

Annex E Town of Elon

E.1 PLANNING PROCESS

The table below lists the HMPC members who represented the Town of Elon.

Table E.1 – HMPC Members

Representative	Position or Title
Alva Sizemore	Fire Chief
Pamela Graham	Planning Director
Steve Floyd	Retired Fire Chief

E.2 COMMUNITY PROFILE

Geography

The Town of Elon is located in western Alamance County. It is neighbored to the south and east by the City of Burlington. The Town is part of the Burlington, NC Metropolitan Statistical Area. Elon comprises a total area of 3.9 square miles.

Population and Demographics

Table E.2 provides population counts and growth estimates for the Town of Elon as compared to Alamance County and the Eno-Haw region. Table E.3 provides demographic information for Elon as compared to the county and the state.

Table E.2 – Population Counts, Elon, 2010-2018

Jurisdiction	2000 Census Population	2010 Census Population	2018 ACS Population Estimate	Total Change 2010-2018	% Change 2010-2018
Town of Elon	6,738	9,409	11,008	1,599	17.0%
Alamance County	130,800	146,902	160,576	13,674	9.3%
Region Total	507,964	567,634	649,276	81,642	14.4%

Source: US Census Bureau Decennial Census 2000, Decennial Census 2010; American Community Survey 2014-2018 5-Year Estimates

Table E.3 – Demographic and Social Characteristics, Elon, 2018

Demographic & Social Characteristics	Elon	Alamance County	North Carolina
Median Age	21.9	39.5	38.6
% of Population Under 5 years old	2.7	5.8	5.9
% of population Over 65 years old	17.9	16.4	15.5
% of Population Over 25 with high school diploma	96.3%	85.5%	87.4%
% of Population Over 25 with bachelor's degree or higher	52.1%	24.0%	30.5%
% with Disability	11.3%	14.3	13.6
% Speak English less than "very well"	2.8%	5.5	4.6

Source: US Census Bureau Decennial Census 2000, Decennial Census 2010; American Community Survey 2014-2018 5-Year Estimates

Housing

The table below details key housing statistics for Elon as compared to the County overall.

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Table E.4 – Housing Statistics, Elon, 2010-2018

Housing Characteristics	Elon	Alamance County
Housing Units (2010)	3,055	66,576
Housing Units (2018)	3,468	69,749
Housing Units Percent Change (2010-2018)	13.5%	4.8%
Housing Occupancy Rate	95.8%	91.8%
% Owner-Occupied	51.7	65.0%
Average Household Size	2.37	2.43
% of Housing Units with no Vehicles Available	6.1	5.3%
% of Housing Units that are mobile homes	2.1	12.0%
Median Home Value	\$246,900	\$147,800

Source: U.S. Census Bureau 2010 Decennial Census, American Community Survey 2014-2018 5-Year Estimates

Economy

The following tables present key economic statistics for Elon as compared to the county and the state.

Table E.5 – Economic Statistics, Elon, 2018

Demographic & Social Characteristics	Elon	Alamance County	North Carolina
Median Household Income	59,962	\$45,735	\$52,413
Per Capita Income	23,008	\$26,215	\$29,456
Unemployment Rate	3.6%	5.7%	6.3%
% of Individuals Below Poverty Level	20.1	16.8	15.4
% Without Health Insurance	3.0	11.9	11.1

Source: US Census Bureau Decennial Census 2000, Decennial Census 2010; American Community Survey 2014-2018 5-Year Estimates

E.3 RISK ASSESSMENT

This section contains a summary of the Town's asset inventory as well as hazard profile and vulnerability assessment for those hazards that are spatially defined and have variations in risk that could be evaluated quantitatively on a jurisdictional level. The hazards included in this section are: Dam Failure, Flood, and Wildfire.

Asset Inventory

The following tables summarize the asset inventory for the Town of Elon in order to estimate the total physical exposure to hazards in this area. The locations of critical facilities are shown in Figure E.1. Critical facilities are a subset of identified assets from the Critical Infrastructure & Key Resources (CIKR) dataset. Note that the CIKR counts are by building; where a critical facility comprises a cluster of buildings, each building is counted and displayed.

Building counts are provided based on data from the NCEM IRISK database, and supplemental parcel exposure is based on November 2019 county parcel data.

Table E.6 – Critical Infrastructure & Key Resources by Type

Jurisdiction	Food and Agriculture	Banking and Finance	Chemical & Hazardous	Commercial	Communications	Critical Manufacturing	Defense	Government Facilities	Healthcare	IT	National Monuments and Icons	Nuclear Reactors, Materials and Waste	Postal and Shipping	Transportation Systems	Energy	Emergency Services	Water	Total
Elon	4	1	0	75	0	14	0	152	62	0	0	0	0	13	1	1	1	324

Source: NCEM Risk Management Tool

Table E.7 – High Potential Loss Facilities by Use

Jurisdiction	Residential	Commercial	Industrial	Government	Agricultural	Religious	Utilities	Total
Elon	12	44	5	51	0	9	1	122

