



Fort Fairfield Maine



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Community Resilience Pilot Community Resilience Building Workshop Summary of Findings August 2021



Town of Fort Fairfield, Maine

Community Resilience Building Workshop

Summary of Findings

Overview

The need for municipalities, regional planning organizations, corporations, states, and federal agencies to increase resilience to extreme weather events and a changing climate is strikingly evident amongst the communities across the state of Maine. Recent events such as the multi-year drought, impactful ice out conditions, and extreme winter blizzards have reinforced this urgency and compelled leading communities like the Town of Fort Fairfield to proactively collaborate on planning and mitigating risks. Ultimately, this type of leadership is to be commended because it will reduce the vulnerability and reinforce the strengths of people, infrastructure, and ecosystems and serve as a model for other communities in Maine, New England, and the Nation.

In the summer of 2021, the Town of Fort Fairfield embarked on participation within the state of Maine's Community Resilience Pilot via the Office of Policy Innovation and the Future. As part of that participation, the Northern Maine Development Commission (NMDC) and the Nature Conservancy (TNC) provided the Town with a community-driven process to assess current hazard and climate change impacts and to surface projects, plans, and policies for improved resilience. In August 2021, the Fort Fairfield Core Team helped organized a Community Resilience Building Workshop facilitated by TNC in partnership with NMDC. The core directive of this effort was the engagement with and between community members to define strengths and vulnerabilities and the development of priority resilience actions for the Town of Fort Fairfield.

The Fort Fairfield Community Resilience Building Workshop's objectives were to:

- Define top local, natural, and climate-related hazards of concern;
- Identify existing and future strengths and vulnerabilities;
- Identify and prioritize actions for the Town;
- Identify opportunities to collaboratively advance actions to increase resilience alongside residents and organizations from across the Town, regionally, and the state of Maine.

The Town of Fort Fairfield employed a unique “anywhere at any scale”, community-driven process called Community Resilience Building (CRB) (www.CommunityResilienceBuilding.org). The CRB’s tools, reports, other relevant planning documents, and local/county maps were integrated into the workshop process to provide both decision-support and visualization around shared issues and existing priorities across Fort Fairfield. The Aroostook County Hazard Mitigation Plan (updated 2021) and Fort Fairfield Comprehensive Plan (2006) were particularly instructive. Using the CRB process, rich with information, experience, and dialogue, the participants produced the findings presented in this summary report including an overview of the top hazards, current concerns and challenges, existing strengths, and proposed actions to improve Fort Fairfield’s resilience to hazards and climate change today, and in the future.

The summary of findings transcribed in this report, like any that concern the evolving nature of risk assessment and associated action, are offered for comments, corrections and updates from workshop attendees and other stakeholders alike. The leadership displayed by the Town of Fort Fairfield on community resilience building will benefit from the continuous participation of all those concerned.

Summary of Findings

Top Hazards and Vulnerable Areas for the Community

Prior to the CRB Workshop, the Fort Fairfield Core Project Team identified the top hazards for the Town. The hazards of greatest concern included flash flooding due to excessive precipitation events, drought due to extended period of elevated heat, and extreme winter storms (ice, wind, snow). As discussed by participants, these hazards have direct and increasing impacts on the infrastructure, residents, and environment including agricultural operations, natural areas (rivers, streams, wetlands), low-lying residential areas, roads, bridges, levies, dams, businesses and commerce, public transportation, municipal facilities, school system, civic events, Potato Blossom Festival, churches, social support services and other critical infrastructure and community assets within Fort Fairfield.

Top Hazards and Areas of Concern for the Community

Top Hazards

- Flash Flooding - Excessive Rainfall
- Drought and Heat Waves
- Extreme Winter Storms (including ice, wind, and/or snow)
- Thaws, Refreezing, and Ice Outs

Areas of Concern in Fort Fairfield* - Several categories and locations were identified as being particularly vulnerable by workshop participants including:

Infrastructure: Wastewater Treatment Plant Pump Station, Surface Drinking Water Treatment Facility, Electrical Power Grid, 6 Dams, Athletic Fields, Irrigation Systems, Private Residential Drinking Water Wells, Dike, Pump Station, Riverside Cemetery (Russell Road).

