses, located on hills and heavily fortified. Schodack and the Papscanee Islands were major settlement sites. Mohican villages were governed by hereditary sachems advised by a council of elders, with a general council that met regularly at Schodack to decide matters affecting the entire confederacy.¹²⁶ Although the cumulative population has been estimated at over 10,000 in the Hudson Valley area at the time of European contact, by the early 1700's their numbers dwindled to four or five hundred. The spread of highly contagious European borne diseases to which natives had no immunity was catastrophic. In addition, after 1680 many Mohicans were driven southeastward to Berkshire County around Stockbridge Massachusetts due to conflicts with the Mohawk during the Beaver Wars, and westward toward Central and Western New York following the disruption of the American Revolutionary War.¹²⁷

On August 12, 2015 the Stockbridge-Munsee Community, Band of Mohican Indians, opened its New York Tribal Historic Preservation Office in the City of Troy. Hosted by the Sage Colleges, the Tribal Historic Preservation Officer works directly out of this office to facilitate reviews and consultations in archeology and historic preservation that the Mohican Tribe undertakes as part of the National Historic Preservation Act Section 106 process. This is a tremendous development in the presence of the Mohicans in their historic Hudson Valley homeland.¹²⁸

Architectural Heritage

The Town of East Greenbush has a very rich Post-European settlement history rooted in the prominence of people and families and the structures they inhabited. Although there are a number of very old notable buildings that still exist as referenced in the **Historic Preservation Assets Map**, many have been significantly altered to the detriment of their original integrity. Colonists from the Netherlands built a handful of "urban-style" Dutch Colonial houses from the mid-1600's to early 1700's that only exist today in rural Albany region settings, one of the finest examples being the Bries House constructed in East Greenbush in 1723. Although recognized as one of less than six remaining examples of the Dutch urban-style, and among the rarest of American domestic buildings, it is barely recognizable today. A "Historic American Buildings Survey" in the Library of Congress includes photographs of the "Jan Breese House" taken sometime after 1933 documenting this short-lived architectural style that gave way

126 "Mahican." Wikipedia. Wikipedia.org, n.d. <https://en.wikipedia.org/wiki/Mahican>. Accessed 7 January 2019

127 Coffey, Richard. "This Land Was Theirs (Part Two)." *History Tidbits*, www.vizettes.com/kt/upstateny-history/ny-na/upstate-local-sites.htm.

128 Curtin, Edward V. *The Mohican Tribe Opens Its Historic Preservation Office in Troy, NY*. Curtin Archeological Consulting, Inc, 21 Aug. 2015, www.curtinarch.com/blog/2015/8/20/the-mohican-tribe-opens-its-historic-preservation-office-in-troy-new-york.

to Dutch “rural-style” construction. Hundreds of buildings remain of the latter style, predominantly found in regions of former Dutch influence.¹²⁹ In contrast, two later structures, the John Carner, Jr. House built sometime before 1776 and the Craver Farmhouse (also known as Van Rensselaer House) from 1790, are both well-preserved examples of Federal style architecture and the only Town structures currently listed on the National Register of Historic Places.

Sensitive Historic Areas

Although not formally recognized by Federal, State or local government, East Greenbush has several geographic areas of historical, archaeological and architectural significance as highlighted on Map 25. These areas include neighborhoods exhibiting unique architectural styles; travel, trade and commerce corridors; native American settlements; military facilities; and clustered 18th and 19th century farmsteads.

Hampton Manor (former Greenbush Cantonment grounds) is a census-designated neighborhood within East Greenbush. Historically, this area was tenant farmland sold to the US Government in 1812 when construction began for a military Greenbush Cantonment. The huge Army post housed over 4,000 soldiers with several buildings and parade grounds. By 1831 the US Government sold the Cantonment property and it returned to farmland. Today one building of the original Cantonment remains as a private residence while the other structures have long been demolished.¹³⁰

Early 20th century Albany area growth included a trolley line through surrounding towns that would bring about the next evolution of the area dubbed “Hampton Manor.” This was a planned development that included a spring-fed lake, sponsored by Veeder Realty whereby farmland was purchased in the 1920's and marketed as vacation spots for those wanting a quick getaway just outside of Albany. Hampton Manor is significant due to an intact concentration of Sears Kit Homes. This neighborhood of just 0.6 square miles¹³¹ boasts at least 60 kit homes as well as a metal manufactured “Lustron” house.