Source: NCEM Risk Management Tool

Table E.8 – IRISK Inventory of Building Counts and Values

Jurisdiction	Building Count	Building Value
Town of Elon	2,760	\$719,062,825

Source: NCEM Risk Management Tool

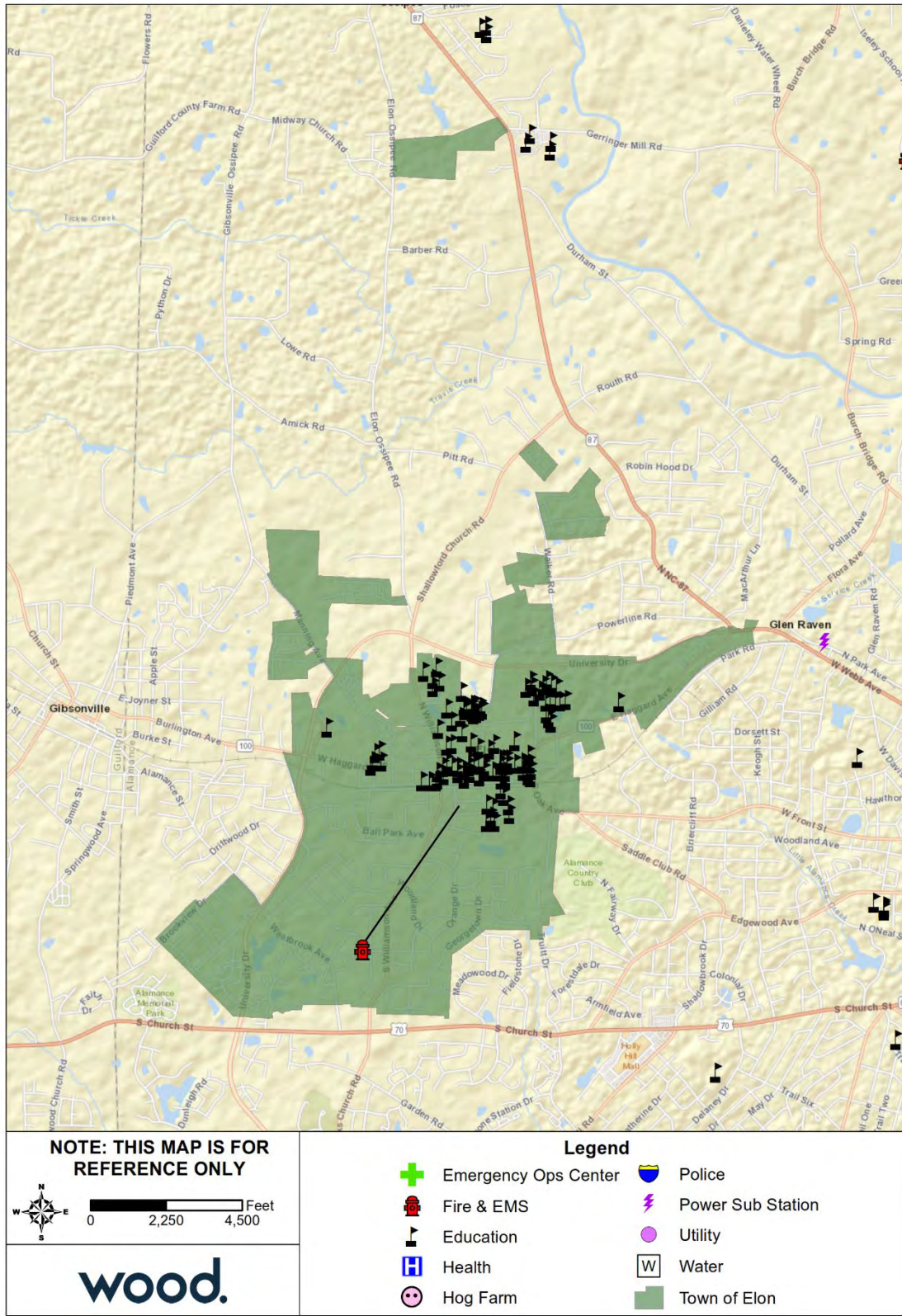
To supplement the asset inventory and provide a clearer picture of the current asset exposure in the Eno-Haw Region, current parcel data was evaluated to identify recent development that was not included in NCEM's IRISK database. The building footprint layer from IRISK was compared to current parcel data; any parcels with an improved value that did not already have a building in IRISK were summarized in the table below. This information is not incorporated into the risk assessment, which was prepared using IRISK. However, this summary of recent development provides some context to understand the degree to which the IRISK exposure and vulnerability numbers differ from current conditions.

Table E.9 – Parcels Development Not Included in IRISK, November 2019

Jurisdiction	Improved Parcel Count	Total Improved Value
Elon	375	\$104,400,254

Source: County parcel data, retrieved November 2019; IRISK database building footprints