Ecosystems/Waterways: Aroostook River, Pattee Brook, Wetlands, Waterways, Forests, Trail Systems, Hockenhull Brook.

Roads, Bridges, and Road Network: Currier Road, Presque Isle Street, Main Street (Route 1A), Strickland Road, North Caribou Road, Russell Road, Hockenhull Brook Bridge (South Caribou Road), State-owned Right-of-Ways, Aroostook River Bridge.

Vulnerable Populations: Elderly/Senior Citizens, Non-English Speakers, Residents with Special Needs, Disabled Residents, Local Business Owners, Veterans, Low to Moderate Income Residents, Working Poor, Seasonal Farm Workers, Amish Community, Fields Lane Neighborhood.

*Information from workshop participants augmented via review of the Aroostook County Hazard Mitigation Plan (updated 2021) and the Town of Fairfield Comprehensive Plan (2006). ***See Appendix A for full list of mitigation/adaptation actions from the Aroostook County's Hazard Mitigation Plan.***

Current Concerns and Challenges Presented by Hazards

The Town of Fort Fairfield has several concerns and faces multiple challenges related to the impacts of natural hazards and climate change. In recent years, Fort Fairfield has experienced a series of highly disruptive and damaging weather events including severe thunderstorms and microburst activity which knocked out power and caused flash flooding, numerous thunderstorms creating flooding and washout conditions, seasonal blizzard conditions that close the roads, severe drought conditions that impact water availability for agricultural uses, annual ice out events on the Aroostook River, and quick freeze/thaw events in the winter. The magnitude and intensity of these events and others across Aroostook County have increased awareness of natural hazards and climate change, while motivating communities such as Fort Fairfield to proactively improve their resilience.

This series of extreme weather events highlights that the impacts from hazards are diverse, ranging from: riverine flooding of critical infrastructure, bridges, roads, and low-lying areas; localized flooding and washouts during intense thunderstorms, and; property damage and persistent utility outages from wind, snow, and ice. Longer periods of elevated heat, particularly in July and August, have raised concerns about vulnerable segments of the population including elderly, disabled, underserved, and disproportionately disadvantaged residents. The combination of these issues presents a challenge to preparedness and mitigation priorities and requires comprehensive, yet locally-specific actions across the Town.

The workshop participants were in agreement that Fort Fairfield is experiencing more intense and frequent storm events and heat waves leading to extended drought. Additionally, there was a general concern about the increasing challenges of being prepared for the worst case scenarios (e.g. major storms and blizzards) particularly in the fall/winter months when more intense storms coincide with colder weather. There was also a growing concern about quick freezing, thawing during the winter, and refreezing before the traditional spring thaw followed by increasingly significant ice out events. The impact of the current Covid-19 pandemic was raised by workshop participants as well.



(Credit: fortfairfield.org)



(Credit: umaine.edu)



(Credit: reddit.com)

Specific Categories of Concerns and Challenges

As in any community, Fort Fairfield is not uniformly vulnerable to hazards and climate change, and certain locations, assets, and populations have been and will be affected to a greater degree than others. Workshop participants identified the following items as their community's key areas of concern and challenges across three broad categories - Infrastructure, Societal, and Environmental.

