

Environmental Vulnerability Assessment Report

End 450 Studio

October 10th, 2022

Section 1: Overview

Location Near Buffalo

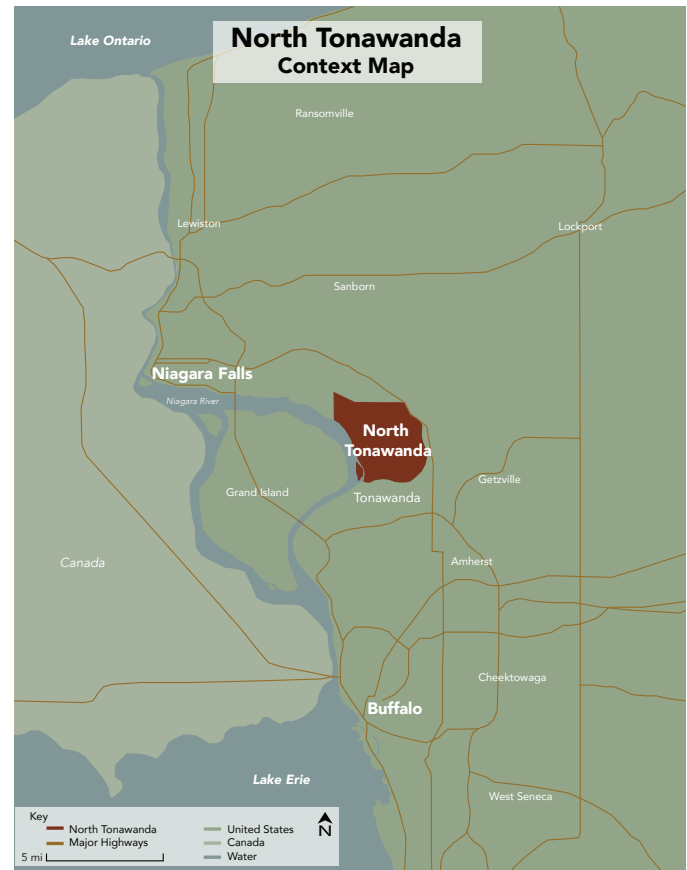
The City of North Tonawanda is located in Niagara County, NY, and serves as a midway point between Buffalo, NY and Niagara Falls. Situated at the convergence of the Erie Canal and the Niagara River, the city was originally the territory of the Iroquois Indians. The land's close proximity to Lake Erie make the city abundant in nutrient-rich land and access to many waterways. This land was secured via a treaty with the Seneca Nation. After settlers moved into the city, they realized the city's potential as a main transportation hub in North America. This was due to the abundant waterways connecting Canada and the Great Lakes east to the Hudson river valley. North Tonawanda became known as the "Lumber City" and became a huge shipping and logistical location within North America for most of the 19th and early 20th century. North Tonawanda formally split off from Tonawanda in 1897, designating the Erie Canal as its southernmost boundary. Due to the success of the St. Lawrence Seaway System, North Tonawanda's place within the lumber industry subsided in the mid-20th century paving way for new industry to take over.

The Niagara River acts as the western border of North Tonawanda. It flows north from Lake Erie to Lake Ontario and is part of the Great Lakes water system (Niagara River Facts, 2022).

The Little River is a small annexation of the Niagara River, it flows between Tonawanda Island and North Tonawanda. This passage acts primarily as a boat launch into the river, providing easy access to the river along with increased protection due to the island.

Tonawanda Creek serves as the southern and eastern boundaries for North Tonawanda. The creek separates North Tonawanda from other towns such as Tonawanda, Brighton, and Getzville. Two parks in the area, Mayors Park and North Tonawanda

Gateway Park, are sustained by the creek. Sweeney Street runs along the creek, where infrastructure is in place for waterfront views.



Historical Overview

Historically the city was known for the lumber industry, being a major lumber transportation hub in the mid 19th century. The area was coined "The Lumber City", as it was the largest lumber port at the time. They also were known for having "a rich agricultural history, and one of the most vibrant collections of fruit and grape production in the nation"(Bergmann Associates, 2008). Since then the city has transformed into a district of living and commerce

Piggybacking off the lumber industry, The Herschell Carrousel Factory gained success in North Tonawanda during the early 20th century by hand carving and hand making carousel horses to be shipped all across the world. Although manufacturing at the factory today is minimal, it is considered a pride and joy of the town and has been converted to a museum which is a major tourist attraction.

Other historic industries that shaped North Tonawanda were The Barrel Organ Factory which was a street organ manufacturing company and building, as well as Richardsons Boat Company which manufactured various types of boats.

Chemical and manufacturing industries took over the already established rail and roadway systems starting in the 1940's, reshaping the identity of the city. Due to the increase in industry population saw similar growth during that time requiring housing be built outside of the urban core for the first time. These units were built at a lower density and much more auto-oriented in design compared to previously developed areas adjacent to the downtown core west of the twin cities highway. In the 1960's, the population began to suffer from decline, resulting in the loss of industry, and manufacturing operations. This led to complications, and with those complications, the city's infrastructure and housing stock began to suffer. The city also saw the contamination of several industrial sites located throughout the downtown and waterfront area.

Demographics

Age

With a total population of 30,496, there is a visible difference in where older and younger people reside. For the Northern half of the city, census data shows a higher concentration of people ages fifty-five and older (Appendix 1). In the Southern region towards the downtown area, there are newer developments,

such as apartment complexes and duplexes, in which census data shows a higher population of twenty-five and younger (Appendix 2). With the recent revitalization in the downtown region, the population is trending upwards, increasing the younger population throughout the city.

Race

According to the US Census 2020 ACS 5-year survey, the population of white residents is reported as 95.1% and all other races including African American, Hispanic, and Asian all report at either 1% or less (Appendix 3).