Figure E.1 – Critical Facilities, Town of Elon



Source: NCEM IRISK Database, GIS Analysis

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E.3.1 Dam Failure

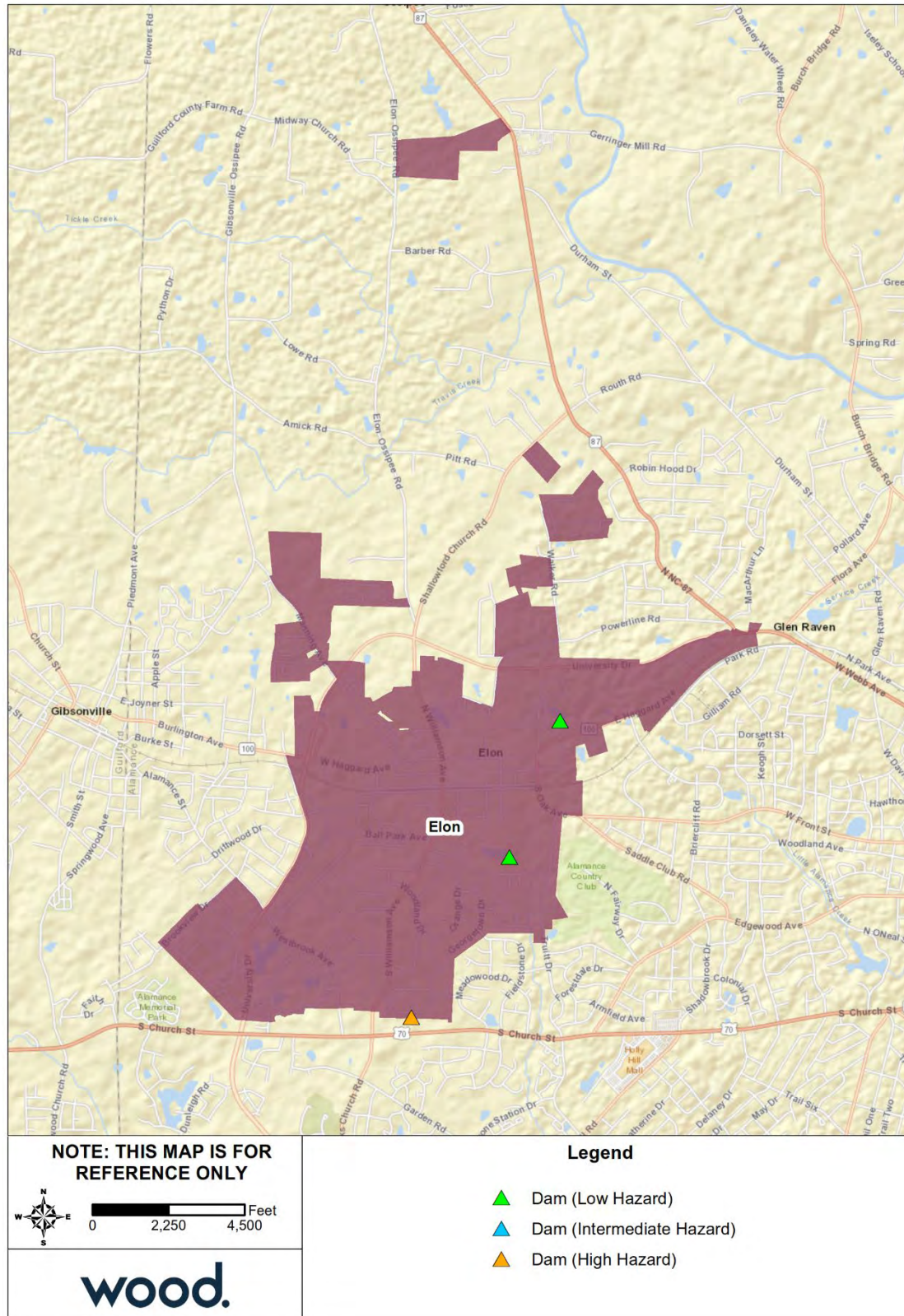
Table E.10 lists the high hazard dams in the Town of Elon identified by the North Carolina Dam Inventory as of July 2018. All dam locations throughout Elon are shown in Figure E.2.

Table E.10 – High Hazard Dams in Town of Elon

Dam Name	NID ID	Condition as of Last Inspection	Max Capacity (Ac-Ft)	Nearest Downstream Location
Somerton Lake Dam	NC05203	Poor	46.89	Burlington

Source: NC Dam Inventory, July 2018

Figure E.2 – Dam Locations, Town of Elon



Source: NC Dam Inventory, July 2018

E.3.2 Flood

Table E.11 details the acreage of the Town of Elon by flood zone on the effective DFIRM. Per this assessment, over 4 percent of the Elon falls within the mapped 1%-annual-chance floodplains.

Table E.11 – Flood Zone Acreage in the Town of Elon

Flood Zone	Acreage	Percent of Total (%)
Zone AE	105.8	4.1
Zone X (500-year)	6.2	0.2
Zone X Unshaded	2,461.7	95.6
Total	2,573.7	--

Source: FEMA Effective DFIRM

Figure E.3 reflects the effective mapped flood hazard zones for the Town of Elon, and Figure E.4 displays the depth of flooding estimated to occur in these areas during the 1%-annual-chance flood.

To supplement the IRISK assessment of property at risk from the 1% annual chance flood event in Section 4 and provide a clearer picture of the current property at risk in the region, recent development not included in IRISK was analyzed using GIS to determine additional exposure to flood risk. Improved parcels in contact with the SFHA were considered at risk to the 1 percent annual chance flood. The count and total value of these parcels are summarized below and compared to total recent development counts and values. Note that this assessment does not account for the degree of exposure, so the result is a maximum exposure estimate for the modeled 1 percent annual chance flood. Additionally, this assessment does not evaluate flood impacts or provide damage estimates. According to this assessment, 4.3 percent of recent development in Elon is located in or near the SFHA.