Infrastructure Concerns and Challenges

Roads, Bridges, and Road Networks:

- Warmer weather in winter increases the softness of roads and susceptibility of impact from plowing which increases the strain on the overall budget for road maintenance and improvements.
- State-owned and maintained segments of Main Street (Route 1A) and Presque Isle Road in need of repair, currently.
- Increased erosion all around the Hockenhull Brook Bridge (South Caribou Road) with one of the culverts compromised and non-functioning resulting in reduced safety for residents.
- Low lying roads close to the Aroostook River and other waterway that routinely flood in the spring and summer months including Strickland Road, North Caribou Road, and Russell Road, among others.
- Large amount of open farm field along Route 1A and elsewhere where snow drifts due to lack of wind breaks causes accidents during winter months as well as inability of employees to get to and from work.
- Growing concerns about ice jams and their potential impacts on bridges and adjoining roads as well as collapse and loss of agricultural fields.

Emergency Management and Preparedness:

- Issues with insufficient cell phone coverage and broadband connectivity present struggle for residents and municipal functions.
- Ability to keep roads clear during winter storms particularly roads with limited wind breaks and high winds (Route 1A) resulting in snow drifts in the roadway.
- Emergency management implications of reoccurring earlier and more pervasive ice out periods and resulting ice jams in the spring including mid-winter events as well.
- Aging population that is living more and more remotely presents challenges when sheltering in place is unsafe due to long power outages in winter months.
- Electrical utility and infrastructure susceptible to regular and extended outages puts residents at risk and limits timely dissemination of critical updates and information.
- Large distances between homes once away from tightly cluster downtown area ("double township") increases response times during emergencies.
- Implications of power outages on the Fire Departments ability to draw water for fire suppression due to inability to pump water.

Specific Categories of Concerns and Challenges (cont'd)

Emergency Management and Preparedness:

- Lack of system and equipment to broadly alert the general public in advance of impactful events.
- Vulnerability to flooding amongst elderly and disabled residents in the Fields Lane area (44 housing units) despite the presence of a dike.
- Concerns that existing dike coupled with increasingly extreme precipitation events may be resulting in upstream flooding in low lying areas when the pump station servicing the dike fails.
- Five of the six dams in Fort Fairfield have extended beyond their projected 50 year life cycles, have not received routine maintenance nor upgrades, have rusted or generally impaired control systems, and have downstream populations vulnerable to catastrophic dam failure.

Critical Systems:

- Fort Fairfield at the end of the line for the NB Power/Hydro Quebec electrical power grid resulting in routine power outages and delay restoration which is particularly concerning for residents and businesses during extended cold snaps.
- Antiquated drinking water systems, including controls and monitoring gauges, with only one well head and surface water areas that does sediment treatment.
- Wastewater pump station is at the lowest point in Town with a history of being flooded (1994 flood) present potential to contaminate Pattee Brook and eventually the Aroostook River with raw sewage during future flood events.
- Surface water treatment plant at risk during drought and reduces availability of municipal drinking water for residents.

Societal Concerns and Challenges

Vulnerable Populations:

- Significant impacts to the agricultural community due to increasingly severe drought which has ramifications on local economies and wellbeing of residents.
- Relatively large percentage of low to moderate income residents living at or below the poverty level.
- Limited to non-existence of day care options for families in Fort Fairfield despite efforts to find ways to bring good quality, “wrap-around childhood care to residents.
- Lack of mobility amongst vulnerable segments of the population including elderly.
- Relatively sizable Amish community in Fort Fairfield with limited understanding by the Town of vulnerability and needs in the event of an emergency.
- Homeowners along open, exposed roads are vulnerable to wind and snow drifts that can increase isolation and knock out power for extended period of time.

Specific Categories of Concerns and Challenges (cont'd)

Societal Concerns and Challenges

Vulnerable Populations:

- Isolated population segments coupled with limited mobility and access to food, prescriptions, and supplies during crisis situations.
- Only one grocery store (IGA) and one drug store in Town that sell a variety of shelf-stable food items and miscellaneous goods.
- Recent influx of new residents without knowledge of northern Maine winters may not be prepared for emergency situations where the remoteness often leads to longer response times and delayed travel times.