Entrance to original Hampton Manor development

The Best Road Corridor is a winding rural road dotted with well-preserved private homes and farmsteads, two of which are individually listed on the National Register of Historic Places. The John Carner House (pre-1776) and Craver Farmhouse (1790) sites are meticulously maintained examples of the numerous mid-18th to early 19th century farmstead buildings found along this corridor. These homes

129 McAlester, Virginia, and Lee McAlester. “Dutch Colonial.” *A Field Guide to American Houses*, Knopf Doubleday Publishing Group, 1992.

130 “Greenbush Cantonment.” *New York State Military Museum and Veterans Research Center*, New York State Division of Military and Naval Affairs: Military History, Feb. 2006, dmna.ny.gov/forts/fortsE_L/greenbushCantonment.htm.

131 Mutch, Andrew, and Wendy Mutch. “Kit House Hunters: Hampton Manor, NY.” *Kit House Hunters*, 2015, kithousehunters.blogspot.com/p/hampton-manor-new-york.html

and estates are indicative of the prominence and wealth early Dutch families amassed primarily through land and property acquisitions.

Columbia Turnpike (US Route 20) today is recognized by the US Department of Transportation's Federal Highway Administration as the longest road in the United States, stretching from Boston, Massachusetts to Newport, Oregon at 3,365 miles long, coast-to-coast.¹³² The non-profit Historic US Route 20 Association was founded in 2012 dedicated to preserving the cultural importance of, and promoting economic development in communities along this vast stretch of highway.¹³³ Known as the Boston and Albany Turnpike constructed in 1800 complete with tollhouses, this roadway provided a means of bringing goods to markets. Earlier in history, this roadway offered a route for General Knox to haul cannons to General Washington awaiting their arrival in Boston during the 1776 American Revolution.



Signage available through Historic Route 20 Association

The Hamlet of East Greenbush is situated at the eastern most portion of the Turnpike within Town lines. A concentration of historical buildings is located in this neighborhood including the first Post Office, a pharmacy, hotel, and houses of prominent Town members from the 19th century. A number of schools, including Lyman's Boarding School, School House #2 and the Greenbush and Schodack Academy were originally located in this area. Additionally, one of many tollhouses that were common along Columbia Turnpike once stood in this location.¹³⁴

Papscanee Island and Route 9J corridor is an area located within the Town of East Greenbush that runs along the eastern shore of the Hudson River from Hayes Road to the northern Town border. Route 9J, once known as the Farmer's Turnpike, was built as a farm-to-market toll road around the same time Columbia Turnpike was established in 1800. Several prominent homes were built in this area, the earliest being the Hendrick Bries House highlighted above.

The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) has determined that Papscanee Island meets eligibility criteria for inclusion in the National Register of Historic Places based on its archaeological significance. The Statement of Significance from the 2009 Determination of Eligibility provides a more detailed summary overview of the area and is included in **Appendix C**. Undeveloped lands of Papscanee Island Nature Preserve owned and protected by OPRHP are situated in an area of high sensitivity for the presence of early Dutch and Mohican archaeological sites. Over 30 acres of the 156-acre preserve are still farmed today, giving this stretch of property the distinction of

132 "Highway History - Ask the Rambler." *U.S. Dept. of Transportation*, Federal Highway Administration, www.fhwa.dot.gov/infrastructure/history.cfm.

133 "Discover Historic Route 20." *Historic Route 20*, The Historic Route 20 Association, www.historicus20.com.