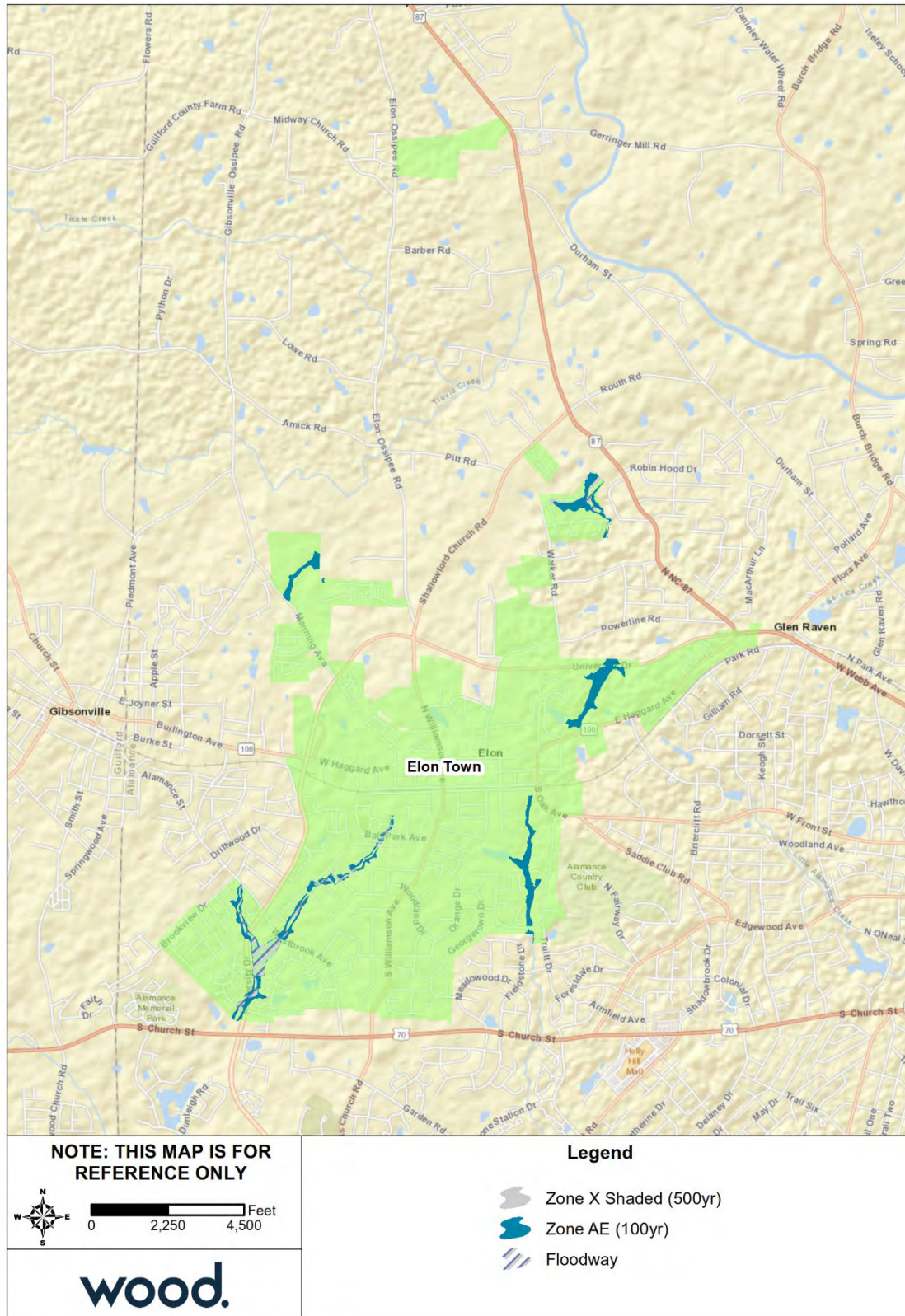
Table E.12 – Recent Development at Risk to Flood, Town of Elon

Recent Development at Risk		Percent of Total Recent Development	
Count of Parcels	Value of Parcels	Percent of Parcels	Percent of Values
16	\$5,585,563	4.3%	5.4%

Source: Parcel data retrieved November 2019; FEMA Effective DFIRM

There are no critical facilities or high potential loss properties with estimated flood damages in the Town of Elon.

