

NJ Office of Planning Advocacy

State Plan Endorsement
Opportunities & Constraints Assessment Report:
TRENDS Analysis

For:

Township of Stafford, Ocean County

March 15, 2022

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Introduction

On June 25, 2020, The Township of Stafford (Township) submitted their Municipal Self-Assessment Report (MSA) to the New Jersey Office of Planning Advocacy (OPA). This document and associated components provided by other State Agencies comprise the Opportunities and Constraints Assessment (OCA) conducted as part of the Municipal Plan Endorsement (PE) process. Plan Endorsement is a voluntary review process designed to ensure the coordination of state, county, and municipal planning efforts in achieving the goals and policies of the State Planning Act. The State Development and Redevelopment Plan (State Plan) is the blueprint for achieving these goals and provides the template for coordination. The endorsement process expands upon the requirements of the Municipal Land Use Law (MLUL) and incorporates many planning initiatives of the State Agencies.

This report provides for a comparison of information with the MSA with the most up-to-date regional and statewide data to determine whether TREND growth is sustainable and viable based on the information provided. This information is intended to guide and direct the Community Visioning Process and to develop a vision with a twenty-year planning horizon. The vision shall provide for sustainable growth, recognize fiscal constraints, housing needs and protection of natural, and historic resources. Community visioning shall take into consideration the findings and conclusions of the MSA and OCA. In addition, the OCA provides specific comments that will need to be addressed through PE.

Background Relation to the State Development and Redevelopment Plan (State Plan)

The Township of Stafford initiated the PE process by attending a pre-petition meeting with OPA and our State agencies on August 28, 2019. The Township then appointed its Plan Endorsement Advisory Committee by resolution #2020-129 on March 10, 2020. The MSA was authorized by the Township via resolution #2020-195 on May 26, 2020. As previously mentioned, the Township submitted their MSA on June 25, 2020.

Relation to the Pinelands Protection Act

The New Jersey Pinelands Commission was granted authority to preserve the Pinelands through the passage of the National Parks and Recreation Act of 1978 and the New Jersey Pinelands Protection Act in 1979. The Commission protects the Pinelands through its implementation of the Comprehensive Management Plan (CMP). The Township of Stafford is split between Pinelands and CAFRA jurisdiction. In the Pinelands area, much of the zoning in these areas on both sides of its border are predicated by the Pinelands Comprehensive Management Plan. The regulations and standards contained in the CMP are designed to promote orderly development by channeling growth toward appropriate areas while safeguarding the region's unique natural, ecological, agricultural, archaeological, historical, scenic, cultural, and recreational resources. These areas are either rural in nature or established residential. The CAFRA zone is home to most of the commercial zones in the Township.

Current designations of the Pinelands Comprehensive Management Plan are identified in the State Plan Policy Map, in accordance with the Memorandum of Agreement between the Pinelands Commission and the State Planning Commission. According to the State Plan Policy Map, 13,845 acres are depicted as Pinelands in the Township of Stafford.

Relation to the State Development and Redevelopment Plan (State Plan)

According to the Township of Stafford's Municipal Self-Assessment Report, the municipality is seeking Plan Endorsement to continue to seek cooperation and assistance from appropriate State and County agencies to implement its plan and prospective projects described in the MSA. The municipality is seeking assistance with permitting, regulatory issues, and help with funding projects. The Township is also seeking Plan Endorsement to align its local planning goals and objectives with the State Plan.

The Township seeks to renew its Regional Center Designation along the Garden State Parkway and along Route 72 to the South-East border of the Township (along the Manahawkin Bay). The Center designation will help the municipality by bringing together necessary entities to work together and make the Township a better community while supporting economic development, based off the already established commercial area in the Township. The Township has an area that they are considering for economic revitalization. This area includes the downtown area along the bay Avenue and Route. This area was once the main town center.

The State Plan Policy Map accompanies the State Plan and categorizes every area in the State into specific Planning Areas based on their suitability to growth, development, and preservation. The state Plan Map that was adopted in 2001 depicts 4,473 acres of Stafford as Suburban Planning Area (PA2), 757 acres as Rural Planning Area (PA4), 4,104 acres as Environmentally Sensitive Planning Area (PA5), 7,081 acres as Park, and 13,845 acres as Pinelands.

About the Trend Analysis

The TREND Analysis performed by OPA was conducted based on the current zoning information from the 2017 Master Plan Land Use Element. OPA considered known environmental Constraints along with identified State Plan Parkland as impediments to development. Also eliminated from development considerations were wetlands (with 25-foot buffer), presence of Category 1 (C1) Streams, existing developed land including infrastructure, and identified surface water. The net result from the TREND Analysis will determine the amount of housing and commercial space that can potentially be built given current zoning regulations.

Ultimately, the information provided throughout this document shall be utilized to inform the Community Visioning Process, as well as the remaining steps in the Plan Endorsement Process. The objective of the analysis is to provide the municipality with an idea of how it might appear at time of full buildout based on current land use and zoning regulations.

Figure 1: Summary Table	
Land Consumption (Acres) Township Wide	
Urbanized Land	11,946.49
Constrained Land	6,324.19
Current Developable Land	11,993.48
Buildings	
Existing Residential Units	12,797.00
Potential New Residential Units	605.00
Potential New Commercial Units	591.00
People	
Current Residents	28,617.00
Additional Residents at Buildout	1,519.00
Total Residents at Buildout	30,136.00

The series of worksheets represents a basic methodology for the TREND Analysis. Based on mapping data and zoning regulations, OPA inserted relevant data transferred from the Township of Stafford’s zoning language, into the Residential Buildout Method and Commercial Trend – Building Cover Method. Household size was identified as 2.51 persons per household (median) (U.S. Census Bureau, American Community Survey (ACS), July 1, 2021, Stafford Township, Ocean County, New Jersey).

The Township of Stafford’s Zoning Ordinance adopted by the Township Council of the Township of Stafford on August 20, 1985 by Ordinance No. 85-68; amended in its entirety June 28, 1988 by Ordinance No. 88-53 is found <https://ecode360.com/11380267>.

Township of Stafford Residential Buildout Method

The TREND Analysis for the Township of Stafford Residential Buildout assumes buildout of existing residential zones at maximum density permitted by the Township’s current zoning ordinance. Figure 2 shows the Zones within the municipality with the potential for growth.

According to the MSA and 2010 United States Census, The Township population increased to 26,535 and this growth has led to many of the drainage issues that the Township is experiencing. The Township also believes that with that many residents there is also an opportunity to develop an economic center in the downtown of the Township and to support the health and growth of the current commercial area along Route 72. Stafford Township is one of

Census Year	Population	%±
1810	1,239	*
1820	1,428	15.25%
1830	2,059	44.19%
1840	2,149	4.37%
1850	1,384	-35.60%
1860	1,436	3.76%
1870	1,514	5.43%
1880	1,008	-33.42%
1890	1,095	8.63%
1900	1,009	-7.85%
1910	934	-7.43%
1920	830	-11.13%
1930	1,039	25.18%
1940	1,253	20.60%
1950	1,347	7.50%
1960	1,930	43.28%
1970	3,684	90.88%
1980	10,385	181.89%
1990	13,325	28.31%
2000	22,532	69.10%
2010	26,535	17.77%
2020	28,617	7.85%
OPA Projection	30,136	5.31%
NJTPA 45	35,856	25.30%

Source: United States Census of Population: 1810-2020, United States Census Bureau, Census Estimates for New Jersey

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twelve Ocean County municipalities that continues to see growth.

Figure 2: Residential Trend								
Land Consumption (acres)								
Residential Zone	Total Land in Residential Zone (acres)	Total Constrained Land in Residential Zone (acres)	Total Developed Land in Residential Zone (acres)	Total Available Residential Land (acres)	Approx. Min Lot Size (area per Sq. Ft.)	Potential Number of Units	Average Household Size (persons per unit)	Approx. No of Total Residents upon Buildout
	A	B	C	D = A-B-C	E	F	G	H = F*G
ARMFAM	5.64	0.07	4.61	0.96	217,800	0	2.51	0
MFAH-10	7.42	-	1.66	5.76	217,800	0	2.51	0
MFAH-12	24.07	-	14.94	9.13	217,800	0	2.51	0
MHP-AH	14.84	-	12.26	2.57	43,560	0	2.51	0
R-2	108.10	8.53	66.47	33.10	20,000	59	2.51	148.09
R-3	145.84	-	125.21	20.63	15,000	50	2.51	125.5
R-3/PRC	158.10	8.26	135.43	14.41	15,000	33	2.51	82.83
R-4	181.34	2.68	166.51	12.15	10,000	45	2.51	112.95
R-75	389.84	24.78	352.11	12.94	7,500	64	2.51	160.64
R-90	1,677.93	0.21	1,646.43	31.29	9,000	135	2.51	338.85
RA	738.09	20.34	537.94	179.81	43,560	144	2.51	361.44
RA-4	409.39	33.50	140.69	235.20	43,560	41	2.51	102.91
RA-4/ML-P	34.30	-	0.32	33.98	174,240 43,560	29	2.51	72.79
RA-5	30.88	0.93	-	29.95	217,800	4	2.51	10.04
RA-5/ROS	384.20	8.40	7.51	368.30	6,534,000	1	2.51	2.51
RR-1	241.23	84.78	156.45	-	6,000	0	2.51	0
RR-2	172.67	52.07	120.59	-	4,000	0	2.51	0
RR-2A	662.52	194.84	467.67	0.01	4,000	0	2.51	0
Total	5,386.40	439.39	3,956.80	990.19	*	605.00	*	1,518.55

Township of Stafford Commercial Buildout Method

The below Commercial Buildout (Figure 3) was performed similar as the Residential Trend Analysis using the current zoning. According to the Township of Stafford’s zoning “All properties within the Township of Stafford which are publicly owned, and certain quasi-public lands, has been classified as special district zones with the following designations on the Township Zoning Map:

- National Wildlife Refuge Zone (W)
- Municipal Land Zone (ML)
- School Zone (ML-SCH or RGL-SCH)
- Park Zone (ML-P)
- County Park Zone (C-P)
- County Land Zone (CO)
- State Land Zone (S)
- Private School Zone (PS)
- Private School/Church Zone (PS/C)

These special district zones have no minimum lot size. The Garden State Parkway Right of Way Zone (GSP) and Public Utility Zone (PU) also have no minimum lot size.

Figure 3: Commercial Trend						
Land Consumption (acres)						
Commercial Zone	Total Land in Commercial Zone (acres)	Total Constrained Land in Commercial Zone (acres)	Total Developed Land in Commercial Zone (acres)	Total Available Commercial Land (acres)	Approx. Min Lot Size (area per Sq. Ft.)	Potential Number of Units
	A	B	C	D = A-B-C	E	F
BP Red	401.09	2.97	162.66	235.45	43,560.00	223.00
CC	23.69	0.09	6.94	16.66	43,560.00	16.00
CM	62.69	4.01	23.80	34.88	Special District Zone	-
CO	862.03	225.98	28.24	607.81	Special District Zone	-
C-P	62.17	52.66	8.68	0.84	Special District Zone	-
FA	1,196.94	149.85	60.71	986.38	740,520.00	32.00
GSP	472.57	48.21	214.87	209.49	No minimum lot size	-
HC	414.31	14.65	354.05	45.60	43,560.00	32.00

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HMC	79.59	0.29	50.57	28.73	43,560.00	25.00
LB	222.40	16.00	151.42	54.98	20,000.00	98.00
MC	41.37	15.46	24.01	1.90	43,560.00	1.00
ML	44.43	1.86	28.82	13.76	Special District Zone	-
ML-P	262.80	23.81	155.61	83.38	Special District Zone	-
ML-SCH	80.95	0.16	68.59	12.19	Special District Zone	-
MU	228.46	25.15	192.58	10.71	20,000.00	16.00
NC	53.30	3.66	41.45	8.18	18,000.00	15.00
NMC	41.73	0.02	34.25	7.46	27,000.00	11.00
P	2,509.58	1,999.68	123.76	386.15	1,698,840.00 348,480.00	7.00
PA	49.54	10.51	0.93	38.09	2,178,000.00	-
PS/C	50.00	3.47	40.20	6.32	Special District Zone	-
PU	143.58	95.58	34.63	13.36	No minimum lot size	-
PV	177.68	10.66	72.75	94.27	43,560.00	83.00
RB	122.39	3.87	78.41	40.11	43,560.00	28.00
RGL-SCH	359.15	25.65	172.22	161.27	Special District Zone	-
RMC	23.66	23.43	0.24	-	4,000.00	0.00
ROS	114.02	2.28	81.95	29.80	130,680.00	4.00
S	9,690.90	2,033.69	100.18	7,557.03	Special District Zone	-
W	7,071.77	6,709.04	53.68	312.05	Special District Zone	-
Total	24,862.79	11,502.69	2,366.20	10,996.85	*	591.00

Conclusion

The Township of Stafford actively plans for its future by engaging the public and seeks to realize the vision articulated in the 2017 Master Plan. According to the 2017 Land Use Element, the Township has committed itself to direct growth to appropriate areas within the Regional Center

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and Pinelands Regional Growth areas. The Township is also committed to the preservation of open space. Also noted in the 2017 Land Use Element, approximately 51.5% of the Township is in some sort of government ownership. As stated in the Township of Stafford's MSA, "All State and County entities would be crucial in helping to plan for the future of the Township of Stafford to obtain Plan Endorsement for the Township."