Community Growth & Resilience:

- Local perception that the state is not providing adequate resources and funding to Aroostook County because of the relatively low population and the assumption that residents are self sufficient.
- Lack of adequate broadband connectivity and capacity for existing residents coupled to an influx of new residents during and post-pandemic.
- Frequent loss of electrical power for homes and businesses across the Town which causes loss of revenue and interruptions of daily needs.
- Projected cost and financial burden on the agricultural community due to the need to install for the first time irrigation systems to supply crops with water during extended droughts from July through September.
- Recent declines in snow amounts impacting Aroostook County's ability to host world class events such as cross-country skiing races and has required the installation of snow making equipment.
- Decline in snow amounts impacting tourism related to snowmobiling and sledding and other winter recreational activities.
- Lack of a large employer to help increase local tax base and offsite the current burden on property owners and residents in Fort Fairfield.
- Recent reduction in the condition of the athletic fields in Town due to extended droughts and lack of irrigation options.

Specific Categories of Concerns and Challenges (cont'd)

Environmental Concerns and Challenges

Agriculture, Open Space, and Waterways:

- Impacts to Aroostook River from non-point source nutrient loading causing poor water quality in low-flow summer months.
- Farmland is threatened by drought which leads to decreased crop yields and increased soil erosion during heavy rains leading to loss of critical topsoil.
- Pattee Brook impoundment is under threat from heavy rain events that cause excessive sedimentation resulting in less storage capacity.
- Loss of farmland in proximity to the Aroostook River due to erosion or sheering by large ice jams.
- Future flooding projections due to precipitation events of longer duration and higher intensity will present a challenge in rivers, streams, brooks, and wetland systems.
- Lack of unified strategy to secure conservation in current and future flood zones to help reduce risks to ecosystems and structures.



(Credit: mainehomesandcamps.com)

Current Strengths and Assets

Just as certain locations, assets, and populations in Fort Fairfield stand out as particularly vulnerable to the effects of hazards and climate change, other features are notably assets for Fort Fairfield's resilience building. Workshop participants identified the following items as their community's key strengths and expressed interest in using them as the core of future resilience building actions.

- Clearly, the responsive and committed engagement by leadership, staff, and residents is a very appreciated strength within and across Fort Fairfield. Ongoing collaboration between municipal staff, committee/commission, volunteers, business community, NMDC, faith-based organizations, non-profit organizations, adjoining municipalities, and various state-level organizations, among others, on priorities identified herein will help advance cost-effective, community resilience building actions.
- Community has ability to work collectively across entities and organizations including residents, farmers, school district, emergency management, planning, and businesses, among others.
- Community members are committed to their neighbors no matter where they are from because everyone recognizes that when you help, it helps everyone.
- Great deal of pride in the housing options and care given to elderly in the community.
- Presence of Border Patrol and close working partnership with local, county, and state law enforcement which provide additional sense of security for residents of Fort Fairfield and a very low crime rate.
- The Town has highly experienced staff with access to adequate resources for most emergency situations coupled with coordination amongst various departments including leadership, Public Works, Police, Fire, and Ambulance as well as adjoining municipalities.
- On connectivity forefront with build out of fiber for broadband compared to other municipalities in the County.
- Host for Potato Blossom Festival which is one of the five major festivals held annually in the state of Maine.
- Relatively large amount of cleared and level land that is desired and ready for development and settlement by people from the south seeking a more rural lifestyle and wellbeing.
- Solid school system providing a quality education for children and young adults.