134 *East Greenbush Historic Sites. East Greenbush Historic Sites*, Town of East Greenbush, n.d. Map and legend prepared by Office of Town Historian

being under active agriculture (corn) longer than any other lands in the United States.¹³⁵

Notable Scattered Building Sites

With the exception of two previously mentioned National Register properties, individual properties referenced on Map 25 are informally recognized local resources, familiar to many for the role they played in the Town's early roots and settlement. They include homes and farmsteads, municipal and civic structures, religious buildings and commercial establishments. Although in varying physical condition today, many of these buildings are considered significant by Town residents due to the prominence of the primarily Dutch families that lived and worked in this region as New World inhabitants. Numerous descendants of these families continue to reside in East Greenbush, still living in historic family homes or simply recalling the history of these properties.

Map 25. Historic Preservation Assets Legend

Building locations and construction dates are approximations based on: a survey conducted by Town of East Greenbush planning consultants as part of the 1993 Comprehensive Plan; an informal mapped "Historic Tour" with photographs prepared by Town historians in 1987; a quadricentennial commemorative booklet sponsored by the Greenbush Historical Society, "Yesterday & Today, A Historical Journey" published 2009; and an 1876 map print displayed in the East Greenbush Town Historian's office.

1. Vandenburg House – 1834 (Reported as early as 1780 in a 1987 Town Historian photographic survey.)
2. John Carner Jr. House (Chenot) – pre-1776
Early federal style building listed on the National Register of Historic Places. Now a private residence.
3. Charles Earing House (Earing-Green, Nittenger) – 1838
Original homestead was settled in 1708 by Earing. In 1857 David H. Green bought the property where the home remained in the Green family for 103 years.
4. Reynolds House (Prins) – 1840
5. Craver Farmhouse (Van Rensselaer House) – 1790
Listed on the National Register of Historic Places. John W. Craver was one of the first "Overseers of the Poor" in East Greenbush. Now a private residence.
6. J. N. Loesch Sawmill – 1860
7. Timothy Phillips Farm – 1709
8. School House #6 – 1890. Now the Best-Luther Firehouse.

135 . "Papscaanee Island Nature Preserve Walk." *Hudson River Valley Ramble*, Cornell Cooperative Ext., www.hudsonrivervalley.com/ramble/events. Accessed 12 Dec. 2018

9. Greenbush Methodist Church – 1874. Now a commercial retail building.
10. W. R. DeFreest Hotel (Knowlton Tavern) – 1802
Location of the first Town (then Clinton) meeting in 1855 and subsequent (new) Town of East Greenbush meetings. Currently a commercial retail building.
11. East Greenbush Dutch Reformed Church – 1861
Congregation was founded in 1787 and this is the third structure to stand on the site. The adjacent Church cemetery is the resting place of the Genet Family.
12. Bates Building – 1914. Originally built as a four-room schoolhouse, now a commercial building.
13. Lyman’s Boarding School – 1854
14. Holy Spirit Church – 1924
15. Hulsapple House (Witbeck House, Pockman Farm) – 1830
16. Quigley House – 1861 Currently Becker’s Farm and a private residence.
17. Onderdonk House/ Maple Hill Farm – 1820
18. Irwin House – 1859. One of two mansions built by the Irwin Brothers on Red Mill Road.
19. The Olcott Mansion – 1876
20. Cantonment Building – 1812
The Cantonment Building is the only remaining structure from a vast U.S. Army Post that housed 4,000 soldiers during the War of 1812. Now a private residence.
21. Wm. A. McCulloch House – 1843. This early Victorian House was built from building components salvaged from the East Greenbush Cantonment. Once part of a 200-acre farm, the building is now a private residence.
22. Newkirk Blacksmith Shop – 1854
23. Herrington House – Pre-1854. Remaining one of several Herrington family houses along the Troy Road corridor.
24. Michel’s Farm House – Pre-1850, perhaps as early as 1790.
25. Witbeck Farm House – 1790. Georgian Colonial red brick house. Home of the William Witbeck family, leaders in Rensselaer County’s organized resistance during the Anti-Rent War.
26. Jan Breese (Hendrick Bries) House – 1723
Although significantly altered, this is believed to be the oldest structure in East Greenbush. Documented in a “Historic America Building Survey” for the Library of Congress.
27. Ailein-Kellogg Farm House – 1840. This was a 238-acre estate known as “Mt. Eden.”
28. Genet House (Charmontot) – 1806
Home built as a wedding gift from “Citizen” Genet to his son Major General Henry J. Genet. Now a private residence.