NJDEP
State Plan Endorsement
Opportunities & Constraints Analysis Report
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Introduction

Municipal Plan Endorsement is a voluntary review process designed to ensure the coordination of State, county, and municipal planning efforts in achieving the goals and policies of the State Planning Act (Act). The State Development and Redevelopment Plan (State Plan) is the blueprint for achieving these goals and provides the template for coordination. The endorsement process expands upon the requirements of the Municipal Land Use Law (MLUL) and incorporates many planning initiatives of the State agencies.

This document constitutes the Department of Environmental Protection's component of the State Opportunity and Constraints Assessment conducted as part of the Plan Endorsement process. This document provides an overview of the Department's regulatory and policy concerns within Stafford Township. The information provided herein is intended to reflect the Department's current information concerning the Town.

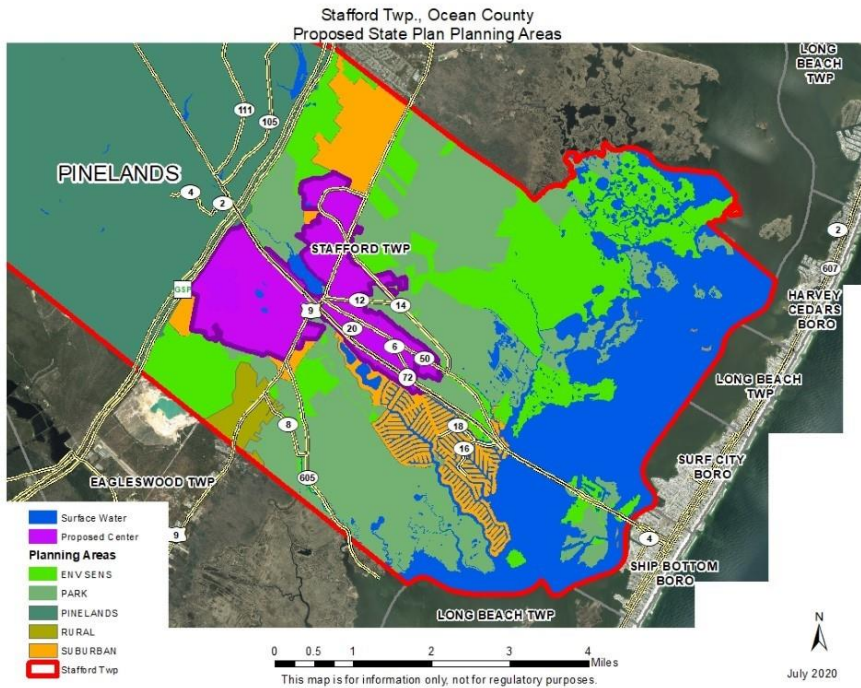
Findings

- In order to adequately plan and prepare for sea level rise and flood events, Stafford Township should utilize the Special Flood Hazard Area for the 0.2 percent (500 year) storm, use the SLR projections from the STAP report based on moderate greenhouse gas emission scenarios, and use 2100 as its planning horizon, as new construction and infrastructure should be expected to exist for at least 80 years. The township should update its floodplain development ordinance to reflect these projections.
- The Township should work identify all piping, treatment plant pump stations, potable supply wells, sewer and stormwater outfalls in the flood zone. The service area includes Beach Haven West and Cedar Bonnet Island, which are within the 100-year flood zone.
- Stafford should explore mechanisms for stormwater runoff and retention to reduce flooding. These mechanisms may include, but are not limited to, reducing impervious cover, restoring wetlands, planning green infrastructure projects, and constructing buffers around surface water. In its resiliency planning, Stafford should center its socially vulnerable populations.
- Transportation and resiliency planning in Stafford should ensure usability of its roadways for emergency evacuation routes in the region.
- The Cedarbridge Road area should be removed as an area planned for development due to its environmental sensitivity. Other wooded areas should be removed due to their placement on open space and recreation planning documents.

- DEP does not support redevelopment north of Cedar Bonnet Island due to flooding and wildlife concerns. Instead of pursuing redevelopment on this site, Stafford should seek funding for its purchase through the Blue Acres program or New Jersey Office of Emergency Management.
- All communities are encouraged to implement actions to meet New Jersey's goals for greenhouse gas emissions reduction. The Sustainable Jersey Gold Star in Energy identifies some specific actions and levels of performance that municipalities can take to reduce greenhouse gas emissions. Information on the goals star standard can be found at <https://www.sustainablejersey.com/actions/gold-star-standards/>. New Jersey's Global Warming Response Act calls for an 80% reduction of GHG emissions from 2006 levels by the year 2050. To meet this target, New Jersey will have to reduce GHG emissions at a rate of 3.6% a year, every year.

Overview

Stafford Township encompasses 54.882 square miles / 35,124.48 acres within Ocean County. The township is bifurcated by the Garden State Parkway (GSP), with the western section in the Pinelands Area and the eastern section in the CAFRA Area. Several different planning areas are represented within the township boundaries with development concentrated in suburban and urban areas surrounded by rural or environmentally sensitive areas. Manahawkin is an unincorporated community and census designated area located within Stafford Township. Stafford Township is also designated as a Regional Center by the New Jersey State Planning Commission. The center designation, including the Beach Haven West development, was extended until June 30, 2020 (amendments to N.J.A.C. 5:85-7.21). On May 26, 2020, Stafford Township issued the Stafford Municipal Self-Assessment Report (SMSAR) as part of an effort to renew the Regional Center designation.



Wastewater Analysis

Stormwater

The most recent compliance evaluation by the Bureau of Water Enforcement of Stafford Township's R9 Tier A Municipal Permit was conducted on March 2, 2017. No violations were cited as a result of this evaluation.

Stafford Township has posted the contact information on their web page for the NJDEP's Bureau of Nonpoint Pollution Control at <https://www.staffordnj.gov/205/Stormwater-Management> but this webpage does not appear to contain the Township's actual reports.

Water Availability Areas Served by Public Water Supply Facilities

Water Supply and Geosciences

The municipality is served by the Stafford Township MUA & Stafford Township Water Beach Haven West, NJDEP PI #'s 1530003, 1530004, & 1530005.

After reviewing pertinent permits, records and other available information related to water supply, water system treatment, distribution, and approved proposed connections related to new development, NJDEP sees no immediate or pending water concerns. The majority of Stafford Township (except for an isolated portion, Cedar Bonnet Island and residents with private wells) is within the public water service area, served by Stafford Township Water & Sewer Utility

Department (STWSUD). Cedar Bonnet Island receives bulk water supply from Ship Bottom Water Department, which currently has a surplus of water available to meet their demands and service all pending and future projects that have received approval through the Bureau of Water System Engineering. STWSUD has sufficient treatment capacity and infrastructure to meet demands. There are no immediate water supply concerns apparent to NJDEP at this point in time, however there is no guarantee that there will be available capacity for any or all future development based on future conditions.

Water Monitoring and Standards

The proposed Town Centers are identified as the Beach Haven West, Deerhaven and Manahawkin vicinity area sections of Stafford Township in the Plan Endorsement Municipal Self-Assessment for Stafford Township. The Centers are labeled as the Center Proposed Working Small (Deerhaven and Manahawkin vicinity) and the Center Proposed Working Large (Deerhaven, Manahawkin vicinity, and Beach Haven West) on the Stafford Township Plan Endorsement Working Map that was submitted for review. The proposed boundaries for both are located entirely within the adopted sewer service area (SSA) of the Ocean County Utilities Authority (OCUA) Southern Water Pollution Control Facility (NJ0026018). There are no wastewater capacity issues that the WQMP program is aware of for this treatment plant.

While the proposed town centers are located entirely within the SSA of the OCUA Southern STP, and the proposed town centers are nearly fully developed, there are 3 wooded and undeveloped areas with concerns:

- The site of most concern is the area located west of Cedarbridge Road, south of the Four-Mile Branch tributary, east of the Four Mile Branch, and North of Littleworth Mill Road. This area is located mostly within the Center Proposed Working Large, and a small portion is located within the Center Proposed Working Small. This area is constrained for Landscape Project 3.3 Rank 4 Threatened and Endangered Species Habitat for Red Shouldered Hawk, Northern Pine Snake, and Barred Owl. The Four Mile Branch tributary, which is a Category One Waterway, extends into this area. All of this area is located within the Manahawkin Lake Macrosite Natural Heritage Priority Site. NJAC 7:15-4.4 identifies areas that are eligible for SSA. The above areas are not eligible for delineation as SSA at 4.4(d) and (e). While 4.4(i) allows for some instances for inclusion of the ESA areas in the SSA, there is no such allowance for inclusion of the NHPS, of which the entire area is identified. We recommend this area not be included in either of the proposed center boundaries due to the environmental sensitivity of the area.

We would also recommend that Stafford Township work with the county and property owner(s) to have this site removed from the sewer service area identified in the WQMP. As part of the Plan Endorsement process a WQMP amendment could be required/suggested to be submitted to update the Stafford Township municipal chapter of the Ocean County WMP. The amendment would need to be submitted by the County. The entire County WMP will be due for update within the next couple years (updates are

required at least every ten years from submittal, see 4.2(c); FWSA Map went to Preliminary notice May 2012 so came in 2011/2012 at best) and the removal of this area would be an issue at that time as well.

[Note: unfortunately prior administration designed the rule so that SS amendments are not for removal of SSA, only for additions, see 3.3(b)]; the only way to remove SSA is through a WMP.]

- The area bounded by Hilliard Boulevard and Stafford Avenue to the north and Manahawkin Creek to the south is designated as a Conservation area within Ocean County Open Space on the Department's Open Space GIS layer. If this area already has conservation measures such as open space purchases/deed restrictions in place, it is unlikely to face significant development pressure and may not need to be in the center boundary. If the County Open Space map is a planning document to assist the county in focusing conservation efforts to come, including the area in the center boundary may not be advantageous.
- Doc Cramer Park located west of Doc Cramer Boulevard and east of the Garden State Parkway is designated as a Municipal Park on the Department's Open Space GIS layer, so may be unlikely to face significant development pressure. The need to include in the center boundary may want to be looked at depending on location relative to the center and whether an active or passive recreation park.

Climate & Flood Resilience

In addition to identifying municipal natural resources, Stafford Township must also consider the current and future impacts of climate change in their activities while minimizing adverse impacts to natural resources, critical infrastructure, and vulnerable populations.

New Jersey issued its first Climate Change Science Report on June 26, 2020 (<https://www.nj.gov/dep/climatechange/data.html>). The report details the most current science, specific to New Jersey, describing the projected impacts of climate change. As atmospheric levels of carbon dioxide and other greenhouse gases increase, Stafford Township can expect to see increases in average temperature, precipitation, and flooding. For example, the average temperature is expected to increase by 4° to 5.7°F by 2050, with longer and more frequent heatwaves, heat-related mortalities, and periods of drought. Precipitation is expected to increase by 4% to 11% annually by 2050, and increases in intensity and frequency may result in larger and more frequent flooding. Water resources will be stressed due to more frequent droughts and extreme temperatures, and water quality will be increasingly impaired due to increased runoff from more intense rain events.