Income

The shade of gold represents the majority income range for that block group. The darkest shade on the map represents the Census block groups that have a majority of households making more than \$100,000 a year (Appendix 8). These areas are heavily suburban and are located along the outer portions of the city. For the income range of \$50,000 to \$74,999, there is only one block group that has a majority making this amount which would be tract 229.01 block group two (appendix 8). In the lowest income bracket, making less than \$25,000, are four block groups (appendix 8). Two out of these four are located in downtown North Tonawanda; tract 232 block groups two and three. In terms of assessing vulnerability, lower-income individuals are more vulnerable to climate change because they have less access to resources and information that would better prepare them against climate hazards and health risks associated with climate change (EPA, 2021).

Section 2: Current State

Recreation / Tourism

Waterfront activities

The North Tonawanda Waterfront was redeveloped in 2021, making the waterfront more walkable and better connected to the downtown area. This renovation has granted opportunity for greater community events and involvement such as their Fall Festival, Canal Fest, various craft and beer festivals, and many more. This update to downtown North Tonawanda extends beyond recreational use as it provides a main form of tourism.

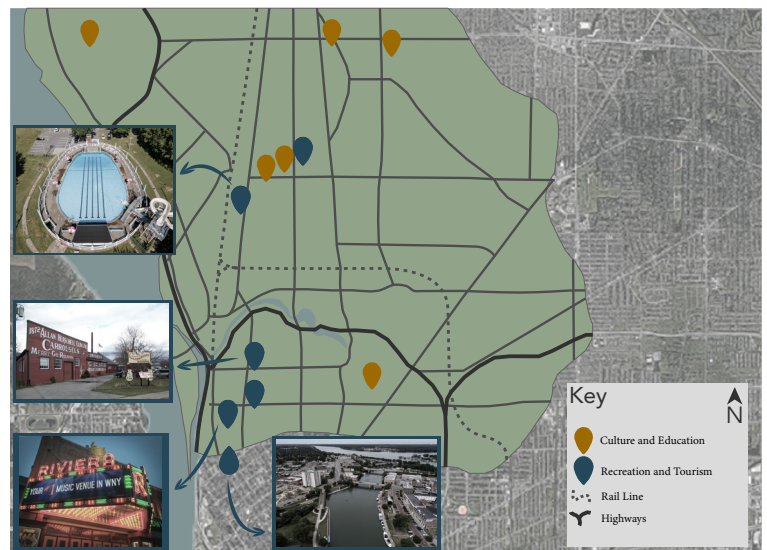
One of the main attractions along the Little River is the Niagara River Yacht Club. The Niagara River Yacht Club leases the facility directly from the city of North Tonawanda (Willinson, 2019). The other marinas that launch boats here include Smith Boys, Carefree Boat Club, Bow & Stern Marine, Tonawanda Island Launch Club, Placid Harbor Marina, and Winfield Marina.

Riviera Theater

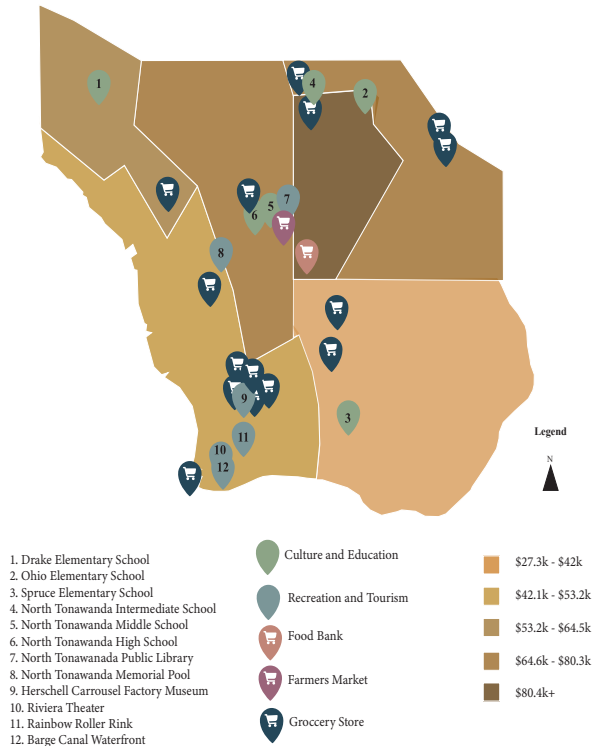
Historical attractions of North Tonawanda include The Memorial Pool and the Riviera Theater. The Memorial Pool in North Tonawanda was built in 1947 in memory of those who fought and died in World War 2. The still functional and used pool is a fun recreational space for the community and surrounding areas to take advantage during the warmer months. It is one of the last above ground public pools still in use in the US. The Riviera Theater was built in 1926 and had their opening night on December 30th, 1926. While this theater was founded by the Yellen family, the ownership has changed several times over the years and in 1989 the Niagara Frontier Theater Organ Society purchased the building. They would spend a decade renovating the historic building to its original condition.

Roller rink

The Memorial Pool, Herschell Carrousel Factory, Riviera Theater, and Rainbow Roller Rink have been staples for recreation in the community for over 50 years. The community has prioritized maintaining and revitalizing these historic spaces for the community and tourists to come and enjoy. The Memorial Pool is one of the oldest above ground public pools in the US still open today. The Riviera Theater has recently undergone renovations to restore historic architectural features and to be made functional for theater, film, and performances in 2022.



Socio-Economic Map of North Tonawanda



Food Supply

The city of North Tonawanda has food access available to people of all incomes, and arguably centrally located adjacent to incomes. Figure 2 below shows North Tonawanda's food access available within the city. This is made up of grocery stores, bodegas, food banks, a health mart, and a vegan food shop. The City also has a community garden as of 2018, the garden has plots available for lease through seasonal shifts and will also provide around \$3,000 worth of vegetables to local soup kitchens and food pantries according to an article written by WNY Papers (Yarger, 2018).