Discussion

The history of East Greenbush lives on through homes, farmsteads, churches, schools and government buildings that have survived throughout the years. They are physical reminders of the very significant role area residents, families and events played in the development of this Town, region and country. Dating back to the American Revolution and before, significant structures remain today in various states of repair as part of the identity of the land and its residents. Vulnerable to development pressures, many historic buildings have been lost or significantly altered throughout time but opportunities exist to

protect, preserve and restore these resources. Many regional municipalities have successfully integrated historic preservation with neighborhood and economic revitalization initiatives. These communities have managed to maintain a welcome comfort and quaintness, while encouraging new commercial investment and residential development.

There is potential in East Greenbush for historic preservation to coexist with growth and vitality. Creation of cultural overlay districts that inform developers and offer historic preservation design guidelines would be a good first step. Another consideration might involve expansion of the Town's "special use permit" provisions to allow thoughtful non-conforming new uses for individual historic structures. This is a compelling approach in areas where individual historically significant scattered structures survive while the character of surrounding neighborhoods continues to change and develop. As stewards of East Greenbush resources, it is incumbent on the Town to streamline re-development procedures for historically significant properties and encourage adaptive re-use of buildings that no longer conform to regularly up-dated zoning regulations.

Historic preservation efforts should not be limited to individual structures situated in East Greenbush. The Town has evolved as a part of greater cultural, societal and economic influences and events. Opportunities remain to preserve legacies of the past by highlighting culturally sensitive historic areas including cemeteries, settlements and historic routes of commerce that linked the Hudson River to expansive, bustling turnpikes. Of particular significance is the Route 9J River Road and Papsanee Island corridor, native home of the continent's earliest Mohican inhabitants as well as Route 20, Columbia Turnpike a very historic part of this Nation's longest continual continental roadway. Historic Route 20 Association is one resource that works with communities along this highway to promote small business development, historic sites and tourism.

Appendix A: Town of East Greenbush List of Regulated Facilities

SPDES Permits

Facility Name	Street Address	SPDES #	NYS DEC ID
C H SPRAGUE-RENSELAER TERMINAL	540 RIVERSIDE AVE	NY0007722	4382400003
NATIONAL GYPSUM COMPANY	301 AMERICAN OIL RD	NY0122980	4382400010
EAST GREENBUSH STP	80 COLUMBIA TPKE	NY0026034	4382400002
SPRAGUE ENERGY CORP	58 RIVERSIDE AVE	NY0028843	4381400005
HESS RENSELAER TERMINAL	367 AMERICAN OIL RD	NY0005690	4382400019

Major Oil Storage Facilities

Facility Name	NYS DEC ID
I.P.T. LLC	4-1480
SPRAGUE RENSELAER TERMINAL	4-1600
BUCKEYE TERMINALS, LLC - RENSELAER TERMINAL	4-1880