At this time, DEP is able to provide detailed information on the impacts of current and future flooding. As research and programs are developed to address planning responses to other climate impacts, DEP will provide additional information.

Sea-Level Rise

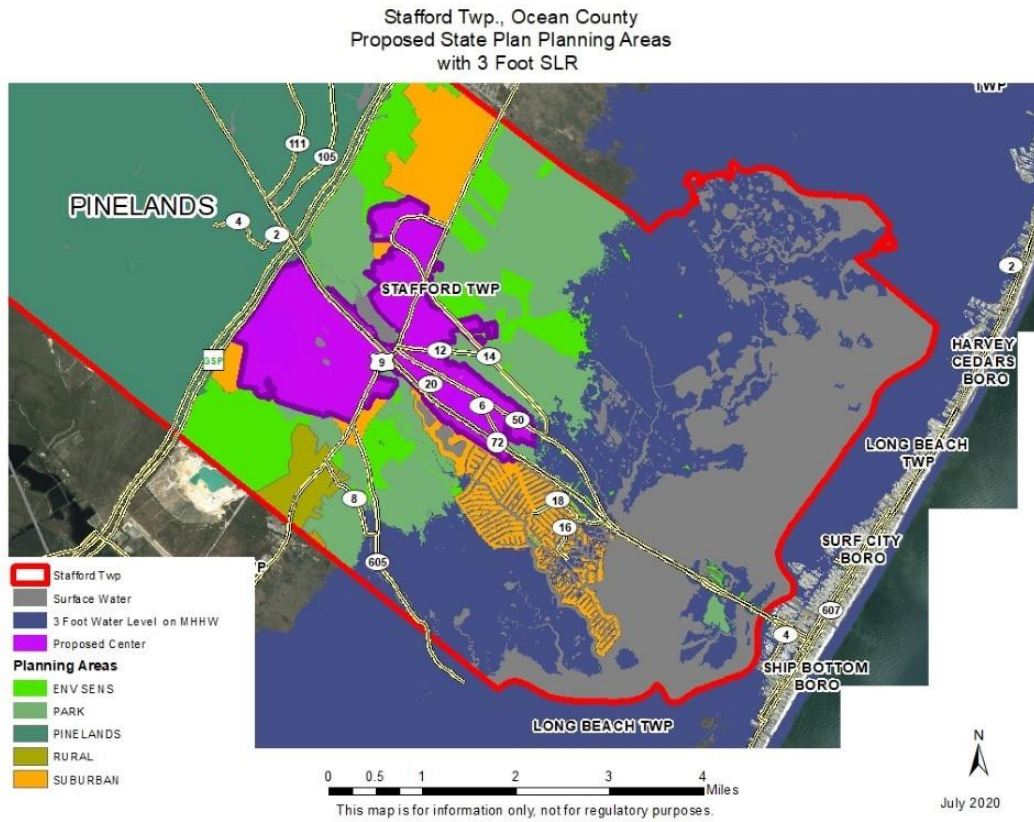
Coastal New Jersey municipalities are increasingly vulnerable to not only flooding as a result of precipitation, but also as a result of sea-level rise. The New Jersey Department of Environmental Protection (DEP) released the New Jersey Scientific Report on Climate Change in July 2020, summarizing the state of knowledge regarding the effects of climate change, including sea-level rise (SLR). The Scientific Report indicates that SLR is increasing more rapidly than other areas around the globe.

DEP has determined that the best source of SLR science for state planning purposes is the Rutgers University Science and Technical Advisory Panel (STAP). The STAP evaluated current science on SLR projections and changing coastal conditions specific to New Jersey. The 2019 STAP report, which updated an earlier 2016 version with ocean ice melt data, includes SLR projection ranges for low, moderate, and high greenhouse gas emission scenarios through 2150. The STAP report is publicly available online at https://climatechange.rutgers.edu/images/STAP_FINAL_FINAL_12-4-19.pdf.

Considering the information presented in these reports, **DEP recommends that coastal communities use the SLR projections from the STAP report based on moderate greenhouse gas emission scenarios for future considerations and use 2100 as the planning horizon, as new construction and infrastructure should be expected to exist for at least 80 years.** Stafford should consider the potential consequences of flooding to project owners and users. This will inform the acceptable risk tolerance, or appropriate probability for which flooding will occur. Further, DEP recommends use of [NJFloodMapper](#) as a dynamic, easy-to-use tool to understand the extent of potential sea levels.

The number of days that New Jersey residents have experienced high-tide flooding in the absence of an associated storm has increased in recent years. High-tide flooding (i.e., “sunny day flooding”) can have detrimental impacts on infrastructure and communities in the absence of a major storm. Between 2007-2016, there was an average of 8 high-tide flood events in Atlantic City, NJ, with annual event totals ranging between 4 events in 2007 and 18 events in 2009. This frequency has grown from an average of less than one high-tide flood event per year in the 1950s. The frequency of high tides exceeding the current high-tide flood threshold will continue to increase with sea-level rise. For example, based on the likely range of sea-level rise projections, Atlantic City will experience 17-75 days of expected high-tide flooding per year in

2030, and 45-255 days per year of expected high-tide flooding in 2050. This increase in flooding is damaging to property, roadways, utilities infrastructure, and public health.



SLR projections in feet for New Jersey under moderate emissions scenario.

Year		2010	2030	2050	2070	2100	2150
Low End	95% chance SLR will meet or exceed		0.3	0.7	1.0	1.3	2.1
Likely Range 66% chance	83% chance SLR will meet or exceed		0.5	0.9	1.4	2.0	3.1
	50% chance SLR will meet or exceed	0.2 Observed	0.8	1.4	2.2	3.3	5.2
	17% chance SLR will meet or exceed		1.1	2.1	3.1	5.1	8.3
High End	5% chance SLR will meet or exceed		1.3	2.6	3.8	6.9	13.8

Notes: All values are 19-year means and are measured with respect to a 1991-2009 baseline. Projections are 19-year averages based on Kopp et al. (2014), Rasmussen et al. (2018), and Bamber et al. (2019). Moderate emissions are interpolated between the high and low emissions scenarios. Rows correspond to different projection probabilities. For example, the 'Likely Range' rows correspond to at least a 2-in-3 (66-100% chance) chance of sea-level rise from the relevant projections considered, consistent with the terms used by the Intergovernmental Panel on Climate Change (Mastrandrea et al., 2010). Note alternative methods may yield higher or lower estimates of the chances of low-end and high-end outcomes.

Flood Zones

The Federal Emergency Management Agency (FEMA) maps Special Flood Hazard Areas (SFHA) adjacent to open water, streams or rivers that experience flooding during periods of high precipitation, stormwater discharge and/or storm surge. FEMA has identified flood hazard areas within Stafford Township. Flooding occurs throughout the township, but predominantly in the eastern section, between the GSP and Manahawkin Bay. Of the total 35,124 acres within Stafford Township, the SFHA for the one-percent storm (100-year) covers an area of 9,257.30 acres (26.35% of Stafford Township's total surface area) while the SFHA associated with 0.2-percent storm (500-year) covers an additional 552.31 acres. In total, approximately 9,809.61 acres all within a FEMA SFHA.

FEMA Flood Zone Statistics

1) Stafford Township Total

FEMA 100 Year = 9,257.30 Acres

FEMA 500 Year = an additional 552.31 Acres

Year 2100 median 3 Foot SLR = 5,768.98 Acres of land permanently inundated

2) Current State Plan Center

FEMA 100 Year = 775.78 Acres

FEMA 500 Year = an additional 127.83 Acres - (903.61 total acres)

Year 2100 median 3 Foot SLR = 172.18 Acres of land permanently inundated

3) Proposed State Plan Center

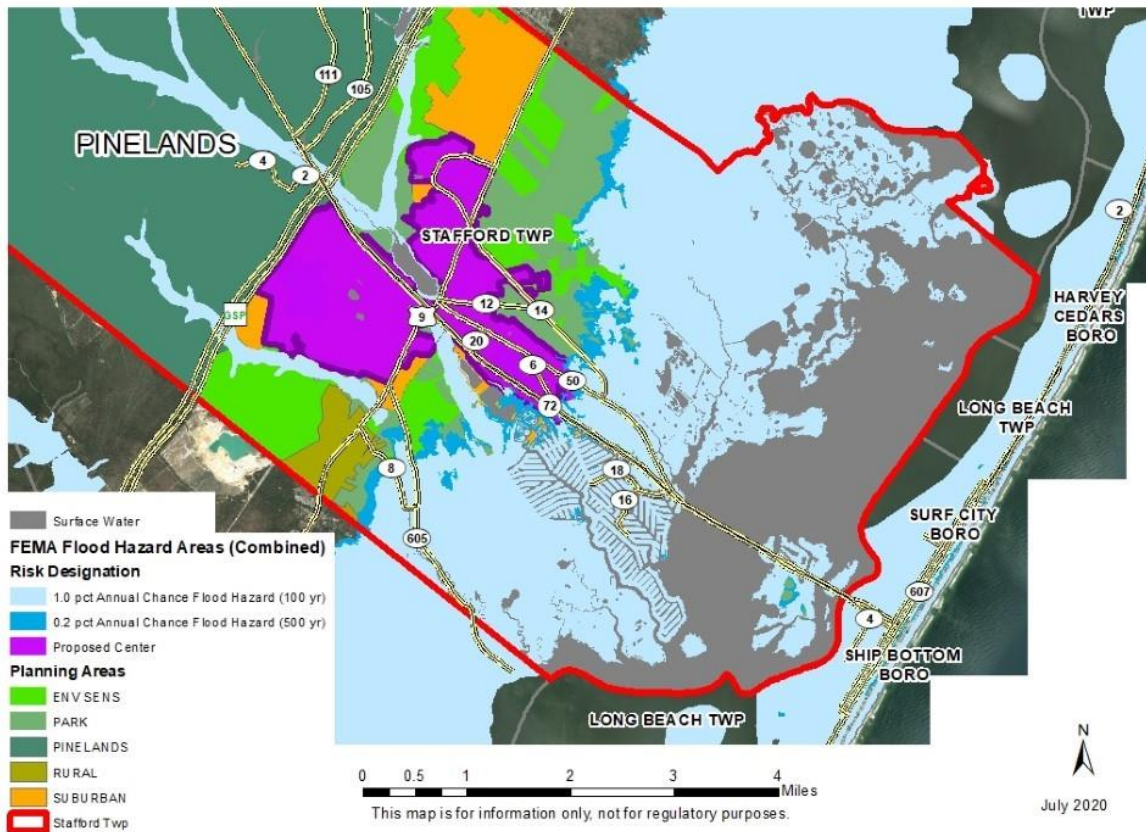
FEMA 100 Year = 36.57 Acres

FEMA 500 Year = an additional 34.30 Acres - (70.87 total acres total)

Year 2100 Median 3 Foot SLR = 0.34 Acres of land permanently inundated

A limitation of the currently delineated SFHAs is that they do not consider projections of future precipitation, sea-level rise or stronger coastal storms due to climate change. The NJFloodMapper website includes a Total Water Level Tool that allows a user to project a total water level that is equivalent to some storm events on top of sea-level rise estimates. For example, the one-percent (100-year) storm + 5.1 feet of sea-level rise (17% chance of occurrence in 2100 under a moderate emissions scenario) is equivalent to approximately 10-feet total water level. The area of Stafford covered by 10-feet of total water is similar to the SFHA for the 0.2 percent (500 year) storms. **As such, DEP recommends that Stafford Township utilize the SFHA for the 0.2 percent (500 year) storms for planning purposes.** This will allow Stafford Township to inform its current decisions in a manner that is protective of health and safety from future impacts.