Figure E.3 – FEMA Flood Hazard Areas, Town of Elon

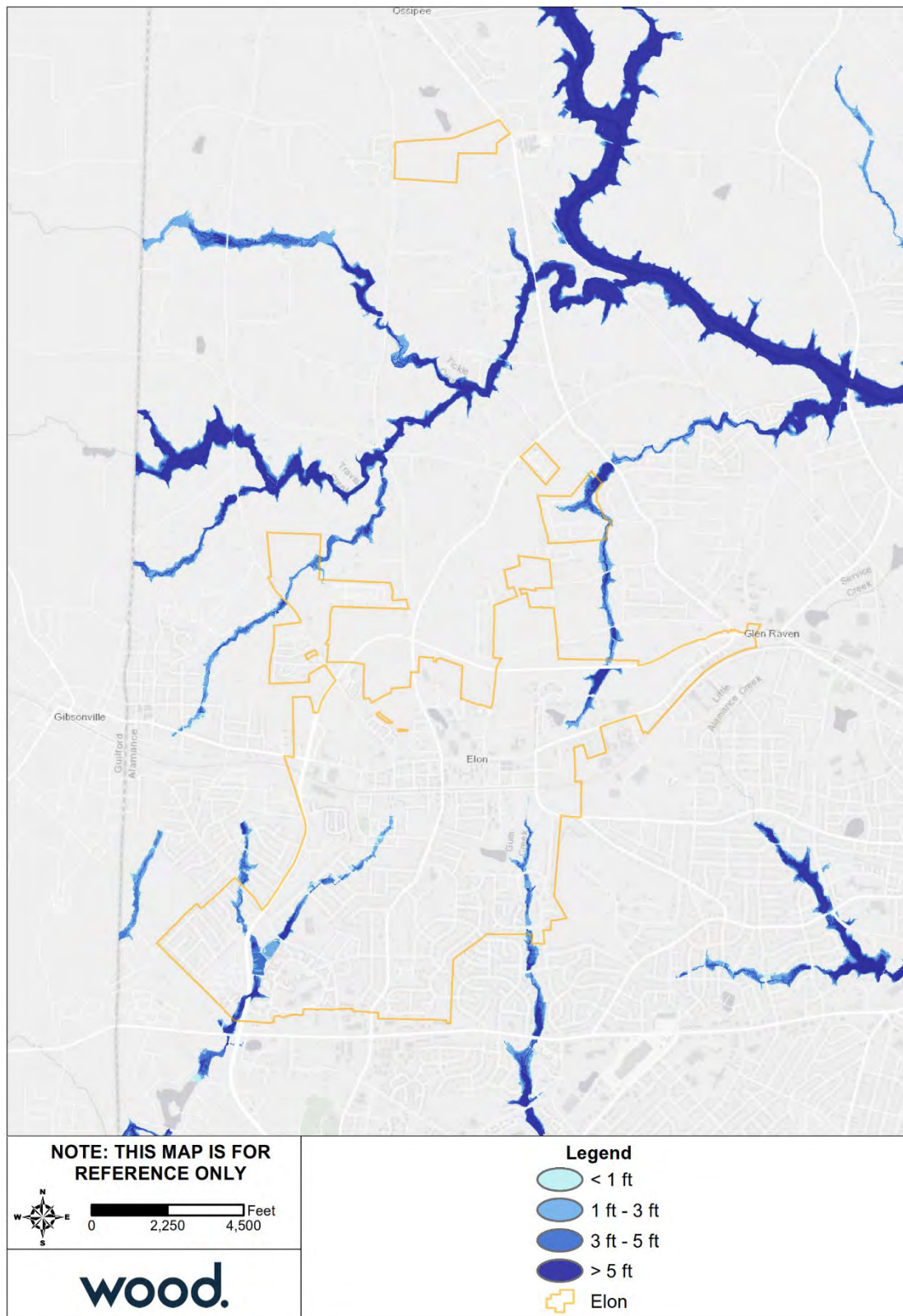


Source: FEMA Effective DFIRM

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Figure E.4 – Flood Depth, 1%-Annual-Chance Floodplain, Town of Elon



Source: FEMA Effective DFIRM

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E.3.3 Wildfire

Table E.13 summarizes the acreage in the Town of Elon that falls within the Wildland Urban Interface (WUI), categorized by housing density. Areas in the WUI are those where development may intermix with flammable vegetation. Over 7 percent of the Town of Elon is not included in the WUI.

Table E.13 – Wildland Urban Interface Acreage, Town of Elon

	Housing Density	Total Acreage	Percent of Total Acreage
	<i>Not in WUI</i>	188.36	7.3%
	LT 1hs/40ac	35.62	1.4%
	1hs/40ac to 1hs/20ac	24.64	1.0%
	1hs/20ac to 1hs/10ac	62.64	2.4%
	1hs/10ac to 1hs/5ac	76.45	3.0%
	1hs/5ac to 1hs/2ac	224.99	8.7%
	1hs/2ac to 3hs/1ac	1,720.93	66.9%
	GT 3hs/1ac	240.05	9.3%
	Total	2,573.67	

Source: Southern Wildfire Risk Assessment

Figure A.5 depicts the WUI for all incorporated areas in Alamance County, including the Town of Elon. The WUI is the area where housing development is built near or among areas of vegetation that may be prone to wildfire. Figure A.6 depicts Burn Probability for all of Alamance County based on landscape conditions, percentile weather, historical ignition patterns, and historical prevention and suppression efforts. Figure E.5 depicts the Fire Intensity Scale; which indicates the potential severity of fire based on fuel loads, topography, and other factors; in order to detail potential wildfire extent in the Town of Elon. There are small clusters of moderate (Class 3) and high (Class 4) potential fire intensity in the northern edges of the Town. Overall, these clusters only comprise 7.7% and 0.5% of the Town's total area.

Table E.14 provides building counts and estimated damages for Critical Infrastructure and Key Resources (CIKR) buildings by sector at risk to wildfire hazard. Table E.15 provides counts and estimated damages for High Potential Loss Properties in the Town of Elon.

Table E.14 – Critical Facilities Exposed to Wildfire, Town of Elon

Sector	Number of Buildings at Risk	Estimated Damages
Commercial Facilities	19	\$22,953,181
Critical Manufacturing	7	\$3,844,060
Energy	1	\$10,000,000
Food and Agriculture	4	\$190,177
Government Facilities	106	\$114,192,121
Healthcare and Public Health	42	\$54,555,540
Transportation Systems	6	\$8,213,993
Water	1	\$800,000
All Categories	186	\$214,749,072