Petroleum Bulk Storage Permits

Facility Name	NYS DEC ID
EAST GREENBUSH SEWAGE TRT PLT	4-009423
GARELICK FARMS NEW YORK	4-036684
GAS AMERICA INC.	4-037052
MILLBROOK DOLLY MADISON	4-051691
GREENBUSH ON THE RUN	4-059498
YANKEE TRAILS INC	4-066206
HIGHWAY OIL #139	4-072400
DISTRICT GROUNDS SHOP	4-075906
577 AUTO CARE	4-086045
UNIVERSITY AT ALBANY	4-088269
BIOSCIENCE DEVELOPMENT CORP	
R L SMITH SALES INC	4-121673
EAST GREENBUSH MOBIL #0060 - 0528 / #23021	4-121754
NYS DOT	4-133930
STEWART'S SHOPS #214	4-142212
SPEEDWAY # 7582	4-163902
EAST GREENBUSH SUNOCO	4-429651
WARREN W. FANE INC. (PERRY PIT)	4-431109
FIRST UNITED METHODIST CHURCH	4-443638
FUCCILLO FORD OF EAST GREENBUSH	4-462004
NORMAN STAHLMAN	4-484679
TOWN OF E GREENBUSH TOWN GARAGE DPW	4-485241
NEW NGC, INC. D/B/A NATIONAL GYPSUM COMPANY	4-485829
SIDOTI'S SERVICE CENTER	4-600272
JIFFY LUBE STORE NO. 453	4-600281
SMITH'S TIRE SERVICE	4-600337
MICHAELS AUTO PLAZA 920 CORP.	4-600365
VALVOLINE INSTANT OIL CHANGE	4-600388

BEST VALUE INN	4-600415
MONRO MUFFLER/BRAKE #107	4-600434
MABEY'S MOVING AND STORAGE, INC.	4-600604
WM. H. CLARK MUNICIPAL EQUIPMENT, INC.	4-600723
NEW YORK PLASTICS	4-600761
REGENERON PHARMACEUTICALS, INC.	4-600915
WALMART SUPERCENTER #1940	4-600969
GREENBUSH REFORMED CHURCH	4-600978
S.A. DUNN and COMPANY	4-601005
CRAWFORD DOORS and WINDOWS	4-601008
5 COUSE PLACE PROPERTY	4-601138
NEW YORK INDEPENDENT SYSTEM OPERATOR	4-601142
WARREN TIRE	4-601344
FEDEX GROUND PACKAGE SYSTEM, INC.	4-601430

Chemical Bulk Storage Permits

Facility Name	NYS DEC ID
ASHLAND DISTRIBUTION COMPANY	4-000049
BUCKEYE TERMINALS, LLC - RENSSELAER TERMINAL	4-000064
GARELICK FARMS NEW YORK	4-000134
SPRAGUE ENERGY CORP.	4-000202
I.P.T., LLC TERMINAL	4-000214
REGENERON PHARMACEUTICALS, INC.	4-000275

Mines

Facility Name	NYS DEC ID	Commodity	Status
Cipperly Farm Pit	40556	Sand and Gravel	Reclaimed
Dunn Bank	40346	Sand and Gravel	Active
East Greenbush Sand Pit	40239	Sand and Gravel	Active
Hayes Road Clay Pit	40413	Clay	Reclaimed
Onderdonk Ridge Pit	40322	Sand and Gravel	Active
Witbeck Bank	40329	Sand and Gravel	Active

Superfund Sites

Facility Name
East Greenbush Landfill
Sterling Drug Site 3
Fashion Care Cleaning East Greenbush
Sterling Drug Site 2
Former United One-Hour Dry Cleaners
Former City of Rensselaer Landfill

Appendix B: Historic Sites

Columbia Turnpike

Today the hamlet of East Greenbush on Columbia Turnpike still features structures from the mid 19th through the early 20th century. The turnpike once boasted many homes, businesses, school and toll houses. Surviving historic structures show changing architectural detail and changes in the lifestyle of East Greenbush residents over the last 200 years.



Bates Building - Former School House 1914



*Former Greenbush Methodist Church
1874*



Former Boarding School 1854

Columbia Turnpike



Holy Spirit Church 1924



Historical marker for the resting place of French diplomat "Citizen" Genet - prominent East Greenbush resident



Greenbush Dutch Reformed Church 1861 - Site of original church founded in 1787

Greenbush Cantonment



Today one building remains from the 1812 Cantonment where the grounds house more than a dozen structures including barracks, a hospital and officer quarters.



The cantonment area became home to the new Hampton Manor development in the 1920's. The neighborhood features a high concentration of kit houses from Sears and Montgomery Ward.