North Tonawanda has a farmers market on Tuesdays, Thursdays, and Saturdays where fresh produce and homemade items are sold. This market accepts EBT, and runs specials to encourage people who have EBT to come including deals like BOGO, and much more. The vendors adjust based on what's in season to encourage year round attendance.

Community Infrastructure

Municipal Departments

North Tonawanda is home to a total of eleven fire houses distributed throughout the city. This results in the average of one fire station per square mile, or one station per 2,795 (County Office, 2022). While there are a number of fire stations, the total number of firefighters employed by the city is unclear. The only firehouse that contains relatively accurate information regarding the number of staff on hand is Rescue Fire Co. #5 with 1333 professional firefighters.

NT is home to only one police station located near the downtown area, leaving most of the eastern edge without quick access to the station. The North Tonawanda Police force is also home to an "auxiliary police." The auxiliary police, as described by Chief Keith Glass, "...is a 100% volunteer organization made up of men and women who wish to serve their community. We act as additional eyes and ears for the North Tonawanda Police Department" (North Tonawanda, 2022).

The North Tonawanda Department of Public Works supervises both the department for waste disposal and the department that manages road/sidewalk repair and construction for the city. The municipal service has provided over 21 miles of lanes, removed 162 city trees, and has collected over 18,000 tons of waste and recyclables in 2021 (Tylec, 2022). The majority of recent road work has been focused on the downtown area, per the mayor's 2022 state of the city report.

The Main Facility for Public - Health in North Tonawanda is the DeGraff Memorial Hospital at 445 Tremont St. right near the southern border of North Tonawanda. This is the only major hospital in the city. Its location can present limitations to individuals in further areas who require medical care

Resources

Transportation

Over 92% of North Tonawanda residents who travel to work use a car and the US Census Bureau reports an average of 2 cars per household in North Tonawanda (DataUSA, 2022). For bus services, there are bus stops along two disconnected routes running through North Tonawanda (Local Waterfront Revitalization Program). The locations of these stops are all along or near Oliver and Goundry Street. Maritime travel is mainly for recreational purposes as noted earlier, North Tonawanda has multiple areas for docking vessels (North Tonawanda, 2022). There isn't a subway or train line for residents to travel but there are freight lines that run through the city.

Water Treatment

A water treatment plant is located on Tonawanda Island. The facility is extremely underutilized and the "plant has a capacity of 12 million gallons per day (MGD), yet the average draw is 3.6 MGD and the maximum draw is 5.3 MGD" (Bergmann et al., 2018).

Power Plant (Fortistar)

Fortistar is the main energy generator that is located within the city's boundaries using natural gas to generate 66MW (megawatts) worth of electricity, however, the vast majority of NT's energy comes from the hydropower facility at Niagara Falls. Information regarding exact power infrastructure is sparse, but there appears to be Electronic Transmission Lines (ETL) settling from Niagara Falls providing power to the surrounding region. In addition, there is ETL starting at Payne Park, running along the Twin Cities Memorial Highway which connects down to the city of Tonawanda.

North Tonawanda is home to "five parks, one pool/wading pool, four sports/ recreational areas, 5 miles of trail, docking facilities, one band shell, and nine playgrounds" (City of Tonawanda Parks, 2021). North Tonawanda's largest park (not along the riverside), is Pine Woods Park. With 33 acres of land, the site includes walking paths through the woods, a playground and swings, a disc golf course, a basketball court, and a softball diamond.

Covering 36 acres of land and located in the northern section of North Tonawanda, The Audubon Nature Preserve, also known as the Klydel Wetland Nature Trail, is a significant wildlife habitat. It offers "a unique natural area that provides vital habitat for wildlife including mammals, birds, reptiles, amphibians, and invertebrates" (North Tonawanda Audubon Nature Preserve/Klydel Wetlands, 2022).

Natural and working lands

Section 3: Climate Hazards

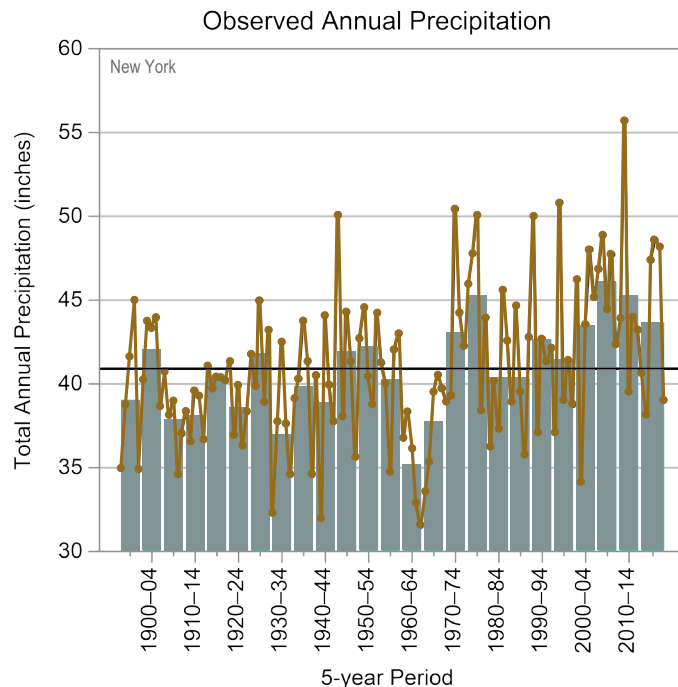
Observed Climate and Projects in New York

As a general basis the climate in the state is described as humid continental. Average annual temperatures are projected to increase across New York State by 2.0–3.4 °F by the 2020s, 4.1–6.8 °F by the 2050s, and 5.3–10.1 °F by the 2080. Although the increase in total annual precipitation is projected to be relatively small, larger increases are projected in the frequency, intensity, and duration of extreme precipitation events.