Current Strengths and Assets (cont'd)

- The Town is increasingly preparing for climate change given the concern about current impacts from hazards and the threat of escalation—particularly from storms, flooding, drought, and snow.
- Robust assortment of public services and amenities offered by the Town to residents and visitors.
- Multi-department focus, in partnership with local police, on ensuring people remain safe during ice out season which is getting longer and more dangerous each year.
- Strong work ethic amongst residents due to connections to working the land and the need to be persistent and committed.
- Fort Fairfield residents, staff, and leadership went through and survived a notable flood that facilitated a pragmatic identification and implementation of a recovery plan which speaks to the experience and fortitude of the community.
- Town is recognized by people as a safe place or refuge away from other more populated areas in the Country with higher Covid prevalence (i.e. Cities versus “Rural America”).
- Very well-established relationships and partnership with every hazard-related organization for most purposes and situations that have and could arise.
- Coordination meeting of all necessary organizations and agencies (local, County, State, federal) in advance of the spring “preflood” to ensure the proper resources and procedures are at the ready and in place to help minimize impacts to people, property, infrastructure, and the environment, among other issues.
- Reliance on word of mouth for information sharing by strong civic groups amongst residents about issues viewed as more important and powerful than traditional media and social media formats.
- Updated master plan for water systems that identify areas that need improvements as shovel ready projects.
- New wastewater plant coming online over the next couple of years which will set the Town up for better facilities and potential for additional capacity.
- The AMHC Children’s Crisis Stabilization Center is located in Fort Fairfield.
- Fort Fairfield is a designated Storm Ready Community.

Recommendations to Improve Resilience

A common theme among workshop participants was the need to continue community-based planning efforts focused on developing adaptive measures to reduce Fort Fairfield's vulnerability to extreme weather, climate change and other common concerns raised. To that end, the workshop participants reached agreement on several priority topics requiring more immediate and/or ongoing attention including:

- **Long-term Vision and Growth** (i.e. responsible economic growth, increasing population trends, transportation, shifting demographics, volunteerism);
- **Infrastructure Improvements** (i.e. wastewater and drinking water systems, irrigation systems, low-impact development, electrical grid reliability, local alternate energy sources, broadband, roadway safety);
- **Resilient Community Support** (i.e. sustainability, mobility, business and residential recovery, senior care support, schools, daycare, food security);
- **Emergency Management** (i.e. communications, outreach, education, continuation of services, coordinating and exercise plans)

In direct response, the workshop participants developed the following priority and other action list. Mitigation actions from the Aroostook County Hazard Mitigation Plan (update 2021) are provided in Appendix A for cross reference. In addition, actions previously identified in the Fort Fairfield's Comprehensive Plan (2006) were reviewed for consistency with input from workshop participants.

Priority Actions

- Look to upgrade levy system with additional automation technology to further enhance the safety of the community in the face of increased variability in weather patterns and rainfall.
- Advance road raising projects to at least the height of 100-year flood level in areas currently subjected to flooding and serving as critical transportation corridors.
- Inventory and prioritize repairing and replacing of outdated and undersized culverts in areas subjected to flooding currently.
- Initiate a fencing/living fencing (tree planting) program along Route 1A and other roadways subject to snow drifting. Work with the agricultural community for their input and implementation.

Priority Actions (cont'd)

- Consider eliminating surface water treatment plant and replacing with one primary high-capacity well and two redundant high-capacity wells with automatic generator backup power supply.
- Look to replace wastewater pump station with a submersible style pump station with controls and backup generator located outside of the current flood zone.
- Explore potential for purchase of extended right-of-way along critical roadways exposed to snow drifts and whiteouts for installation of fencing/living fencing projects.
- Continue to advocate to the State Department of Transportation to complete the seriously critical repairs needed on Main Street and Presque Isle Street which are year-round safety hazard areas.
- Incorporate resilience actions from CRB workshop into updates to the Fort Fairfield Comprehensive Plan and Aroostook County Hazard Mitigation Plan.
- Continue to update and implement the Local Emergency Action Plan and Local All Hazards Plan.

Other Actions

- Continue to advance efforts to increase broadband and cell service via the current request for proposal to secure reliable fiberoptic broadband and work with Mission Broadband via a new committee in Aroostook County.
- Conduct assessment of the level of risk to the surface water treatment plant due to drought.
- Secure necessary state and/or federal funding and support to set-up and maintain full-service childcare for all residents within the school system to help reduce the current burden on families in Fort Fairfield.