18th Century
Homesteads



Circa Late 18th & Early
19th Century Homesteads



Early 19th Century Homes

Many remaining homes from the 18th & 19th centuries in East Greenbush were once part of large estates and farmsteads. Today many surviving homes from these times feature similar characteristics such as wooden white clapboard and column detail or pediments of the federal and greek revival style. Porches, window shutters and fencing would be common but have not always survived with changes over time.



Appendix C: Papscaanee Island Statement of Significance

RESOURCE EVALUATION

DATE: November 25, 2009

STAFF: Blakemore/Herter

PROPERTY: Papscanee Island

MCD: East Greenbush (08303)
Schodack (08313)

ADDRESS: N/A

COUNTY: Rensselaer

PROJECT REF: [REDACTED]

USN: 08303.000010/08313.000018

- I. Property is individually listed on SR/NR:
name of listing:
- Property is a contributing component of a SR/NR district:
name of district:
- II. Property meets eligibility criteria.
- Property contributes to a district which appears to meet eligibility criteria.
- Pre SRB: Post SRB: SRB date

Criteria for Inclusion in the National Register:

- A. **Associated** with events that have made a significant contribution to the broad patterns of our history;
- B. **Associated** with the lives of persons significant in our past;
- C. Embodies the distinctive characteristics of a type, period or method of construction; or represents the work of a master; or possess high artistic values; or represents a significant and distinguishable entity whose components may lack individual distinction;
- D. **Have yielded**, or may be likely to yield information important in prehistory or history.

STATEMENT OF SIGNIFICANCE:

Papscanee Island is historically and archeologically significant for its association with upper Hudson Valley's predominant native people, the Mohican, who are currently recognized as the Stockbridge-Munsee Community Band of Mohicans. The pre 20th century island is historically significant as a center of life for this cultural group in New York where it served as a primary gathering spot and place of ceremony. The island is also archeologically significant for the potential it possesses to provide significant information about the life ways of its inhabitants and also for the information that has already been acquired through the archeological record.

The island is located in the floodplain of the Hudson River, in the Town of East Greenbush, Rensselaer County. It is about 4 miles long and about a half mile across, with the Papscanee Kill separating it from the mainland. A strip of additional fertile land lay east of the kill that was another half mile at it widest. (Huey 2004). In the 19th and 20th century, filling of the channel behind the dike resulted in an expansion of the island's western shore and silting between the island and the mainland has resulted in wetlands that have obscured the original island configuration. The tidal estuary Cuyper Kill originally separated the small Cuyper Island from the western shore of Papscanee Island until alluvium began to fill the channel in the late 1750's creating a single landform (Huey 1996: 137).¹

¹ The boundary for the Determination of Eligibility includes an area, which based on historic maps best represents the historic limits of Papscanee Island prior to its connection to the eastern shore of the Hudson River.

The Mohican Indian Nation was the most populous Indian Nation in the Upper Hudson upon the arrival of the Dutch. Historic documentation provides evidence that when Hudson arrived in 1609, he was well within the Mohican territory which extended throughout the Upper Hudson (Dunn: 1994, 54). Hudson was greeted by the Mohicans who provided land for Dutch use and maintained a peaceful coexistence with the Dutch (Dunn 1994:63). At the time of Dutch arrival they had claim to “16,000 morgens of mountain and valley and 1200 morgens of cleared land” (Van Laer, 1908). The 2400 acres of cleared land included Papscaenee Island. When the Dutch farmers came upriver in 1637, they were able to immediately plant on the previously cleared land. (Dunn 1994:226).