Increase in Extreme Weather

Flooding and Stormwater Runoff

“In general, climate change is expected to increase flood risk in most portions of New York State. One factor in this increased risk will be increases in the frequency and severity of heavy-precipitation events” (D.E.C., 2022, p. 43). The Niagara County Climate Mitigation Plan for North Tonawanda identified floodings as a significant threat as the city has experienced urban flooding due to major storms and an insufficient and aging stormwater sewer system (Ecology and Environment inc, 2008). The FEMA FIS reports the Niagara River – Tonawanda Channel has been associated with high-water elevations and ice jams. Strong winds blowing across Lake Erie from the southwest causes a wind setup of the lake and high elevations on the river. Large ice jams occur on the river in the spring when the ice disintegrates on the lake and flows down the river (FIS, 2021, p.11).



The Federal Emergency Management Agency (FEMA)’s Niagara County Flooding Risk Report illustrates that 32% of North Tonawanda’s population or 10,096 residents are located in watersheds which are at a higher risk of flooding. Thirty six percent of the city’s land area is located in the watershed. The potential losses for flood event scenarios indicates that North Tonawanda is at risk of losing \$2,810,000.

Community Name	CID	Total Community Population	Percent of Population in Watershed	Total Community Land Area (sq mi)	NFIP	CRS Rating	Percent of Land Area in Watershed	Mitigation Plan
City of North Tonawanda	360508	31,550	32	11	36	Y	N/A	Y

City of North Tonawanda: Estimated Potential Losses for Flood Event Scenarios

Type	Inventory Estimated Value	% of Total	1% (100-yr) Dollar Losses ¹	1% Loss Ratio ²
Residential Building & Contents	\$200,000	0	\$10,000	5
Commercial Building & Contents	\$67,800,000	57	\$1,700,000	3
Other Building & Contents	\$50,600,000	43	\$1,000,000	2
Total Building & Contents ³	\$118,600,000	100	\$2,710,000	2
Business Disruption ⁴	N/A	N/A	\$100,000	N/A
TOTAL ⁵	\$118,600,000	N/A	\$2,810,000	N/A

Source: Hazus analysis results stored as the Flood Risk Assessment Dataset in the Flood Risk Database.

¹ Losses shown are rounded to the nearest \$10,000 for values under \$100,000 and to the nearest \$100,000 for values over \$100,000.

² Loss Ratio = Dollar Losses ÷ Estimated Value. Loss Ratios are rounded to the nearest integer percent.

³ Total Building and Contents = Residential Building and Contents + Commercial Building and Contents + Other Building and Contents.

⁴ Business Disruption = Inventory Loss + Relocation Cost + Income Loss + Rental Income Loss + Wage Loss + Direct Output Loss.

⁵ Total = Total Building and Contents + Business Disruption.

The figures in this table only represent information within the City of North Tonawanda.

Flooding Risk in North Tonawanda

Through the North Tonawanda Flood Hazards Location Map, compiled from FEMA flood maps and land use maps, flooding can be identified in these five spots with varying degrees of flooding having been identified along with its land use (commercial, agricultural, residential, industrial) and level of risk (moderate or high)



Sweeney Street and East Robinson

High risk flooding from Tonawanda Creek affecting agricultural and residential districts. Moderate flooding extends inwards hitting more residential districts.

Belling PL, Arnold Drive and Old Falls Blvd

High risk flooding on residential districts while moderate flooding hits commercial parcels on Belling PL.

Walck Rd and Old Falls Blvd

High and moderate risk flooding on residential districts

North Tonawanda Island

The entirety of North Tonawanda island is at moderate risk of flooding with most of its outer edges at high risk, the island is zoned commercial and industrial and also contains North Tonawanda's water treatment facility that has been said to be in a state of deterioration.

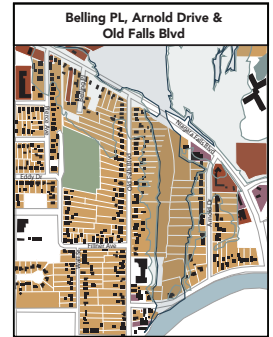
Weatherbest Slip Road

High risk flooding with moderate risk on the inner periphery affecting residential districts and some industrial and commercial ones as well.

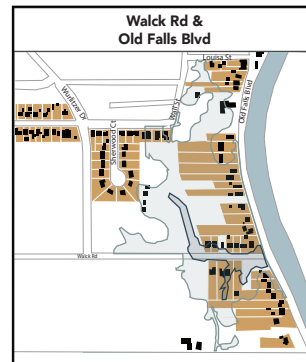
Climate Hazards Flood Map
Figure 1



Climate Hazards Flood Map
Figure 2



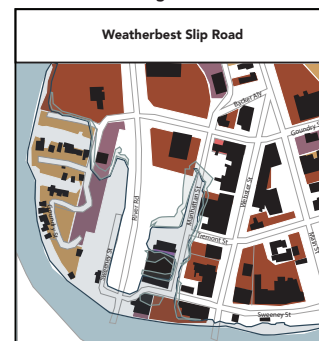
Climate Hazards Flood Map
Figure 3



Climate Hazards Flood Map
Figure 4



Climate Hazards Flood Map
Figure 5



Increased wind

Severe Storms and Wind

Changes in average temperature, precipitation rates, as well as wind speeds and directions, influence the likelihood of severe flooding, wind, rain, and hailstorms. Severe storms tend to carry much of these conditions as it is often an indication of dropping temperatures and increased wind speeds.