Source: NCEM Risk Management Tool

Table E.15 – High Potential Loss Properties Exposed to Wildfire, Town of Elon

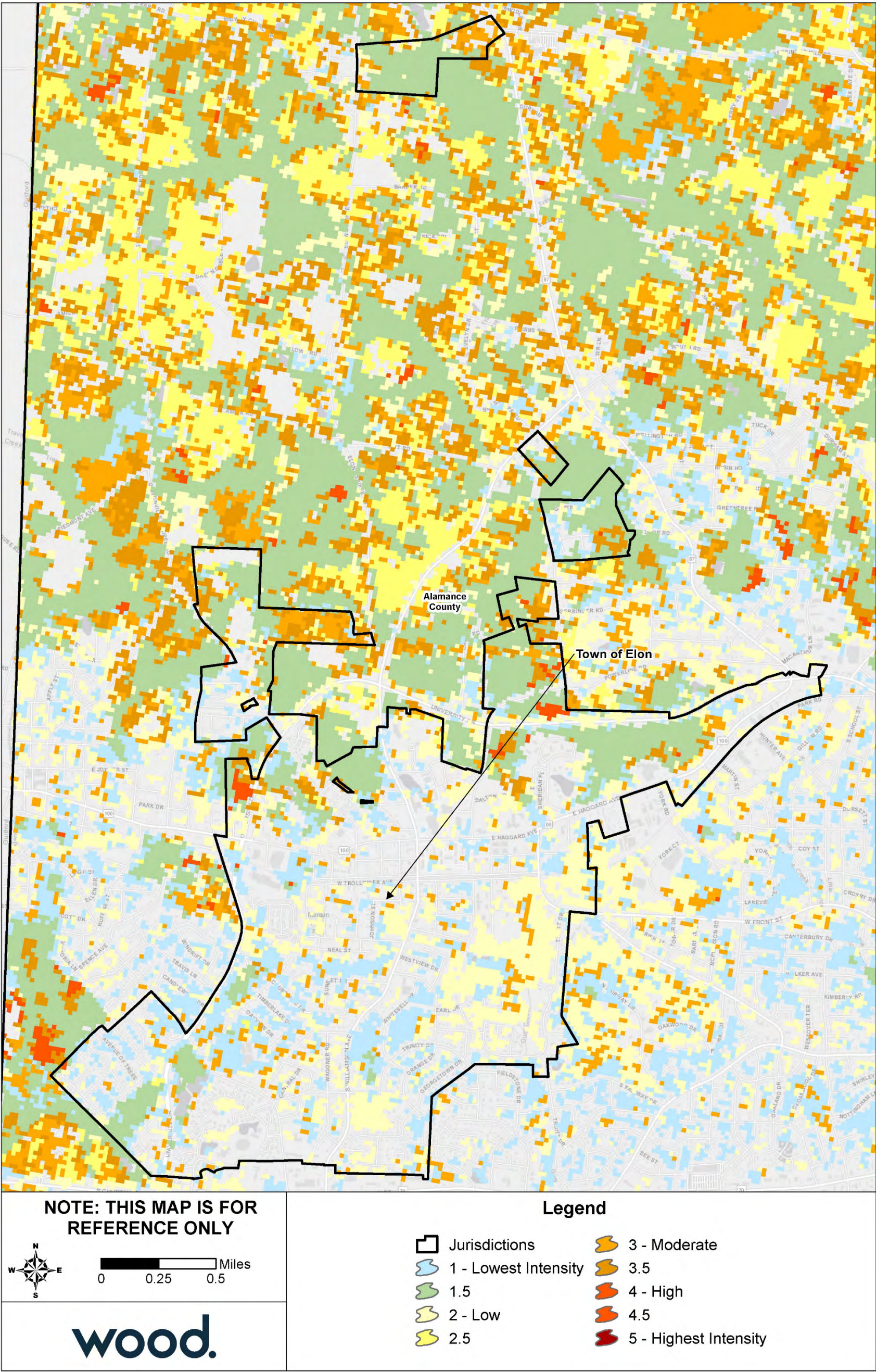
Category	Number of Buildings at Risk	Estimated Damages
Commercial	24	\$49,288,090
Government	38	\$97,015,324
Industrial	2	\$2,526,242

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Category	Number of Buildings at Risk	Estimated Damages
Religious	7	\$18,657,115
Residential	7	\$9,708,281
Utilities	1	\$10,000,000
All Categories	79	\$187,195,052

Source: NCEM Risk Management Tool

Figure E.5 – Fire Intensity Scale, Town of Elon



Source: Southern Wildfire Risk Assessment

E.4 CAPABILITY ASSESSMENT

E.4.1 Overall Capability

Details on the tools and resources in place and available to the Town of Elon are summarized in Section 5 Capability Assessment. Based on that information and using the scoring methodology detailed in that section, Elon has a low overall capability rating. The Town relies on Alamance County for much regulatory and planning capability support. The Town has moderate administrative capability, limited fiscal and outreach capability, and no structural mitigation experience.

E.4.2 Floodplain Management

The Town of Elon joined the NFIP through emergency entry in 1988 and has been a regular participant since June 1989. The following tables reflect NFIP policy and claims data for the Town categorized by structure type, flood zone, Pre-FIRM and Post-FIRM.