Stafford Twp., Ocean County
Proposed State Plan Planning Areas
with FEMA Flood Zones



Critical Infrastructure and Assets in Flood Zones

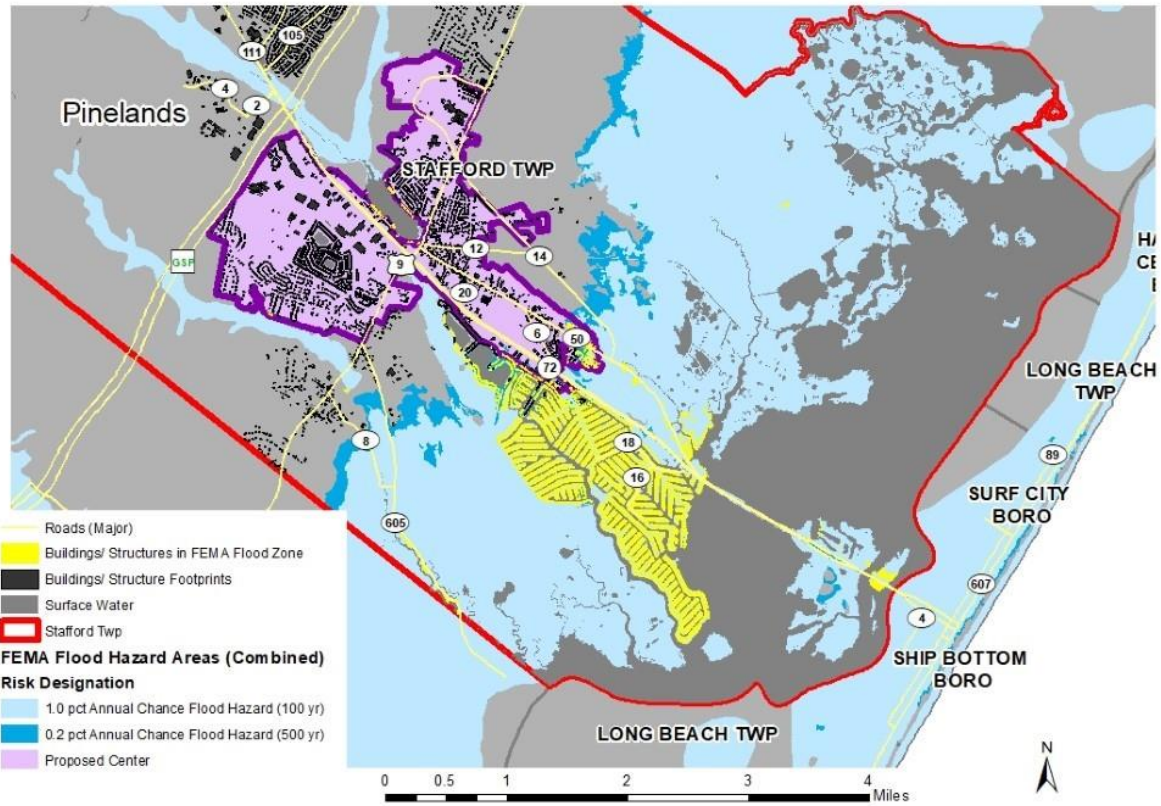
These flood prone areas are subject to state and federal regulation which limits new construction and promotes open space preservation. In addition, the municipal code should minimize new construction in flood hazard areas and mitigate for any redevelopment of existing structures. Adverse impact to existing assets, infrastructure and buildings within the flood zones, and how a municipality will mitigate for potential increased vulnerability to flooding are particularly concerning. Several properties and municipal stormwater management basins have been identified in the flood prone areas of Stafford Township. In the eastern section, these include the downtown commercial and residential areas along Route 72 and Bay Avenue to Route 9, Route 9 intersections with Oxycoccus Road and McKinley Avenue, Beach Haven West neighborhood and Cedar Bonnet Island. In the area west of the GSP, these properties are within the Ocean Acres development, the Neptune Drive stormwater management basin and the Forecastle stormwater management system between Atlantis Avenue and Forecastle Drive. Route 72 is a State owned and operated roadway that is the primary evacuation route for the municipality and the NJDOT is responsible for stormwater management improvements and flood mitigation.

Stafford Township does not have any critical emergency services or schools within the flood zone east of the GSP, but a hospital and nursing homes are located near to the Mill Creek Flood Zone west of the GSP.

Critical utility infrastructure like powerlines, sewers and potable water lines can be adversely impacted by flooding. The Stafford Water and Sewer Utility sewer service provides potable water and sewer service to the entire municipality and includes piping in the flood zone. According to their website, Stafford Water and Sewer serves 28,863 residents in the Stafford Township area and obtains its supply of potable water from nine wells that draw groundwater from two geologic formations: the Atlantic City "800 Foot" Sand Aquifer and the Kirkwood-Cohansey Aquifer. The Township should work identify all piping, treatment plant pump stations, potable supply wells, sewer and stormwater outfalls in the flood zone. The service area includes Beach Haven West and Cedar Bonnet Island, which are within the 100-year flood zone.

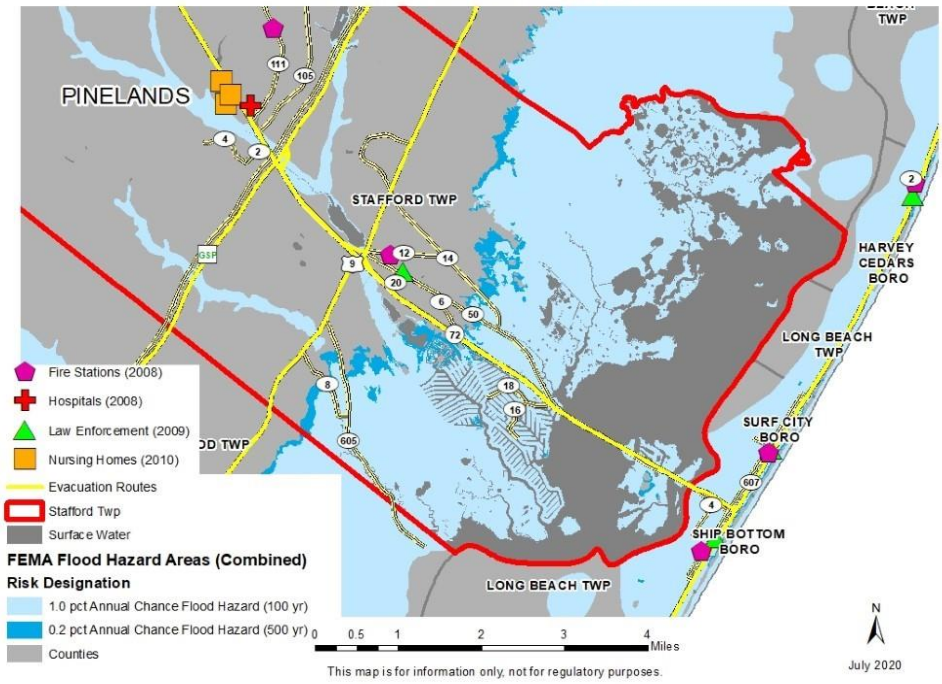
Unimpeded transportation is critical to safety, and transportation infrastructure is also subject to flooding. A desktop analysis shows that approximately 207 total miles of road exist in Stafford Township and 50 miles of road are within the FEMA 500-Year Flood Zone. In addition, 23 miles are designated as part of the municipal flood evacuation plan and 3.5 of those miles are within the FEMA 500-year flood Zone. Of particular concern is that the Route 72 Evacuation Route west as it is the only access on and off Long Beach Island and inland from the Stafford flood zone.

Stafford Twp., Ocean County
Buildings/ Structures in FEMA Flood Zones

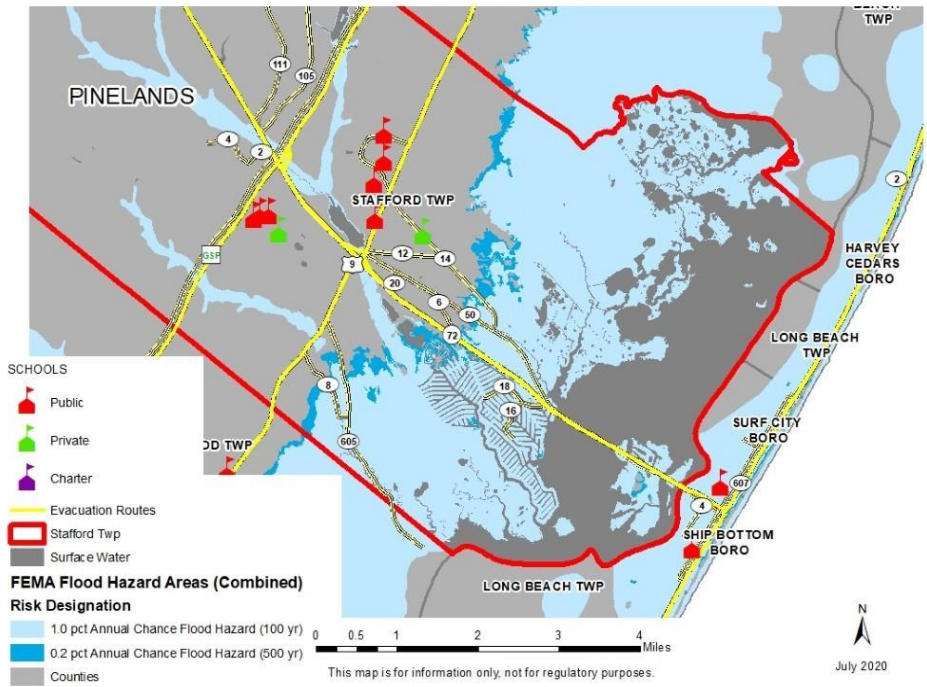


This map is for information only, not for regulatory purposes.

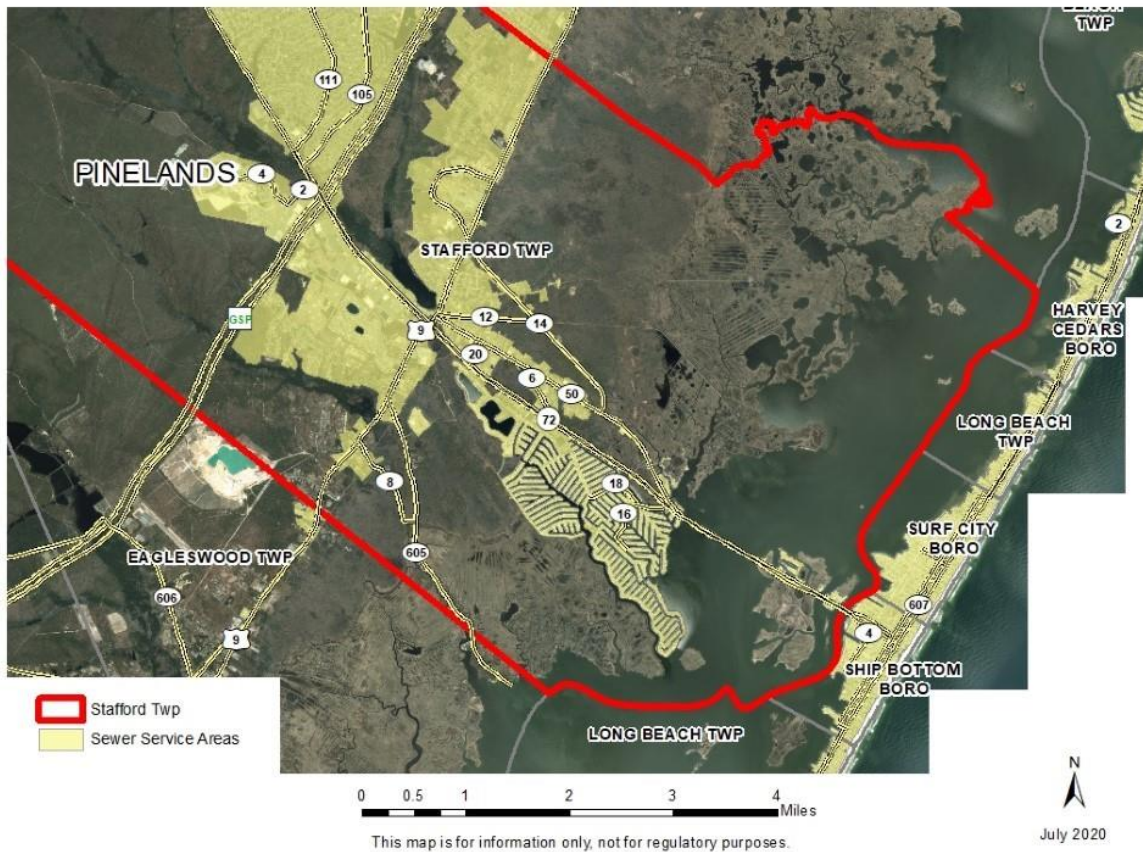
Stafford Twp., Ocean County
Critical Services with FEMA Flood Zones