While all NYS counties experience their share of wind events, analysis indicates that North Tonawanda sits on the border of two of the windiest counties: Erie and Niagara. The National Severe Storms Laboratory quotes, “Damage from severe thunderstorm winds account for half of all severe reports in the lower 48 states and is more common than damage from tornadoes.” (NSSL, 2022) While seemingly less drastic, wind damages are collectively more costly than tornadoes across the US. Through understanding the role wind plays in severe weather events, the next logical step is to outline North Tonawanda and Erie/Niagara Counties’ specific wind patterns and their main source: Lake Erie.

Changes in climate also threaten the stability of the convection currents which move air and evaporate water, known as Lake Effect, inducing more irregularity in the behavior of wind and precipitation in Western New York. Lake Effect is a phenomenon of differential air pressure and air temperature. Less pressure and less temperature correlate, as do more pressure and higher temperatures. Lake Erie holds onto heat better than surrounding soil, creating a differential pressure and temperature gradient. As the low pressure cold air above the ground meets high pressure warm air above Lake Erie, the clash between these fronts results in immense evaporation cycles, and the strong winds that North Tonawanda and neighboring cities experience. For this evaporation to result in snow, the atmospheric pressure and temperature at higher altitudes need to be low

enough to reach the dew point. Essentially, Lake Effect occurs even without snow, resulting in intense winds and in some cases rain or hail.

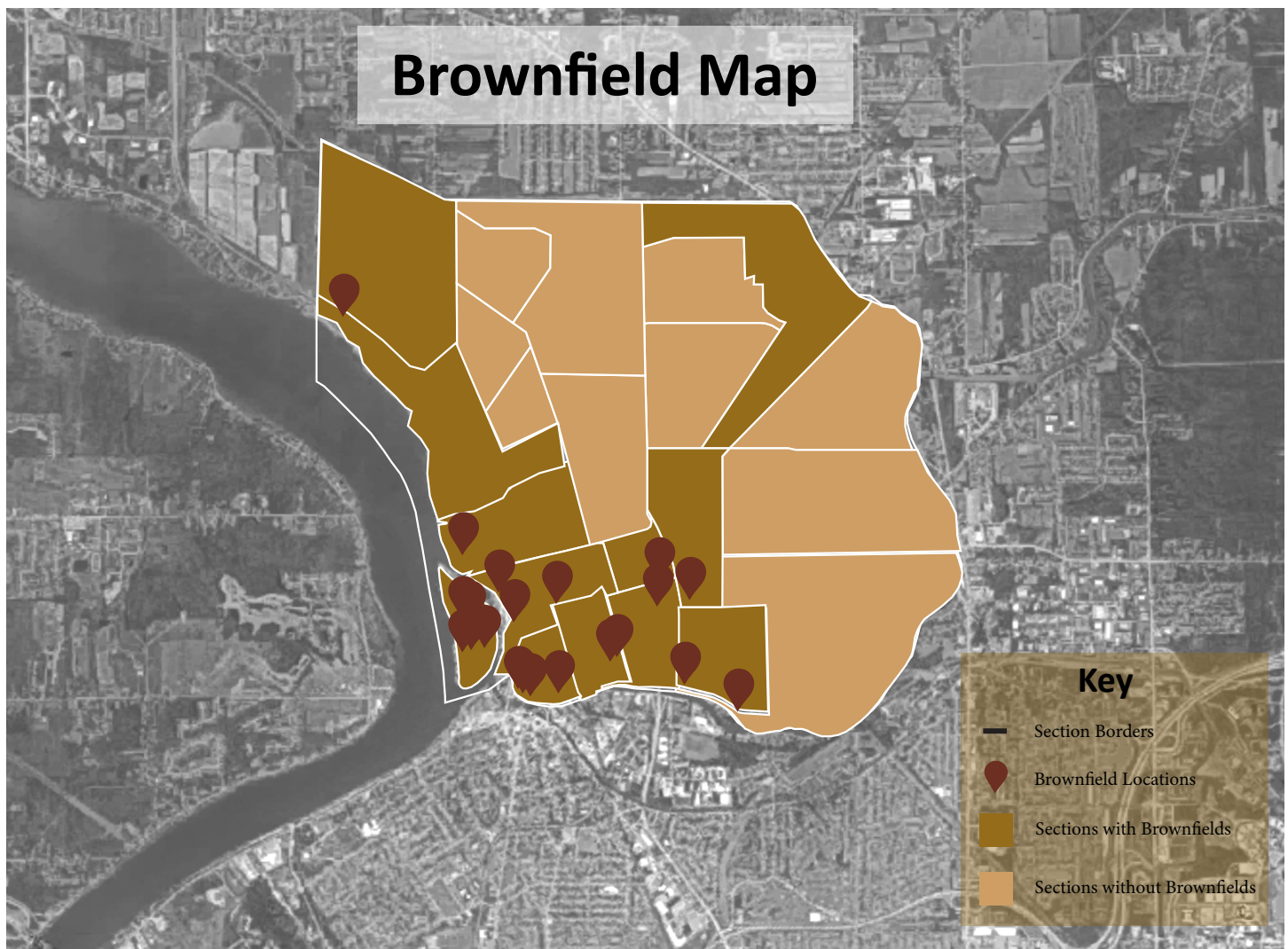
The movement patterns of these Lake Effect winds are best described through wind maps included below. Moreover, the map displays wind barbs indicating that the wind directed at North Tonawanda is highly concentrated, as barbs align in the direction of North Tonawanda for almost half the span of Lake Erie. A graphic tracking the average wind speeds shows their different effects in comparison to NYC and Buffalo.