Table E.16 – NFIP Policy and Claims Data by Structure Type

Structure Type	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
Single Family	26	\$13,473	\$7,059,100	5	\$114,402.89
2-4 Family	2	\$900	\$700,000	0	\$0.00
Total	28	\$14,373	\$7,759,100	5	\$114,402.89

Source: FEMA Community Information System, accessed May 2020

Table E.17 – NFIP Policy and Claims Data by Flood Zone

Flood Zone	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	12	\$7,848	\$2,839,600	3	\$27,590.23
B, C & X Zone					
Standard	3	\$1,578	\$754,500	1	\$10,473.56
Preferred	13	\$4,947	\$4,165,000	1	\$76,339.10
Total	28	\$14,373	\$7,759,100	5	\$114,402.89

Source: FEMA Community Information System, accessed May 2020

Table E.18 – NFIP Policy and Claims Data Pre-FIRM

Flood Zone	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	7	\$4,854	\$1,693,500	0	\$0.00
B, C & X Zone	6	\$2,625	\$1,734,500	1	\$10,473.56
Standard	1	\$678	\$54,500	1	\$10,473.56
Preferred	5	\$1,947	\$1,680,000	0	\$0.00
Total	13	\$7,479	\$3,428,000	1	\$10,473.56

Source: FEMA Community Information System, accessed May 2020

Table E.19 – NFIP Policy and Claims Data Post-FIRM

Flood Zone	Number of Policies in Force	Total Premium	Insurance in Force	Number of Closed Paid Losses	Total of Closed Paid Losses
A01-30 & AE Zones	5	\$2,994	\$1,146,100	3	\$27,590.23
B, C & X Zone	10	\$3,900	\$3,185,000	1	\$76,339.10
Standard	2	\$900	\$700,000	0	\$0.00
Preferred	8	\$3,000	\$2,485,000	1	\$76,339.10
Total	15	\$6,894	\$4,331,100	4	\$103,929.33

Source: FEMA Community Information System, accessed May 2020

E.5 MITIGATION STRATEGY

Action #	Action Description	Hazard(s) Addressed	Goal & Objective Addressed	Priority	Lead Agency / Department	Potential Funding Source	Implementation Timeline	2020 Status	2020 Implementation Status Comments
Prevention									
P-1	Review methods of school construction to ensure that all new schools are constructed to the maximum cost feasible standards of wind resistance, flood resistance, and access so that they can be used as shelters for evacuees during and after natural hazard events.	All Hazards	1.2	High	Alamance County, Town of Elon	Elon University	2020-2025	Carried forward	Completed and continuing ongoing implementation. Elon University donated and built a new Elementary school for the residents of Elon and surrounding community. Built in 2019. Estimated cost \$19m.
P-2	Consider adopting a policy prohibiting the development of critical public facilities in the 100-year floodplain in cases where viable alternatives exist. Presently, most critical facilities located in the floodplain are waste pump stations because they must be located at low elevations because the handle gravity flowing sewage.	Flood	1.2	Moderate	Town of Elon Public Works Department, Town of Elon Planning Department	General Fund	2020-2025	Carried forward	Completed and continuing ongoing implementation. The Town of Elon Public Works along with Town of Elon Planning(TRC) coordinate an inventory of all public facilities and identify the facilities that are within the 100 year floodplain-if any.
P-3	Expand the County's Geographic Information System (GIS) capabilities to include maintaining Elevation Certificates in a computer database.	Flood	1.2	Moderate	Alamance County, Town of Elon	General Fund	2020-2025	Carried forward	Completed and continuing ongoing implementation. The Town of Elon works in conjunction with Alamance Co. GIS in computer based driven software on this.
P-4	Continue Town of Elon's participation in the National Flood Insurance Program (NFIP) so citizens are eligible for flood insurance.	Flood	1.2	Moderate	Town of Elon	General Fund	2020-2025	Carried Forward	Completed and continuing ongoing implementation. Elon actively participates in the NFIP for its citizens.
P-5	Review all fire districts coverage to ensure that there are adequate quantities of water for firefighting purposes and that all water points are maintained on a regular basis.	Wildfire	2.2	Moderate	Alamance County, Town of Elon Fire Department	General Fund	2020-2025	Carried forward	Completed and continuing ongoing implementation. Town of Elon contracts with 3rd party testing company to model and project needed water supplies for firefighting and domestic use on a yearly basis to keep up with growth and to help with FD ISO rating. Estimated cost \$10,000.
P-6	When the county land use plan is complete, create a land use map with an overlay of flood hazards and any other natural hazards that can be mapped.	All Hazards	1.2	Moderate	Town of Elon	N/A	2020-2025	Carried forward	Completed and continuing ongoing implementation. Town participated with Alamance Co EM on flood mapping. Mapping was completed in 2015-2016.
P-7	Direct Town of Elon to assess how it can better incorporate hazard mitigation plan goals and objectives into its planning and implementation of its duties with the County's plans.	All Hazards	1.2	Moderate	Alamance County/Town of Elon	General Fund	2020-2025	New	
Property Protection									
PP-1	Monitor reservoirs, lakes, and streams for potential flooding problems and note any unexpected flooding issues.	Flood	1.2	Moderate	Town of Elon, Alamance County	N/A	2020-2025	Carried forward	Completed and continuing ongoing implementation. No new flood risks were identified in the last five years, but the Town and the County will continue to monitor for any new potential flood issues within the area.
Structural Projects									
SP-1	Seek funding to the retrofit of critical facilities and Town-owned facilities for improved resilience to all hazards with the use of the latest building materials and technology. This could include, but is not limited to: wind retrofits, low water consumption fixtures, leak detectors, backup generators, ignition-resistant materials, 320 or 361 compliant safe rooms, lightning protection, hail resistant roofing, and anchoring fixed building equipment.	All Hazards	4.2	Moderate	Town Buildings and Inspections Department, Town Planning Department, Town Emergency Services	General Fund, Local, State Grants, UHMA Grants, other potential federal grants	2020-2025	Carried forward	The Towns TRC committee together with plans review have been able to review and approve all new construction builds from 2015-2020 particularly with new construction at Elon University with backup generators (where applicable and required by the NC Fire Code) along with fire resistant materials, wind retrofits and upgrades, as well as 911 communications requirements in buildings for effective radio transmissions.