Papscaenee Island was the home of the Mohican Sachem, Papsickene, who also controlled other smaller nearby islands and some of the adjacent mainland. A territory associated with a particular sachem was often mentioned in the Dutch deeds. One example of a fertile territory bearing the name of the chief, Papsickene’s Island and “Paep-sykenekaes kill” is shown on the 1632 map. Numerous Dutch documents, letters and land references refer to Papsickene’s land. (Dunn: 1994, 54) Papsickene’s importance during the 17th century is reflected in how the Mohicans interacted with the Dutch, as the sachem’s decisions meant the difference between war and peace. Prosperity for the newcomers depended on the relationship of the native population with the Dutch but also to other native groups. The status of the sachem seems evident in that Papsickene’s son in the historic record is referred to as “the son of Papsickene”. After Papsickene’s death in 1634, three years lapsed before the island was acquired from his heirs by Kiliaen Van Renseelaer, who had repeatedly sought to obtain the land.

The Mohican people consider Papscaenee Island to be a historic property of religious and cultural significance based on its direct association to the sachem Papsickene, for its importance as a place of traditional ceremonies and for its direct connection to their ancestors. The following presents the view of the Stockbridge Munsee Community Band of Mohicans:

“The homes of the Mohican Chiefs, or Sachems were places of spiritual and ceremonial rituals. The Sachem was looked upon as a great tree in whose shade the whole nation sat. His business was to contemplate the welfare of his people, promote peace and happiness with all of their allies. The sachem kept the bag of ceremonial wampum and the pipe of peace.

The wampum was used to track treaties, stories and important events in the tribe’s history. In the years before contact and for 150 years afterwards, all collective knowledge had been memorized. To assure that traditions and treaty obligations were not forgotten, at regular intervals, conferences were held to recite and memorize the Nation’s past. Both young and old were expected to participate in this tradition. This could take as long as two months. Tribal members gathered together at certain seasons, and the historian taking a piece of wampum from the bag, repeated aloud its meaning, and passed it to the person who sat next to him, who then repeated the story. Each piece of wampum and story was passed to each tribal member.

It was not just pieces or strings of wampum, but also elaborate belts were made to mark a treaty with government officials, and other tribes. The belt told the story of the event. The belt was also used to invite a tribe to join in a war, or mark death. It is the native way of documenting its history, and held in great importance. The sachem had a bag which was made special to hold wampum and wampum belts. It was his responsibility to keep these in his home. When a sachem dies his responsibility to care for the wampum was passed to the next sachem. (Jones: 1854, 21)

Turtles have a great value to the Mohican people. Many Lenape Tribes, of which Mohican belong, have a creation story. It is believed the earth is resting on the back of a giant turtle lying in the water. From the soil on the turtle’s back there grew a tree that sent forth a sprout that produced the first man. Then bending over, the top of the tree touched the earth and another sprout grew and this became the woman. These two people were the original parents for all Lenape Indians.

The turtle did not just give us life but helped to sustain life. The shell of the turtle was used as cups and dishes. The shell was also used as rattles in spiritual and ceremonial rituals. The animal world is believed to be one with us and we must treat them with dignity and respect. In the spirit world, the destiny of the Indian is linked with the animal.

The importance of the turtle is not just spoken about, but displayed daily in our tribal affairs. The turtle is on our tribal flag, letterheads, and part of our daily lives. In our clan system, one of the clans is a turtle. The painted turtle which is symbolic with Mohican people still exists on this island today. Protecting the water ways to ensure this turtle does not become extinct is vital to the Mohican people.

This island also holds known graves of our Mohican ancestors. Mohican people hold burials in extreme spiritual significance. Traditional Native beliefs are if graves are disturbed the spirit of this person can not continue their journey. Because of the tribe's strong beliefs in protecting its ancestors' graves, the tribe has an officer whose job is to protect their ancestors. With the knowledge that Papscaanee Island was the home of our sachem, used as fishing and camping sites, and burials are known to be in situ we believe this island must be listed as a historic district to protect our tribe's rich history on this island. (White: 2009).