(Credit: townandshore.com)



(Credit: etravelmaine.com)



(Credit: bangordailynews.com)

Other Actions (cont'd)

- To help reduce the dependence on the unreliable electrical power grid, identify and install alternate, and locally controlled power generation options including solar and wind sources in support of local load stabilization.
- Hazardous waste education, training, and events to help remove household hazard waste.
- Identify and integrate a universal approach to emergency alerts that should include phone trees, radio stations, local TV stations, social media, and website(s).
- Explore subsidized irrigation systems for agricultural producers in coordination with USDA NRCS and others at the Maine Potato Board already working on finding irrigation solutions.
- Examine the capacity of the existing backup generator at the principal municipal water well for extended use of several weeks in the event of a major power outage.
- Work with the municipality of Easton to learn from their engagement approach with the Amish elders to help figure out how to distribute information and identify needs in advance of major disasters within the Fort Fairfield community.
- Conduct a survey of Fort Fairfield residents to help identify how people currently gain information and news when there is a power outage as a step to inform a comprehensive emergency communication system.
- Support and expand the current group of 25-30 people that watch and report flood stage information during major events based on direct observation of the Aroostook River.
- Develop a plan of action for the six local Dams to ensure increase control options and safety to downstream residents.
- Conduct public education and communication to the public and businesses concerning potential hazardous weather events in partnership with the National Weather Service.
- Review monitoring protocols and procedures and continue monitoring water tables via wells, gauges, and sutrons in pump house during times of droughts.
- Encourage energy efficiency projects for all entities in Town including modifications to lighting, heating, and using alternative/renewable energy options.

Other Actions (cont'd)

- Put plan in place to keep young people/families in the community and encourage more to move into the area.
- Reevaluate and strengthen services and support to properly manage mental health issues for local citizens, especially during weather events.
- Education plan for new people moving to the area about weather conditions, resources, and life in the north region of the state of Maine.
- Ensure that vulnerable populations are receiving services for their water, food, health, and transportation needs from the appropriate entities and organizations in a timely manner.
- Encourage property owners to manage their lands in ways that support native species and ecosystems.
- Incentive and encourage farmers to increase organic matter that can hold soil moisture longer during dry conditions.

Special Note: Fort Fairfield suffered from destructive ice jams and floods in the Aroostook River six times between 1988 and 1994 with Federal disaster declarations resulting from the 1993 and 1994 events. With planning, foresight, and lessons from past hazard events, Fort Fairfield developed a permanent solution to protect the flood-prone community through the construction of a dike. Not only did Fort Fairfield prevent future damages, but it also created additional flood storage, provided recreational space, and protected natural and cultural resources. Fort Fairfield proved that mitigation can protect families and communities.

CRB Workshop Participants: Department/Organization

Town of Fort Fairfield - Office of Town Manger

Town of Fort Fairfield - Utilities District

Town of Fort Fairfield - Housing Authority

Town of Fort Fairfield - School District

Town of Fort Fairfield - Public Works Department

Town of Fort Fairfield - Police Department

Town of Fort Fairfield - Residents

Rotary Club

Aroostook Partnership

Aroostook Waste Solutions

Aroostook Emergency Management Agency

Northern Maine Development Commission

State of Maine - Department of Environmental Protection

State of Maine - Office of Policy Innovation and the Future

Fort Fairfield Core Project Team

Andrea Powers - Town Manager, Town of Fort Fairfield

Tony Levesque - Code Enforcement Officer, Town of Fort Fairfield

Online CRB Workshop Facilitation Team

Northern Maine Development Commission - Jay Kamm (Project Lead/Facilitator)

The Nature Conservancy - Adam Whelchel (Lead Facilitator)