Stafford Twp., Ocean County
Schools with FEMA Flood Zones



Stafford Twp., Ocean County
Sewer Service Area

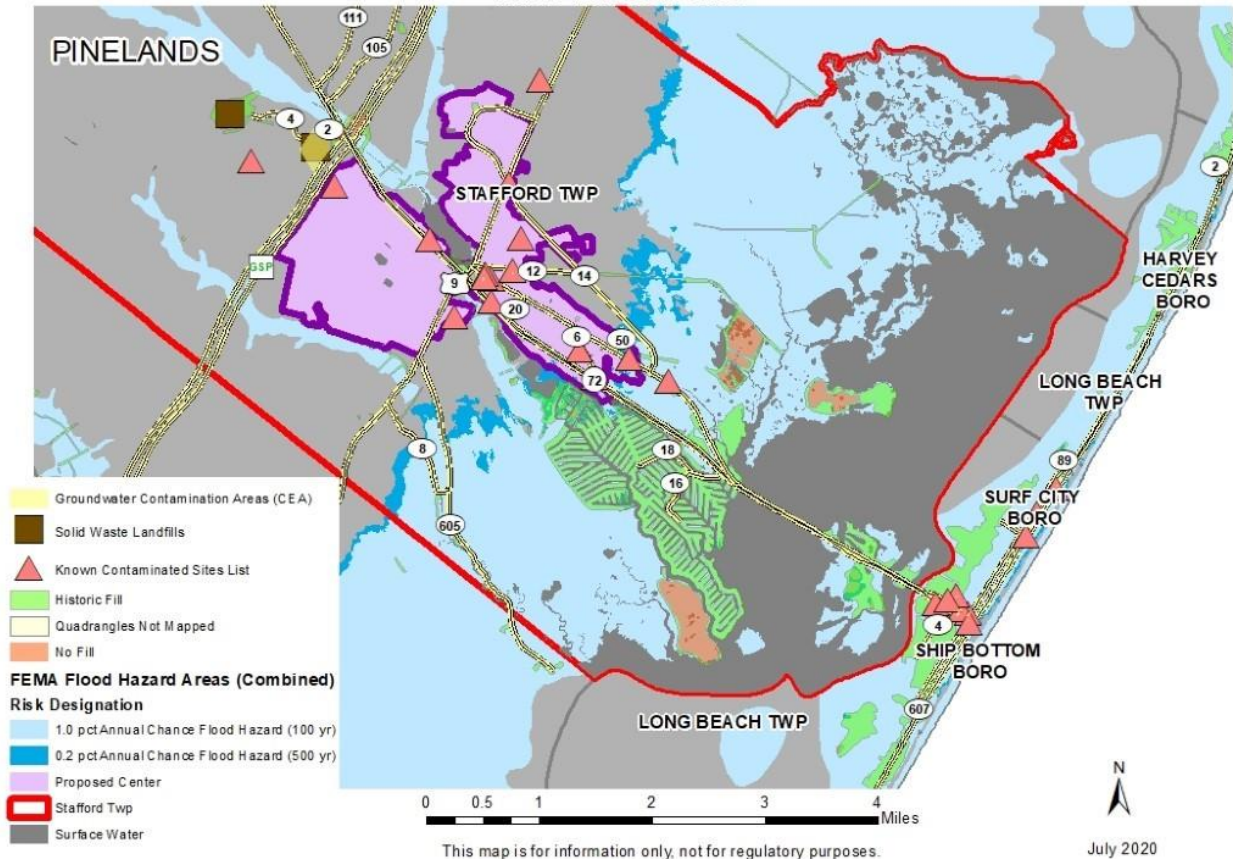


Water Resources in Flood Zones

Groundwater

Groundwater recharge and protection is essential to control stormwater runoff and to maintain a clean source of drinking and supply water. More than 12 known contaminated sites have been identified within municipal boundaries that have adversely impacted ground water quality and are or have been subject to remediation measures. Two (2) sites have been identified in the flood zone, including Brennan Fuel LLC DBA Gulf Gas Station (PI #009849) at 980 East Bay Avenue and Fred's Garage (PI #012307) at 780 Bay Avenue. Both are under remediation with a State licensed site remediation professional (LSRP). Adhering to NJDEP regulations for spill prevention and completing any required remediation and long-term groundwater monitoring of existing contamination are required in order to protect this valuable resource and public health.

Stafford Twp., Ocean County
 Known Contaminated Sites, Historic Fill and Solid Waste Landfills
 with FEMA Flood Zones



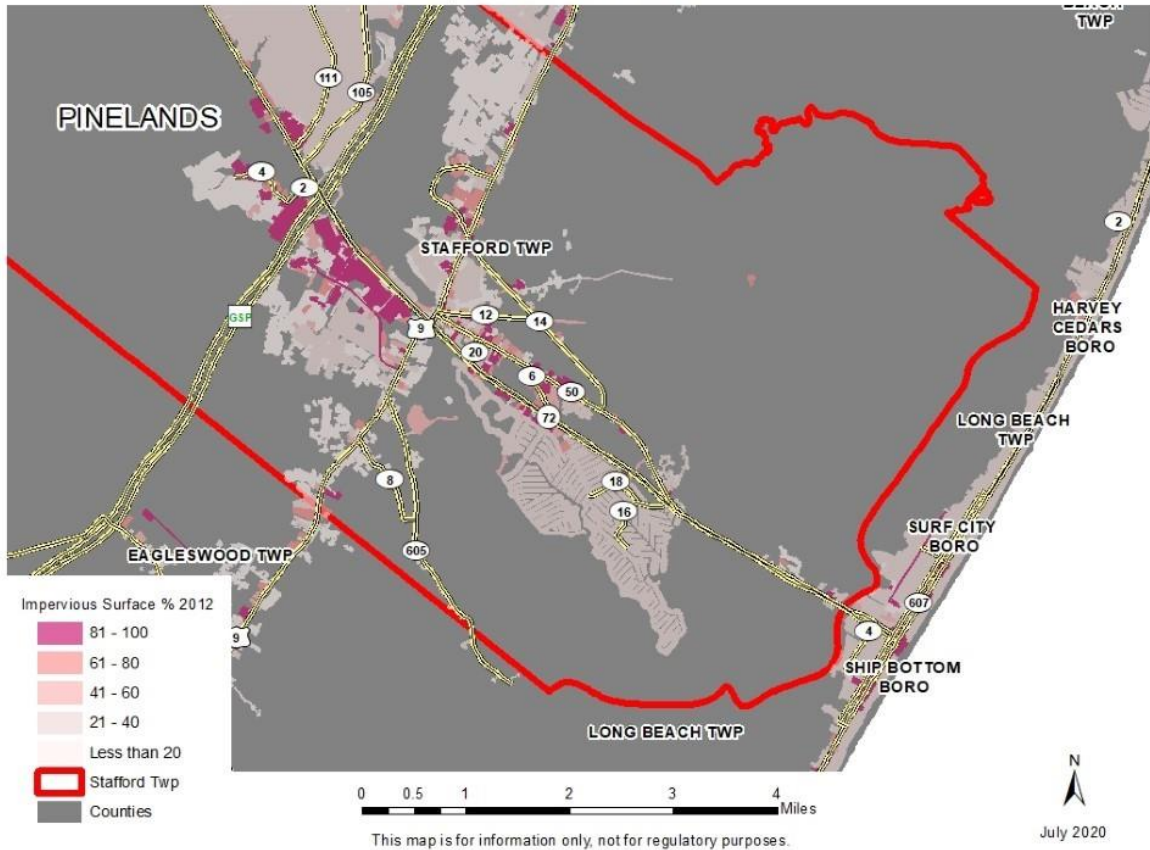
Surface water

Stafford Township is bordered to the east by Barnegat Bay. Several valuable recreational bodies of water including streams, inlets and lakes located in Stafford Township including Mill Creek, which traverses the township from east to west, Manahawkin Lake, and Forecastle Lake.

Flooding has been increasing in many areas of the township. Several of these water bodies are subject to flooding as well as neighborhoods located adjacent to these water bodies including Ocean Acres to the west of the GSP and in the Pinelands planning area and to the east of the GSP in the CAFRA area the downtown area of Route 72, Route 9 and Bay Avenue and the Beach Haven West neighborhood which includes manmade lagoons connected to Manahawkin Bay. As development has increased over the last 30 years, the flooding has been exacerbated by an increase in impervious cover and a decrease in stormwater's ability to infiltrate the ground. In 2012, impervious surfaces including buildings, pavement, etc. covered approximately 412.62 acres in the FEMA 500-year Flood Zone.

To reduce flooding as temperatures and precipitation rise, **DEP recommends that Stafford Township continue to address stormwater runoff and improve stormwater retention on site at its source.** Improvements to surface water infiltration and stormwater management can be implemented in many ways including replacing impervious pavement with pervious surfaces, maintaining and restoring all surface water bodies potential for additional stormwater retention through dredging and silt control, constructing green infrastructure, requiring buffers to surface water bodies, restoring wetland areas, adhering to state requirements for stormwater management best management practices, and adding stricter municipal building codes. Stafford Township has identified stormwater retention improvement projects at Route 9 between Bolton Lane and Ridgeway Avenue, on Route 72 between Manahawkin Lake and the Holiday Inn at 151 Route 72 West, and on Route 72 Forecastle Lake between Atlantis Avenue, through Canal Avenue and to Forecastle Avenue. Stafford Township has also indicated that silt accumulation in the Beach Haven West neighborhood canals, located entirely in the 100-year and 500-year flood zone, has limited navigation and increased flooding.

Stafford Twp., Ocean County
Impervious Surface % 2012



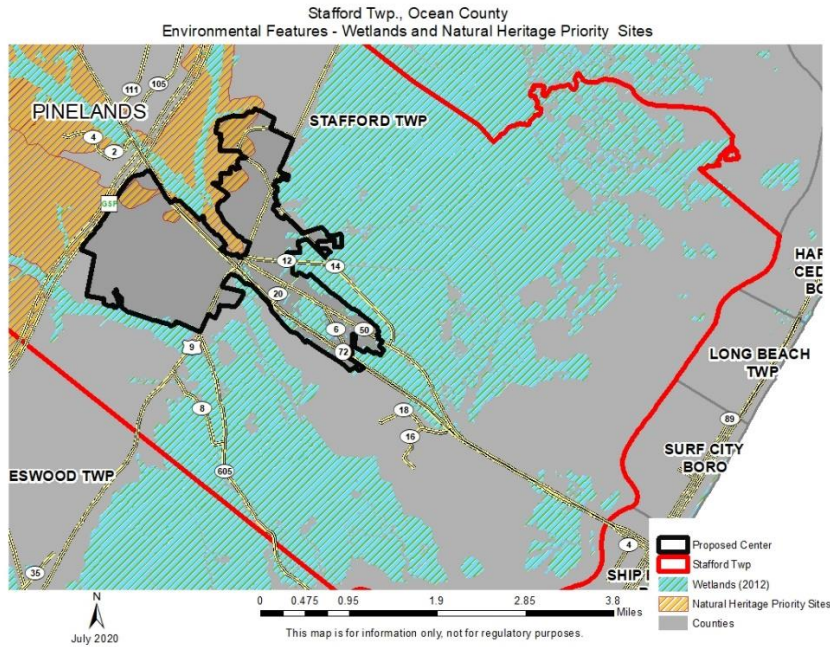
Natural and Historic Resources in Flood Zones