The rich soil along the flats and on Papscaanee Island was flooded annually and generations of Mohicans cleared and cultivated these areas. The Van Rensselaer manuscripts reveal "that 1200 morgens of lands were enriched by the overflow of high water when the ice breaks" (Van Laer, 1908). Kiliaen van Rensselaer, when establishing his agricultural colony in New Netherlands, had his agent select desirable lands on the west side of the Hudson near Albany and a small tract on the east side. Papscaanee Island attracted sufficient notice to be described in Johannes de Laet's book published in 1625: "...on the east side of the river live the *Mahikans*. On the same East side lies a long, broken Island (many kills run through it so that there multiple Islands) extending nearby...and the ships can come up this far" (Huey 2004: 64). Not being initially successful in acquiring Papsickene's lands in 1632, Kiliaen van Rensselaer wrote in 1636 to his agent in the New Netherlands who was responsible for getting farmers located, that "in case they (the farmers) should want to settle on PaepZickens land, which I think has not yet been bought, make every effort to purchase the same or at best to cause the farmers to be established there with the consent of the owners" (Waite 1913: 26).

After the Hudson's seasonal spring flooding, Papscaanee Island would have been an ideal resource procurement site. New plant growth and abundant fish (perhaps collecting in the receding back water) provided a ready food source. With the introduction of maize agriculture into the Northeast during the Woodland Period, the Mohican people had an ideal location for the growing of crops, including beans and squash. While intensive cultivation normally depletes the soil, Papscaanee Island was annually enriched with new soils.

The archeological data that exists for Papscaanee Island have already provided significant information about precontact Native peoples, the Mohican people of the Woodland and Contact Periods, and later Dutch inhabitants. The hunter-gatherer model suggests that Native populations would disperse into smaller task based or family groups, depending on the season and available resources, and then come back together when it was logistically favorable for larger groups to function together-generally fall and winter. Various hypotheses have been presented on the model of Mohican Pre-Contact settlement. While some of the early maps show fortified villages, there have been no palisaded Mohican villages found to date. Another hypothesis is that small camps were used in addition to stockaded villages, or that unfortified household groupings were dispersed throughout the Mohican territory. (Sopko 2009: 7). The archeological sites that have been identified on Papscaanee Island provide evidence that the Mohican's use of the island was extensive throughout the precontact and contact periods.

The earliest identified precontact occupation on Papscaanee dates to the Late Archaic (2500 B.C. to 1500 B.C.) The Goldcrest Site (A08303.000050) was identified on the former Cuyper Island (now part of Papscaanee) which was held by the Mohicans until 1661. The site dates to the Middle Woodland (A.D. 290 and A.D. 430) and to the Late Woodland/Contact Period (A.D. 1435 and A.D. 1660). Earlier burned deposits found below these occupations may reflect the initial Mohican land clearing process (Sopko 2009). A burial was encountered at this site,

suggesting that Papscanee Island was considered an appropriate location for burials and that other Woodland and Contact Period burials may be present elsewhere on Papscanee Island.

In addition to the recently identified East Greenbush Marina site (A08303.000093), there are 10 other recently identified Late Woodland Period and Contact Period Mohican sites on the island representing temporary agricultural camps, fishing camps and long term isolated farmsteads. Late Woodland pottery has been encountered on seven archaeological sites, with two sites representing different Late Woodland Period occupations. Three sites date to both the Contact and the Late Woodland Period and three sites are single component Late Woodland occupations. Recovered materials include chert tools and flakes, hearth features, mussels, deer bones, fish bones, nut, structural remains and pottery. While these sites have many similarities, they also have many differences (Sopko 2009: 9).

The fact that new sites are being identified as a result of systematic archeological investigations, suggests that there are many more unidentified sites on the island that will yield significant information about the precontact period, the Mohican utilization and habitation of the island and the Mohican interaction with the Dutch during the Contact Period. Many Dutch farm sites are located on earlier Mohican sites, some of them below alluvial soils and fill. The Dutch farm sites have archaeological importance because they contain information on the earliest Dutch house types, individual living standards, trade contacts, and other significant research topics (Huey 2004:69). The Mohican's cultivated farmland on Papscanee Island may actually be the first European farms in New York State (Huey: undated). Some of this original farm land continues to be actively farmed.

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