Brownfields and Polluted Soils

There are a series of 60+ brownfield sites throughout the city of North Tonawanda. The following figures highlight the number of sites within the three levels of environmental concern: 4 low level sites, 45 medium level sites, and 11 high level sites (DOS, 2012). Six active spill sites have undergone some level of remediation. The remediation methods have ranged from soil management plans to direct actions such as the collection of groundwater. One of the major issues for continued remediation of the brownfields is both funding and ownership.

Land Degradation

Threatened by an increase in intense storms and exceptionally high temperatures, the Great Lakes Region's coastal environments have faced accelerated erosion, and a greater incidence of flooding, leaving the shoreline vulnerable to reduction in soil integrity (Western New York Stormwater Coalition, 2022). North Tonawanda has identified a series of man-made hazards, most of which are the result of chemical waste resulting in contaminated soils along a series of parcels throughout the city.



Section 4: Vulnerable Populations

Vulnerability Report

Transportation vulnerabilities include bridges, rail and road systems, which are susceptible to scour caused by flooding which will lead to degradation of structural support systems and structural integrity if not addressed, flooding will impact airport runways especially one located near water and marine transportation suffer a variety of vulnerabilities including electrical power line susceptible to damage and insufficient embanks to protect against flooding. Energy vulnerabilities are all concerned with aging systems. Land Use vulnerabilities are mostly concerned with flooding, levees and seawalls are inefficient to prevent flooding, outdated flooding maps and natural systems that increase climate resilience such as wetlands are not protected from development. Insurance vulnerabilities include consumers not knowing what is covered made worse by the fact that policy exclusions may not cover damage from flooding and state agencies already lack proper coordination.

Populations

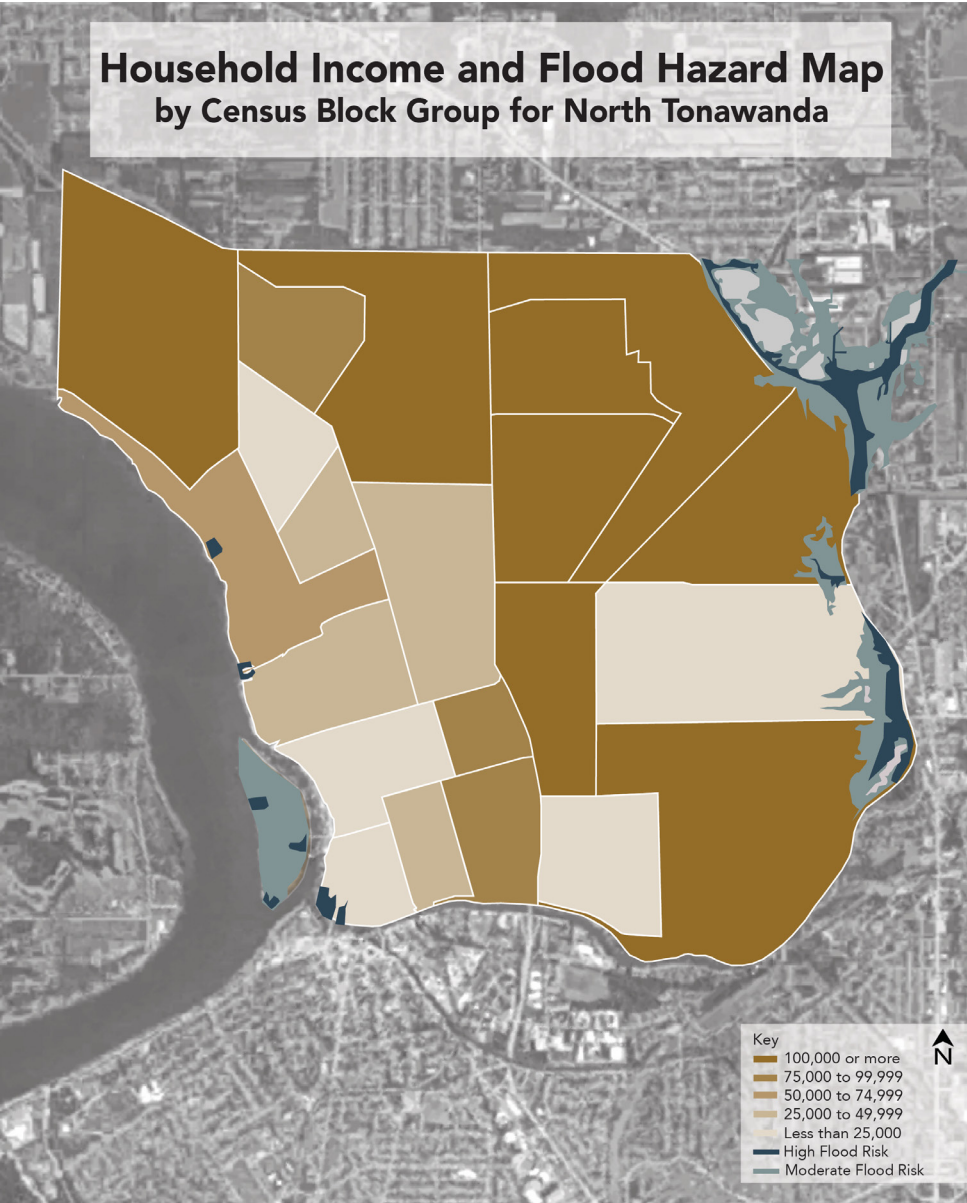
The CDC uses census data to calculate how vulnerable census tracts are to climate impacts based on four criteria: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation (CDC, 2018). Within these four categories the data is broken down into fifteen social factors (Appendix 12). Every tract is ranked in each of the fifteen social factors in each of the four categories, and then given an overall score from zero to one (CDC, 2018). For North Tonawanda, the areas least at risk are all to the North. To the Southeast, tract 233 is at low to moderate risk. To the Southwest, tracts 230.02, 231, and 232 are at moderate to substantial risk. The most vulnerable tract is 231 with a score of 0.6398 (Appendix 12).