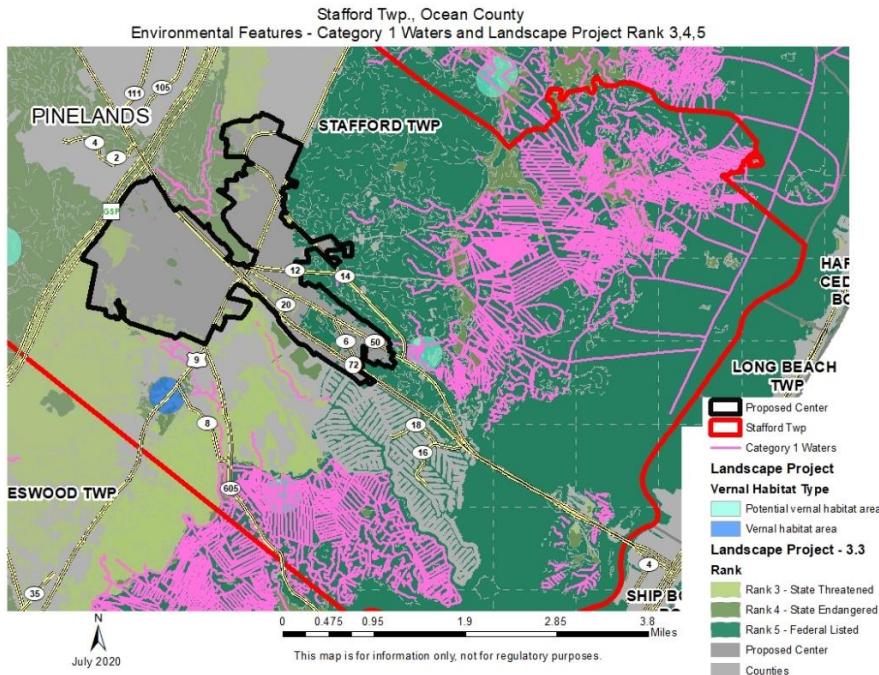
Wetlands

Wetlands provide an area for stormwater management, water quality management, and a habitat for threatened and endangered species. Of the 10,767.07 total acres of wetlands in Stafford Township, 9,478.51 acres of wetlands are located east of the Garden State Parkway, within the CAFRA regulated area. Adding to and restoring wetlands buffers improves stormwater management and can reduce adverse impacts of flooding. However, sea-level rise threatens these coastal wetlands and, if lost, will significantly impact Stafford's resilience to coastal flooding, in addition to the ecosystem value the wetlands provide.

Vulnerable, Threatened and Endangered Species

Threatened and endangered species habitat ranked between 3-5 have been identified in Stafford Township around and within the proposed planning center. Excess stormwater runoff, flooding and contamination adversely impact terrestrial and aquatic species. Like aquatic and terrestrial animals, reptiles, fish and birds, climate change can adversely impact plants and trees. Increases in temperature and periods of drought can result in loss of suitable conditions for a tree or plant species to survive as well as a higher risk of wildfire.



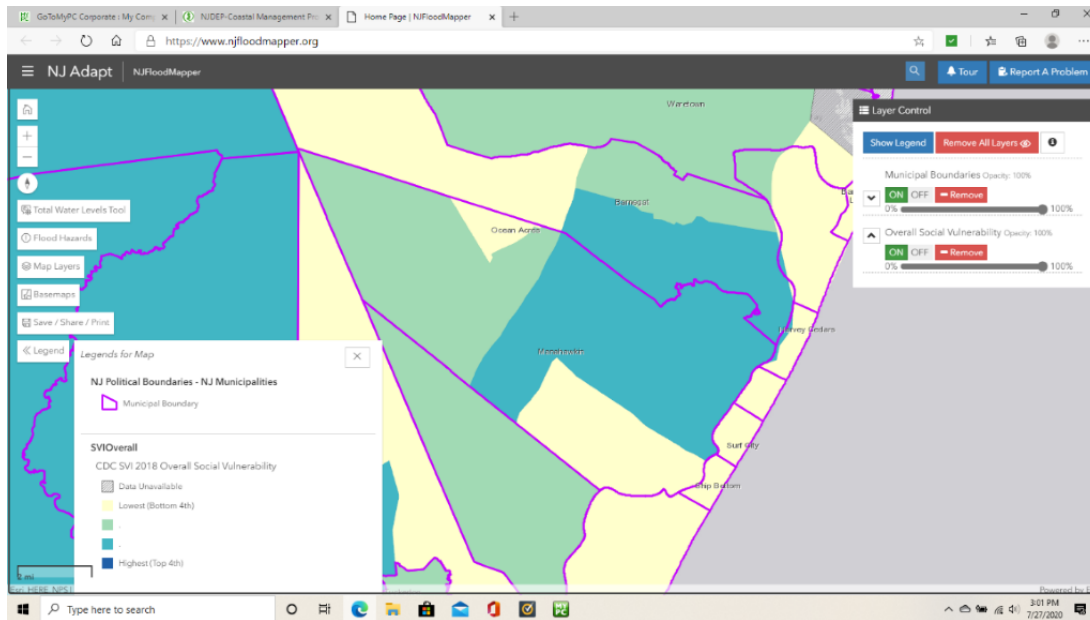


Socially Vulnerable Populations

Stafford Township had a population of 26,535 as of 2010 and 27,542 in 2018, as determined by the U.S. Census. Currently, the Stafford Water and Sewer Utility states that it serves 28,863 residents. Over the last 30 years the population has more than doubled from 13,325 in 1990 and over the last decade has increased by at least 4%, which is above the overall New Jersey average of 1%. While less than 6% of the population identifies as non-white, approximately 2.9% of families and 4% of the population live below the poverty line.

In planning for climate change related resilience measures, the township must also consider the vulnerability of various populations within Stafford Township to adverse effects of climate change. All residents of Stafford Township are vulnerable to increases in temperature and precipitation and the degradation of natural resources. However, climate change also impacts residents of Stafford Township differently based on their location in town, their social and economic situation, and their abilities to anticipate, resist, or recover from a natural hazard. The degradation of air quality and elevated temperatures can lead to negative health issues. Elevated temperatures can interrupt power supply to all residences, which could be very detrimental to those who need electricity for medical equipment or air conditioning in their homes. The loss of air conditioning in the summer could increase heat stress for some residents and its associated, negative health impacts. For those living near Stafford Township's flood zones, increased stormwater runoff under elevated precipitation and current impervious cover conditions could lead to catastrophic flooding.

The CDC Social Vulnerability Index GIS layer (2018) below indicates that there is a census tract with high overall social vulnerability within and adjacent to the FEMA flood zone. Stafford Township has 4,774 homes in the Eastern section of the township located predominately in the storm surge and flood vulnerable Beach Haven West development. Any residential areas within the flood zone are potentially subject to severe flooding.



Any residents within the area of high social vulnerability and adjacent to or in the floodplain, including the Ocean Acres development, the commercial development on Route 72 and Bay Avenue, the Beach Haven West development and the residences on Cedar Bonnet Island, are extremely vulnerable to flooding. Stafford Township should evaluate residents living in tracts close to or in the floodplain including the elderly, disabled, minorities, and those without personal transportation to identify the disproportionate and inequitable impacts they may face as a result of increased flooding. For example, if there are people without cars who rely on public transportation, increased flooding could result in lost wages or jobs if they cannot get to work on flooded days.

Redevelopment

The redevelopment plan for Stafford Township includes a proposed dredging project to increase stormwater runoff and storm surge management in the Beach Haven West development. This area is located within the Suburban PA-2 planning area and is currently included in the designated center but is not included in the proposed designated center. By 2100, it is estimated that sea-level rise could be on average 3 feet above present levels. In addition, Stafford Township is proposing the replacement of vulnerable houses on the northern end of Cedar

Bonnet Island that have been subjected to repeated flooding with restaurants and shopping areas as a new revenue source. Cedar Bonnet Island is located entirely within the Environmental Sensitive Panning Area (PA5).

Each of these proposed projects are located in an area of high social vulnerability. Stafford Township has significant areas of wetlands, areas within the flood zone, and areas of impervious cover. As the population increases, additional residences are constructed outside of the flood zone and redevelopment advances, any increase in impervious cover within the municipality and especially within the flood zone could negatively impact stormwater runoff and reduce stormwater infiltration and the stormwater management buffer. Additional impervious surface could also negatively impact water supply and public health as well as increase ground temperatures and heat related health illnesses. Evacuation routes from Long Beach Island over the Route 72 Bridge and westward via Route 72 are threatened by increased flooding. Within the municipal flood evacuation plan, 3.5 miles are within the FEMA 500-Year Flood Zone which could hinder the swift evacuation of the township and Long Beach Island in the event of a natural disaster.

CAFRA

Stafford's self-assessment indicates that on the Northside of Cedar Bonnet Island (CBI) a developer has been looking to buy up the residential homes and build a large restaurant shopping complex. On May 29, 2020, under PI #: 1530-02-0054.2, the DEP's Bureau of Coastal & Land Use C&E issued a Notice of Violation (NOV) citing violations which have occurred to the North of CBI, on Block 297, Lot(s) 3, 4, & 4.01, Stafford Township. The NOV cited the addition of approximately 134,369 square feet of parking to the site, unauthorized expansion of the restaurant building over land and water within a coastal high hazard area, and construction/placement of multiple structures within the CAFRA and Flood Hazard regulated area on site. Stafford township was copied on the NOV. Any proposed redevelopment of the subject area would need to be in accordance with the DEP's land use and water regulations.

Threatened and Endangered Species Habitat

Overall, the proposed center working small boundaries have reduced the amount of encroachment into endangered or threatened species habitats over the existing center boundary and the proposed working center boundary. As a result, it is favored from a habitat standpoint over the other two boundaries. That said, there are still several areas of concern that shall be discussed below.

The first area of concern is north of Route 72, south of East Bay Avenue and west of Mill Creek Road. This forest patch is currently in the town center but not in the sewer service area. The forest is valued for the state threatened barred owl, state endangered Cope's gray treefrog and federally listed northern myotis bat. While largely mapped as wetlands in the GIS layer, several properties within the forest patch have been subject of wetland delineations that have shown the extent of wetlands to be less than suggested in the GIS mapping. In addition, past site investigations into this area have defined suitable habitat for one or more of the documented

endangered or threatened species. Obtaining approval for a WQMP amendment and/or a CAFRA permit at this locale will be difficult, time consuming, and will likely require substantial mitigation for lost habitat. Given the sensitive nature of the lands, DEP would recommend removing them from the proposed town center, or, in the very least, the re-assessment document should note their environmental sensitivity and clearly detail the probable difficulty in obtaining any necessary permits or authorizations from the Department.



Parcels identified as endangered or threatened species habitat north of Route 72

The second area of concern is a Block 118, Lot 83 between Doc Cramer Boulevard and the Garden State Parkway. Forested habitat on this largely upland track is identified as habitat for the state threatened barred owl and northern pine snake. The site also has potential habitat for the federally listed northern myotis. The property is not presently in the sewer service area. Due to the parcel being surrounded by development, its overall habitat quality is limited. However, any proposal to develop these lands would need to address the potential for these three species to be present or use the onsite habitat in order to address CAFRA and WQMP authorization standards.



A third area of concern is Block 54, Lot 31. This parcel is mapped for the state threatened barred owl and northern pine snake and state endangered red-shouldered hawk. A large portion of the property also falls within the boundaries of the Manahawkin Lake Natural Heritage Program (NHP) priority site boundaries. The site is within the sewer service area boundaries. The proposed center working small boundary removes much of the property from the town center, leaving only a small area of NHP priority site lands within the proposed boundary and shows a much smaller portion of Landscape mapped habitat near Cedar Bridge Road. This proposal is an encouraged change from the existing boundaries but still would encroach on areas of potential habitat for the forest associated raptor species and the northern pine snake. Overall, development of this parcel faces fewer challenges than the other two areas detailed above, but could still have some permitting hurdles to surpass depending on the size and type of development proposed.



Cedar Bridge Road parcel.

Natural Resources

Overall, Stafford's plan is lacking content on natural resources, particularly wildlife. While the resolution recognizes the need to conserve the state's natural resources, these resources were not addressed in the plan beyond getting assistance from Natural and Cultural Resource Protection for a dredging project and acquiring more open space for a bike path.