Action #	Action Description	Hazard(s) Addressed	Goal & Objective Addressed	Priority	Lead Agency / Department	Potential Funding Source	Implementation Timeline	2020 Status	2020 Implementation Status Comments
Emergency Services									
ES-1	Meet annually with State Forester for Alamance County to improve coordination of wildfire control and response.	Wildfire	3.2	Moderate	Alamance County, Town of Elon Fire Department	NA	2020-2025	Carried forward	The Town of Elon FD conducts monthly meeting with the local arson task force and topics such as wildland fires are discussed occasionally with local FS Rep.
ES-2	Coordinate with the North Carolina Department of Transportation (NCDOT) to maintain adequate and effective snow and ice removal plans by the towns/cities and NCDOT. "Adequate" means that all major thoroughfares are cleared and remain clear within 12 hours of last snowfall.	Severe Winter Weather	2.2	Moderate	Town of Elon	General Fund	2020-2025	Carried forward	The Town's Public Works Department provided completed snow removal from the Towns streets during every snow storm from 2015-2020. This was for any storm which produced enough precipitation to cover the roads and maintained them clear.
Public Education & Awareness									
PEA-1	Encourage builders, developers, and architects to become familiar with the National Flood Insurance Program (NFIP) land use and building standards by attending annual workshops presented by the North Carolina Division of Emergency Management (NCEM). This can be accomplished by creating a mailing list and providing it to NCEM to use for its announcements. This task can be further supported by distributing copies of NCEM's announcements from the Alamance County Inspections Department when builders and developers apply for permits.	Flood	1.2	Moderate	Town of Elon	General Fund	2020-2025	Carried forward	The Town of Elon along with Alamance County provides this information during the Town's Technical Review Committee meetings with contractors, architects, etc. The Town continues to provide this information to the institutions with the most development activity such as Elon University, Blakey Hall and Twin Lakes Retirement Centers. A link to the Flood Damage Prevention Ordinance has been placed on the Town's website.
PEA-2	Encourage citizens and businesses/industries to develop emergency preparedness plans.	All Hazards	2.1	Moderate	Town of Elon	General Fund	2020-2025	Carried forward	The Town will continue to coordinate efforts to meet with the major institutions and businesses (Elon University, Twin Lakes, Blakey Hall, Labcorp, Carolina Biological, Sonoco, and Engineering Controls) to encourage continued development of their plans as their operations expand.
PEA-3	Encourage homeowners to review insurance policies as part of an overall family disaster plan.	All Hazards	2.1	Moderate	Town of Elon	Staff Time	2020-2025	Carried forward	The Town of Elon FD's Emergency Management currently maintains an updated preparedness page on their website. This information will continue to be updated periodically to help inform town residents.
PEA-4	Increase awareness of the natural hazards potential to local officials, the general public, and private industry.	All Hazards	2.1	Moderate	Town of Elon	Staff Time	2020-2025	Carried forward	In the Town of Elon FD preparedness page on the Town's website and a link also is added to the Alamance Co. Emergency Preparedness website.
PEA-5	Maintain hazard mitigation plan and floodplain information on the Town's website (www.elonnc.com).	All Hazards	2.1	Moderate	Town of Elon	Staff Time	2020-2025	Carried forward	The website carries you to the Hazard Mitigation Plan, NFIP website, and flood damage prevention ordinance (which is already in the Planning Departments documentation for download).
PEA-6	Maintain documents about flood insurance, flood protections, floodplain management, and natural and beneficial functions of floodplains at the local libraries and government offices.	Flood	2.1	Moderate	Town of Elon, Alamance County	General Fund	2020-2025	Carried forward	The Town of Elon is the FEMA repository for all related documents within its jurisdiction. The Town also works closely in conjunction with Alamance County concerning flooding issues.
PEA-7	Maintain GIS system at www.alamance-nc.com. From this site anyone from a private citizen, builder, insurance company, etc. can see if a property is located in the 1-percent-annual-chance (100-year) floodplain.	Flood	2.1	Moderate	Alamance County	Staff Time	2020-2025	Carried forward	The Town provides a link on the Town's website to the County's GIS. The Town will continue to maintain this link.

Action #	Action Description	Hazard(s) Addressed	Goal & Objective Addressed	Priority	Lead Agency / Department	Potential Funding Source	Implementation Timeline	2020 Status	2020 Implementation Status Comments
PEA-8	Provide local real estate agents with handouts that will advise potential buyers to investigate the flood hazard for the property they are considering purchasing.	Flood	2.1	Moderate	Town of Elon	Staff Time	2020-2025	Carried forward	The Town provides links or info to the County GIS and NC FRIS website.
PEA-9	Educate citizens to listen for the watches and warnings issued by the National Weather Service	Flood	2.2	Moderate	Town of Elon	Staff Time	2020-2025	Carried forward	The Town of Elon in conjunction with Alamance Co. inform the residents via website as well as the countywide emergency alert system, Nixle, of upcoming warnings and watches.