Increase in Invasive Species and Coastal Erosion

Changing temperatures of 4-10 degrees fahrenheit by 2100 which could allow for migration of invasive species as well as hurt businesses like maple syrup, apple, dairy and winter sports (NYS 2100 Commission Report). This warming effect has also been found to further the spread of harmful invasive species, including ticks, mosquitos, and algal blooms. (Erie County Climate Action Update, 2021).

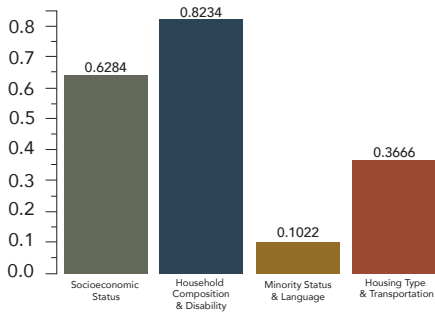
Land Use

Climate change and land use are interrelated as climate change effects can vary based on different land uses. The city of North Tonawanda stresses the importance of protecting the community as well as the land in the development section of the town's zoning regulations. The town requires that topsoil cleared for new developments remain on the site to be reused for landscaping and have it be protected from wind and erosion. These development regulations are implemented "To dissuade the unnecessary clearing and disturbing of land so as to preserve the natural and existing growth of flora and to replace removed flora, or plant new flora indigenous to the Western New York region" (North Tonawanda Zoning)



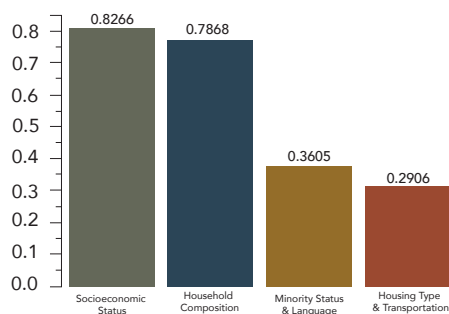
Census Tract 230.01
Social Vulnerability Index Chart

Overall Score: 0.5013



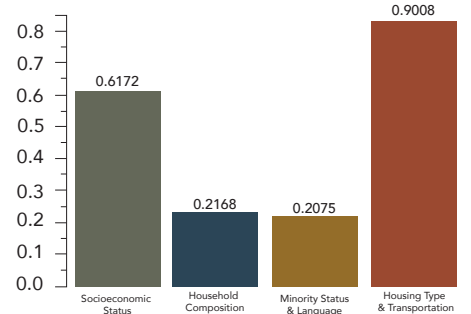
Census Tract 231
Social Vulnerability Index Chart

Overall Score: 0.6398



Census Tract 232
Social Vulnerability Index Chart

Overall Score: 0.5795



Section 5: Mitigation

Completed Local Initiatives

Downtown Placemaking Enhancements

“Downtown placemaking enhancements through the Smart Growth Community Fund have had the largest impact on the physical environment in North Tonawanda. Through this funding, NT hired a professional team of architects and engineers in early 2018 to lead the project. This project which had a robust public engagement process included meetings with the City of Tonawanda to align efforts, an open public meeting held at the Carnegie Arts Center, multiple walking tours of Oliver Street, Downtown, and River Road, and community conversations at local businesses. These public engagement sessions have taken a community driven-new urbanism approach to development and have been attended by members of the community. Projects completed through the Downtown Placemaking project included enhancements to a municipally owned walkway (lighting improvements and signage), improved pedestrian crossings, curb bumpouts, signage and visual improvements at strategic gateway sites, and expansion of Charles Fleishman Park. Construction was completed in Spring of 2020, and the project is substantially complete.” (NT Downtown Revitalization Initiative , 2021)

Gateway Harbor Park Improvements

Gateway Harbor is individually identified as the city’s gateway to the Erie Canal, providing areas for boat docking, festivals, and concerts, all surrounded by an emerging area of commercial, retail, and restaurant development. Gateway Harbor park received facility improvements due to its increase in popularity in order to maintain a quality public experience through upgrades from Smart Growth Community Fund and other public sources. The facility improvements included upgrades to dock space, utility upgrades for baoter, a new restroom facility and a park overlooking seating areas. (NT

Downtown Revitalization Initiative , 2021)

YWCA Of The Niagara Frontier

“The YWCA of the Niagara Frontier is a well-respected organization that strives to empower women, strengthen families, and promote social justice in our communities. The YWCA located on Tremont Street in North Tonawanda has always hosted a number of annual events as

well as ongoing programming that supports the organization’s mission. The YWCA has committed to a redevelopment project at their North Tonawanda location. This multi-million dollar project has converted the existing structure into a mixed-use facility featuring 12 studio apartments, programming space, and a social enterprise retail bakery and café space. The addition of these new housing units, which are affordable permanent housing for women, adds critical density as well as adds to the diverse housing options available in Downtown North Tonawanda. This project also features a unique social enterprise component in the retail space which will foster the job skills of disadvantaged members of our community. The YWCA, through its robust workforce training capabilities, plans to staff this bakery and café with women in their

programs who will be receiving assistance with job training, skills development, and future job placement. This model has been successful at other YWCA projects in both Niagara Falls and Lockport, and has proven to have very successful impacts on the community. Construction is substantially complete and the YWCA is expecting a grand opening in February 2022.”(NT Downtown Revitalization Initiative , 2021)

Main Street Streetscape Enhancements

The city has a plan of converting brownfields into public or private parcels for the city and use them to improve each section of the city. Mainly to diversify the uses within the downtown district dominated by commercial properties.

Empire State Trail Bicycle Path Connection (In Progress)

This project is arguably the largest contribution to cyclist accessibility from the documents provided along with the River Road Project, considering the earliest document dates back to 2008. A connection to the center of the city will add a safer route for cyclists while providing more access to the downtown area.