Stafford should also consider connectivity between open spaces for the benefit of wildlife, rather than only for people. For example, the town should assess wooded corridors to connect forests and adjoining wetlands through road culverts to allow endangered and threatened amphibians to freely and safely cross roads. Furthermore, the town should also explore improvements to enhance its natural resources, such as forest and park management for invasive plant species and measures to prevent saltwater intrusion into freshwater wetlands, especially vernal pools.

DEP has a full inventory of threatened and endangered species, habitat areas, natural heritage sites, landscapes projects, and state open space that can be provided to the township and factored into future planning and conservation efforts.

Fish and Wildlife

The majority of the municipality contains habitat with a Landscapes Project Rank 3,4,5 and therefore any expansion into undeveloped areas will likely impact these habitats. In the self-assessment, Stafford discussed a redevelopment project located on the north side of Cedar Bonnet

Island in area of repetitive loss due to flooding. The developer envisions purchasing homes and converting the property from a residential zone to a commercial zone (restaurant/shopping center). As noted above, the bay waters contain important wildlife and fisheries concerns. Superstorm Sandy resulted in large amounts of debris in our coastal waters. NJDEP would recommend not encouraging this redevelopment project over concerns of that continued flooding will adversely impact water quality and the health of the bay. This is an area the town should strongly consider for purchase with Blue Acres dollars.

Stormwater runoff, tree clearing and development in flood-prone areas all adversely impact the significant habitat in and surrounding the municipality, which is of interest to the State. Any additional stormwater measures, set-backs from stream corridors and the bay, buy-out programs in flood prone areas or mitigation programs to offset tree losses handled locally would help eliminate and/or reduce the adverse impacts these actions have on these significant habitats.

Early coordination with the Division of Fish and Wildlife Office of Environmental Review (OER) will help ensure concerns are addressed prior to the permitting phase.

Green Acres

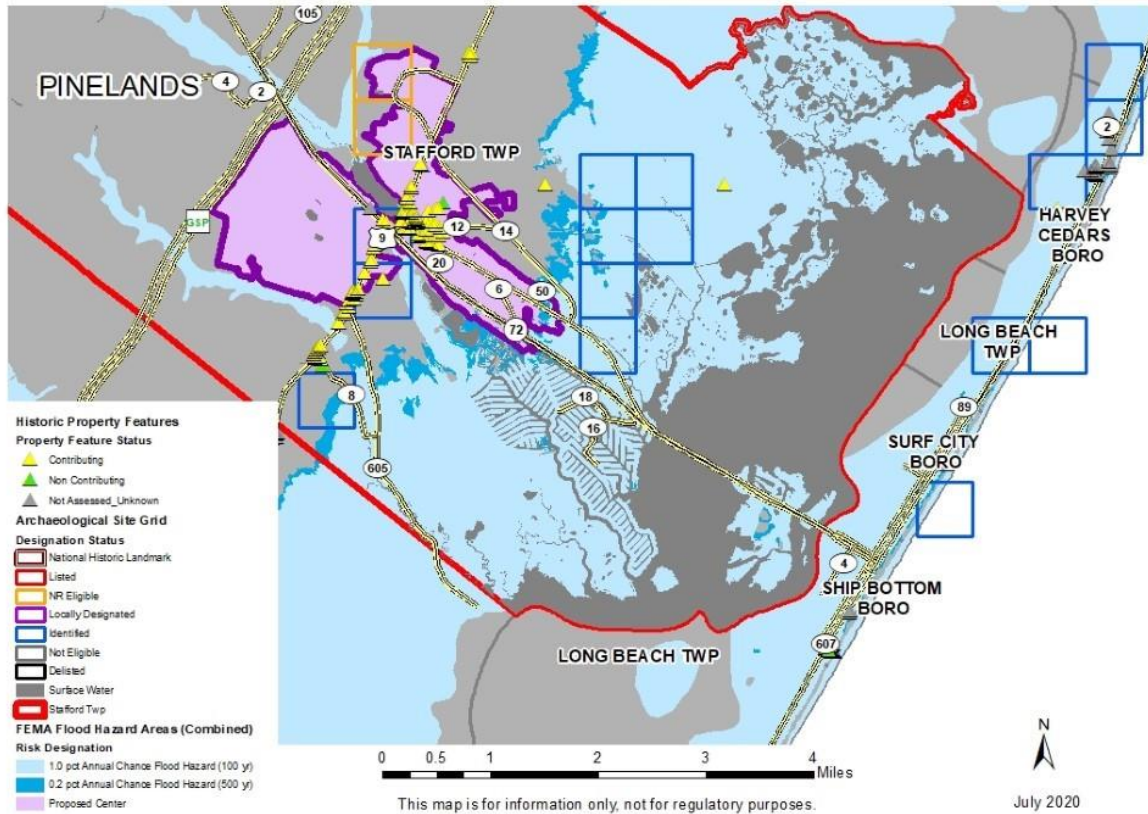
Stafford has accepted Green Acres funding for 15 closed projects, although it currently has no open projects for land acquisition or park development. The most recent payment was in 2009. Stafford has an unresolved diversion of approximately 6.26 acres at Doc Cramer Park. Green Acres will continue to work with Stafford to resolve the issue. Any town with homes that repetitively flood is encouraged to speak to the DEP about buyouts.

Environmental, Natural and Historic Resource Factors

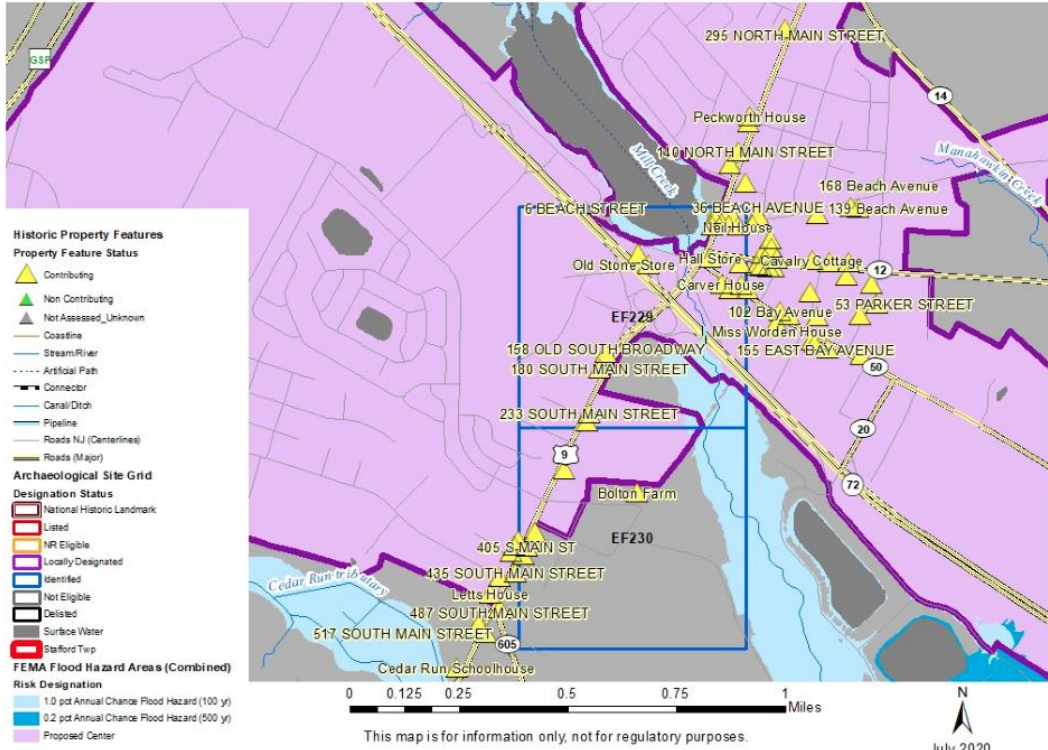
Cultural and Historic Resources

It is also critical to protect our cultural and historic resources. Several properties are located within the proposed center that are eligible for designation as historic or culturally significant as well as areas eligible for consideration as a historic district in the future.

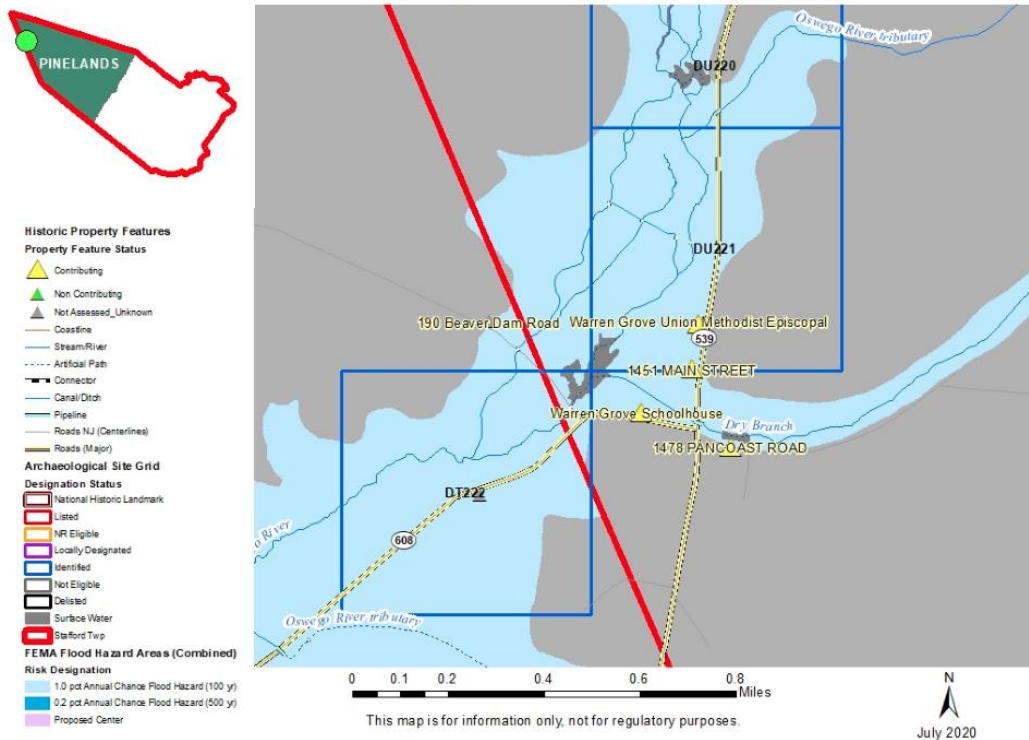
Stafford Twp., Ocean County
 Historic Properties & Archaeological Sites Grids
 with FEMA Flood Zones



Stafford Twp., Ocean County
 Historic Properties & Archaeological Sites Grids
 with FEMA Flood Zones



Stafford Twp., Ocean County
Historic Properties & Archaeological Sites Grids
with FEMA Flood Zones



Healthy Communities

Stafford has no freight rail vulnerabilities, and while it is within the Emergency and Ingestion Planning Zones of the Oyster Creek nuclear power facility, the facility is closed and the township is included in any emergency planning related to the facility. From the facility and chemical inventory information we currently have, there appears to be little site hazardous material vulnerabilities from the facilities in or impacting their town. To further examine hazardous materials and risk, and to review Emergency Management Plans, Stafford land planning staff should consult with the municipal and county Office of Emergency Management.

Community health issues may be revisited when the Healthy Community Planning Reports (HCPR) are finalized and made public.

Environmental Justice

NJDEP is not aware of any environmental justice issues in Stafford Township, nor of any portion of Stafford Township having been identified as an environmental justice community. Extensive information regarding the DEP's Office of Environmental Justice as well as State and Federal Environmental Justice Policy & Regulation is available at <https://www.nj.gov/dep/ej/>.

Site Remediation

Stafford must inventory both contaminated sites and brownfields within its boundaries. To start making a brownfield site inventory, the township can use the Sustainable Jersey Brownfields Action tools.

CFR Opportunities and Constraints Recommendations

One goal of any municipality when considering future development is to ensure that it is consistent with the goals of the State Plan. These include providing protection of critical natural resources, historic and cultural preservation, creation of open space and innovative alternatives for sustainable development and conservation. When evaluating any construction within the identified flood prone areas of Stafford Township, one must also consider the cost of damage and replacement in the event of flooding.

Future development within the floodplain requires a higher level of regulation through state and federal environmental rules for flood hazard areas. Any proposed conceptual plan should be presented to NJDEP early in review process, before planning board approval, and before submittal of any permit applications to determine if the project has any fatal flaws rendering it un-permittable in its current design.