Oliver Street Revitalization (In Progress)

Community garden located along the Oliver Street corridor allows residents to participate in their community, but provides food for the residents who lease a garden and provides food for the church to donate to families in need.

Parks and community space has become a focus for North Tonawanda as stated in the BOA Plan, with plans set forth to construct “a park in the triangular lot formed by the intersection of Thompson Street, Main Street, and River Road. This park would serve as a gateway to the downtown district of North Tonawanda, and is recommended to include wayfinding signage, high-quality landscaping, and public art” (Bergmann et al., 2018).

The Brownfield Opportunity Areas program has aimed to identify and begin cleanup of brownfield sites in order for them to be reused.

The Niagara County Climate Mitigation Plan identifies NT’s look into stormwater sewer system

upgrades by adding additional power generators in sewage lift stations in case of severe storms (Figure 2).

Timeline of Plans Moving Forward

Community Engagement

The city has started a community program for planting trees to promote a healthy ecosystem, founded as the PlaNT it Forward program, supporting the local ecosystem as part of the city’s agriculture. The benefits of planting include “filtering pollutants from the air, providing shade, providing food and habitats for animals, cooling the atmosphere, conservation of water, stabilization of soil, reduction of wind speeds, and improvement of air quality” (North Tonawanda Dept of Youth, Recreation and Parks, 2022).

Gateway Harbor Park Improvements

Project	Completed
Waterfront Restaurant Renovation	2015
Public Amenities & New Infrastructure	2018-2019
Mural Installation	2021
Smart Growth	2021
Gateway Hub Implementation	2022*
Bridge Lighting	2022*
Overall Project Anticipation	Feb 28, 2023

Downtown Placemaking Enhancements

Project	Completed
Revitalization Initiative	2017-Present
Small Business Revolving Loan Fund	2022*

YWCA of the Niagara Frontier (NT Founded in 1915)

Project	Completed
Smart Growth Project	2021
Therapeutic Housing and Assistance Program	2015-2022

Empire State Trail Bike Path Connection (in progress)

Project	Completed
Erie Canal Bike Path Extension	2016
Erie Canal Bike Path Extension II	2022*
Empire State Bike Trail Connection	2021-Present

Main Street Streetscape Enhancements

Project	Completed
Main Street Initiative	2019-Present
Smart Growth Project	2021
Public Art Project	2021
Northern Mainstreet Redevelopment	2014*

Oliver Street Revitalization

Project	Completed
Street Revitalization	2015
Street Business Facade Enhancement	2016-2019
Sidewalk & Green Infrastructure	2021
100 Oliver Street Rehabilitation	2022*
Walkability Enhancements	2022*

Team members interviewed residents of NT on the streets. Most of these people were in the area due to either growing up in NT or finding opportunity and circumstance in the area. Two of the interviewees preferred automobiles, and the other two preferred to walk to get around (mostly to save gas money since amenities are in close proximity). All participants mentioned that the revitalization in the downtown area was getting lots of attention, and some felt as if there isn't enough municipal attention being given to residential areas.

What's being done on the State Level

The ClimAID project was created by the The New York State Energy Research and Development Authority (NYSERDA) to assess climate change impacts and adaptation options for the state. The study was able to scale environmental impacts down by each region. Showing how each region is affected by current climate change in the state. The report records Average Temperature and Precipitation, Sea Level Rise, Snowfall, Extreme Events, and Historical Analysis. The report identified points of vulnerability that are unique to the state. Originally published in 2011 with revisions done in 2014.

The NYS 2100 Commission report after examining vulnerabilities developed solutions for five main areas: transportation, energy, land use, insurance, and infrastructure finance" (NYS, 2013, p. 10). Each recommendation seek to identify immediate action, identify infrastructure projects that will increase climate resilience (as well as economic and quality of life factors as well), assess long term options of protecting coastal communities through use of hard systems and natural barriers, create opportunities for climate resilience in economic development decisions and strategies and shape reform in terms of insurance, investment and risk management related to natural disasters (NYS, 2013,p.10). In addition the NYS 2100 commission report also identifies "nine crosscutting recommendations to

improve New York State's overall resilience. These recommendations include steps to improve the State's built (hard) and natural (soft) infrastructure, institutions, and information systems." (NYS, 2013, p.10)

The New York State Energy Research and Development Authority (NYSERDA) is a public organization which distributes funds to mitigate the effects of climate change in NY. For communities like North Tonawanda, programs like the Clean Energy Communities Program and the Climate Smart Communities program can be beneficial. Other incentive programs offered by the NYSEDA include but are not limited to the Affordable Solar and Storage Predevelopment and Technical Assistance (PON 3414) initiative, Clean Green Schools Initiative (PON 4924), and the Community Heat Pump Systems (PON 4614) program.

What's being done on the National Level

The Infrastructure Investment and Jobs Act is legislation that was signed by President Biden allocating investment and efforts to the nation's infrastructure and competitiveness. The legislation will invest \$7.5 billion for the construction of a national network of Electric Vehicle (EV) chargers. From the Environmental Protection Agency (EPA), Administrator Lisa Garcia announced the distribution of \$3.9 million in grant funding that will aim to assist Brownfield sites in Niagara County.

Conclusion

The city of North Tonawanda is located near Buffalo, NY. It consists of people from all age groups and is primarily white. While it once had large manufacturing power it has lost that, although in recent years has been attempting to encourage visitors by bolstering their downtown area. Climate hazards that affect North Tonawanda include flooding, wind as well as man made brownfields. The vulnerable populations have been identified using the following factors: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation. Current North Tonawanda mitigation plans look to invest in the downtown with some look to brownfield cleanup and flood mitigation.

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