Stafford Township should also consider enhancing its own zoning regulations and building codes to encourage building outside of the flood zone and to minimize construction in flood prone areas to reconstruction of existing buildings. Stafford Township has updated its master plan to include several areas of the municipality that would most benefit socially and economically by the redevelopment of underutilized land. Each of these areas is an opportunity to incorporate energy efficiency, green building techniques and green infrastructure for stormwater infiltration on site. But, flood zone area new construction or redevelopment of existing buildings should avoid high density concentration and areas of severe flooding. For example, Cedar Bonnet Island and the area east of the proposed designated boundary including Beach Haven West is severely prone to flooding. Future plans for these areas should not include additional housing or mixed use in which road access and evacuation could be impacted by storm surge or flood waters. Any Brownfield redevelopment of an existing building that may have cultural and historic significance should work within the existing footprint and a design should include future estimates of sea level rise, flood and storm surge mitigation and stormwater management best practices.

Construction of any critical utility line and associated infrastructure, emergency services, or public services buildings (schools, hospitals, churches, etc.) should be avoided in the flood hazard area. By avoiding construction in flood plains, one can avoid adverse impacts also to critical roadways and provide a safe level of distance in the event of a flood. Historic structures should be protected with enhanced stormwater management plans and flood minimization plans.

Green infrastructure should be incorporated into all projects within the floodplain. By creating more open public space, Stafford Township gains flood zone buffer areas and additional recreation area as well enhanced areas for stormwater management. Any opportunity in a flood area to enhance or expand a buffer area protects vulnerable residential areas and minimizes future flood events. Each of the municipalities' existing surface water bodies should also be maintained to ensure maximum stormwater storage and infiltration capacity.

National Flood Insurance Program

According to the FEMA community status report, Stafford Township is a National Flood Insurance Program (NFIP) participating community. Stafford also participates in FEMA's Community Rating System (CRS) and in 2019 achieved a ranking of 5. Stafford is still recovering from Superstorm Sandy in 2012 and has some FEMA actions still open. For Substantial Damaged (SD) Sandy properties, the township has responsibilities under the building code and the NFIP to resolve the temporary COs that were issued after Sandy and to mitigate any SD properties by October 29, 2021. While Stafford Township has adopted a floodplain development ordinance, DEP would recommend as part of the Plan Endorsement process that they update their floodplain development ordinance to make sure that it is consistent with the most recent standards.

Beach Haven West and Navigable Waterways

In reviewing the Stafford Township MSA redevelopment plans (page 4 of 14 'Relevant Planning Issues') the Municipality identified the Beach Haven Residential Area as vulnerable to severe flooding. The entire development is in the 100-year and 500-year flood zones where development would be restricted. The municipality is looking to initiate a dredging project to remove silt from lagoons as well as other navigable waterways to improve navigation and mitigate stormwater flooding as the Mill Creek watershed drains to Barnegat Bay. Stafford Township is also exploring means of mitigating for flooding due to severe storm surges from the Bay. DEP can offer Technical Assistance in clarifying development constraints for this site.

Cedar Bonnet Island

In reviewing the Stafford Township MSA redevelopment plans (page 4 of 14 ‘Relevant Planning Issues’) the Municipality identified the north side of Cedar Bonnet Island where there is interest in replacing the homes with commercial mixed use including a restaurant and shopping. This area is environmentally sensitive and within 100-year flood zone and susceptible to Repetitive Loss (RL) and Severe Repetitive Loss (SRL). DEP can offer Technical Assistance in clarifying development constraints for this site. Through a partnership between NJDOT, the Fish & Wildlife Service, the DEP, and the US Army Corps of Engineers, a \$9.6 million federal and state funding mitigation project began back in February 2015, on Cedar Bonnet Island Conservation Unit (CBI), a portion of which was a former Confined Disposal Facility (CDF). Additional information regarding this project should be referred to NJ DOT.

Planning for Future Flooding

A limitation of the currently delineated SFHAs is that they do not consider projections of future precipitation due to climate change. While annual increases may not result in significantly additional flooding, the increased frequency of shorter but more intense precipitation events is expected to result in additional flooding events. DEP recommends that Morristown utilize the SFHA for the 0.2 percent (500 year) storms for planning purposes.

Additional Vulnerability Assessment

Stafford Township should work with the utility authority and water purveyor to perform a detailed vulnerability assessment of the infrastructure that serves the town.

Green Infrastructure

Stafford Township should seek opportunities to install green infrastructure measures to offset increased stormwater, but also to lower the impacts of heat-island effect which are directly related to the amount of impervious surface.

Open Space & Natural Features

DEP recommends that Stafford Township work with Ocean County and surrounding municipalities to provide and expand corridors of open space and natural features to support habitat connectivity and adaptation to changing conditions.

Funding and Technical Assistance

DEP will inform OPA of additional sources of funding and/or technical assistance as they become available.

NJ DEPARTMENT OF TRANSPORTATION

**State Development and Redevelopment Plan
Plan Endorsement
Opportunities and Constraints Analysis**

For:

Township of Stafford, Ocean County

August 14, 2020

This document constitutes the New Jersey Department of Transportation’s component of the State Opportunities and Constraints Analysis conducted as part of the Plan Endorsement process. This document provides a collection of the most recent data and information that exists in the Department pertaining to transportation features, studies, projects, grants, designations and other significant issues as applicable. The document should serve as a baseline to inform the remainder of the Plan Endorsement process. It should be understood that this assessment reflects conditions as they presently exist, and that changes may occur at any time during the Plan Endorsement process.

NJDOT has examined the following categories for pertinent data:

State Highways

U.S. Route 9 – MP 68.42 – 73.30

Route 72 – MP 18.06 – 28.14

Straight Line Diagram sheets are attached.

State Highway Access Management Code – Access Levels and Desirable Typical Sections

The attached Access Classification table identifies the access classification changes that would occur with designation of a Center. The access classification of Route 72 from milepost 26.36 to 28.18 would change from rural to urban. This change would produce a less restrictive Access Level: from Access Level 2 – (access along street or interchange only) to Access Level 3 (right-turn access with provision for left-turn access via jughandle) for the subject segment serving a higher access function than mobility function as compared to the current highway function.

Congestion Management System

According to the attached charts, the Overall Congestion Assessment for U.S. Route 9 is classified as “Moderately Congested” and is identified on the list of Congested Commuter Corridors on State Highways.

The Overall Congestion Assessment for Route 72 is classified as “Severely Congested.”

The Overall Assessment is based on a review of Congestion Management System (CMS) and PDA Suite Data (also attached), showing weekdays and Friday, Saturday and Sunday from July to August of the year 2019. The congestion analysis is valid between June 2020 and June 2023. The PDA Suite was developed by the University of Maryland for the I-95 Corridor Coalition.

Major Capital Projects/Initiatives and Mitigation Projects

The FY 2020-2029 Statewide Transportation Improvement Program (STIP) contains the Route 72, Manahawkin Bay Bridges Contract 1A and 1B. Contract 1A includes Route 72 and Marsha Drive intersection improvements, reconstruction and widening of Route 72 and Marsha Drive, and reconstruction of a traffic signal. The project also includes the installation of new storm drainage systems, a detention basin, ITS improvements, highway lighting and utility relocations. Contract 1B includes operational and safety improvements in Ship Bottom Borough on Long Beach Island. Approximately 3000 feet of Route 72 (locally known as 8th and 9th Streets) and three cross roads (Barnegat Avenue, Central Avenue and Long Beach Boulevard) would be widened. Two-way traffic would be restored along Barnegat Avenue, Central Avenue and Long Beach Boulevard. Five traffic signals would be reconstructed. A new traffic signal would be installed at the intersection of 8th Street and Long Beach Boulevard. In order to reduce frequent flooding along Route 72 and the intersections, a new storm drainage system would be installed. The project also includes the installation of bicycle and pedestrian accommodations, ITS improvements, highway lighting and utility relocations.

The FY 2020-2029 STIP also contains the Route 72, Manahawkin Bay Bridges Contract 5A – Environmental Mitigation. This project includes the implementation of Submerged Aquatic Vegetation (SAV) mitigation requirements in the Manahawkin Bay to comply with environmental permit conditions. The overall goal of this work is to offset losses to SAV, through a combination of adaptive management and research to establish and enhance SAV beds within the Barnegat Bay. The research element would include the monitoring of existing SAV beds to measure recovery post-Superstorm Sandy, and the adaptive management component would include establishing and/or enhancing up to 10 acres of new or existing beds to facilitate recovery efforts and promote resiliency.

Designated Transit Villages

Not applicable.

Designated Scenic Byways

The Pine Barrens designated Scenic Byway has a small portion of Route 9 in Ocean County, which ends in Tuckerton at about milepost 51, south of Stafford. The Pinelands Commission has explored the idea of adding a second loop of this byway that would include more of Ocean County, as either another byway or an extension of the existing one.

Open Local Aid Grant Projects

Stafford Township received an FY 2020 Municipal Aid allotment of \$375,000 for Compass Road. The Township also received an FY 2019 Municipal Aid allotment of \$365,000 for Phase I improvements to Breakers Drive.

Corridor Studies

Stafford Township participated in the Route 9 Corridor Integrated Land Use and Transportation Study completed in 2005.

Local Planning Assistance Projects

Stafford Township partnered with NJDOT to create the Route 72 Access Management Plan (AMP) in 1997, one of only two AMPs in New Jersey.

Bicycle and Pedestrian Local Planning Assistance Projects

No local assistance studies have been conducted.

The Safety Management System Analysis has shown that segment of Route 9 from milepost 68.42 to milepost 73.30 does not appear within the top 200 on any of the 2019 NJDOT Screening Lists.

The Safety Management System Analysis for Route 72 has shown the following:

- Rt. 72, MP 20.70 – 22.70, roadway segment is # 87 within the top 100 on our 2019 NJDOT Segment Ranking List (2014-2016 crash data)
- Rt. 72, MP 21.4 – 23.4, roadway segment is # 191 within the top 200 on our 2019 NJDOT Pedestrian Safety Management System (PSMS) Segment Ranking List (2013-2017 crash data)
- Rt. 72, MP 23.0 – 25.0, roadway segment is # 184 within the top 200 on our 2019 NJDOT Bicycle Segment Ranking List (2013-2017 crash data)

Stafford Township has not adopted a Complete Streets policy.

Public Use/General Aviation Airports

Not applicable.

Rail and Truck Freight

No rail freight lines appear in Stafford Township.

A truck weigh-in-motion (WIM) table is attached for Route 72. Class 9-12 are tractor trailers; class 7 are 4-axle heavy single-unit trucks, mostly “dump” trucks. Lighter class single units are not tracked.

Traffic Engineering and Safety Initiatives

Traffic Engineering has an outstanding work order to replace the old school speed limit flashers with new ones at the Stafford Elementary School on Route 9 and Oxycocus Road at milepost 71.03.

Existing and Planned Park-and-Rides

Stafford Township does not have any NJDOT-owned or leased park-and-rides.

Other Significant Issues

The Office of Maritime Resources has evaluated the State navigation channels in the Beach Haven West and Ship Bottom area for shoaling and sediment characteristics. It has been determined that there is a significant and urgent need for dredging of several state channels, and some of the current need is ongoing since Superstorm Sandy. The current need is approximately 50,000 cubic yards. Unfortunately, there are no currently available facilities in the area that can be used for managing the dredged material that needs to be removed. Maritime Resources is currently in Concept Development for a dredged material management strategy that might allow moving forward. Discussions have occurred with USFWS on a site near Beach Haven West that might be available as part of a shoreline/marsh restoration opportunity. Preliminary investigations of the marsh and surrounding water have been conducted through a Professional Services contract. At present, no date has been scheduled for performing the needed maintenance of these channels. The local municipalities should consider working together to identify their own local dredging needs and initiate conversations about suitable, long-term dredged material management strategies.

ATTACHMENTS

Straight Line Diagram Sheets
Access Classification Table
Congestion Management System Charts
PDA Suite Congestion Scan Analyses
Weigh-in-Motion Table

NOTE: OPA may access NJDOT GIS data layers as needed.