The Nature Conservancy - Jeremy Bell (Small Group Facilitator)

Northern Maine Development Commission - Dana Delano (Scribe)

The Nature Conservancy - Jocelyn Runnebaum (Scribe)

The Nature Conservancy - Kaitlyn Bernard (Scribe)

The Nature Conservancy - Tamara Lee Pinard (Scribe)

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Acknowledgements

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Appendix A

Aroostook County Hazard Mitigation Plan (updated 2021)

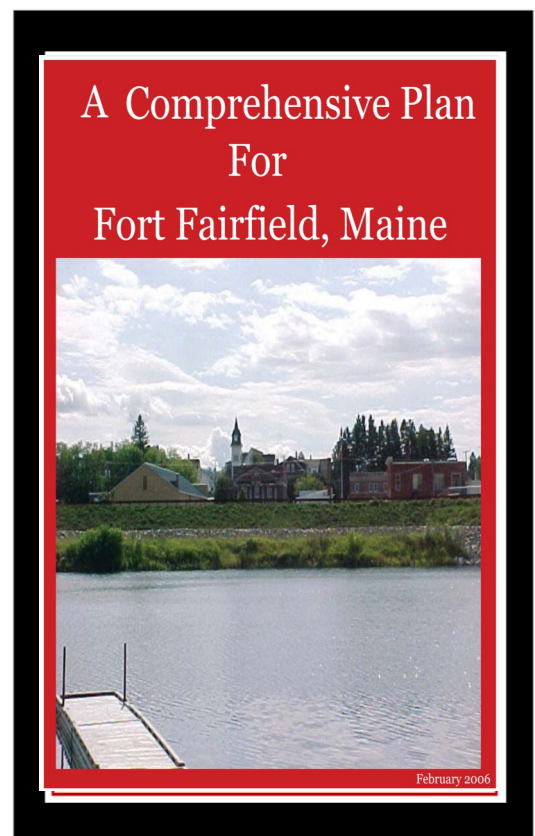
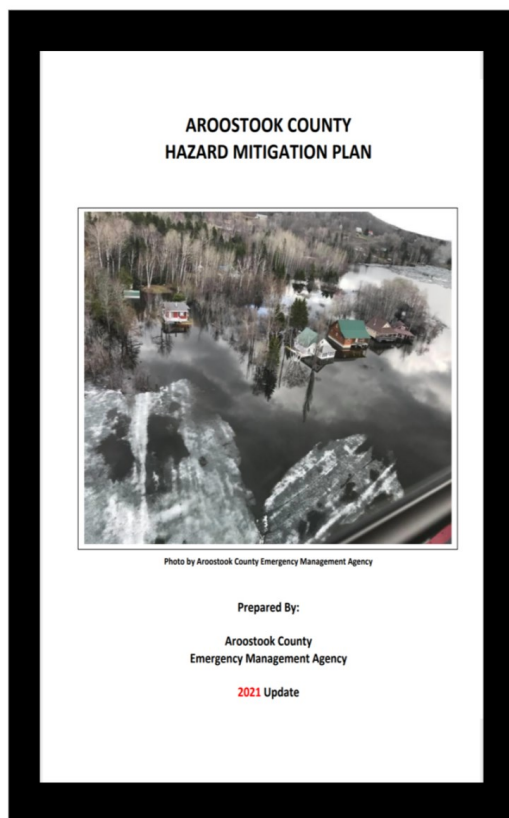
Updated Mitigation Strategies and Actions

AROOSTOOK COUNTY HAZARD MITIGATION PLAN – 2021 Update

Town Aroostook Co.	Project (in Priority Order)	Estimated Cost	Time Frame	Responsible Agency	Status
Fort Fairfield	1) Currier Road – Install 12' x 60' box culvert, rip rap, raise road & repave	\$149,000	Long Term	Road Commissioner/ Selectmen	Deferred – Lack of funds

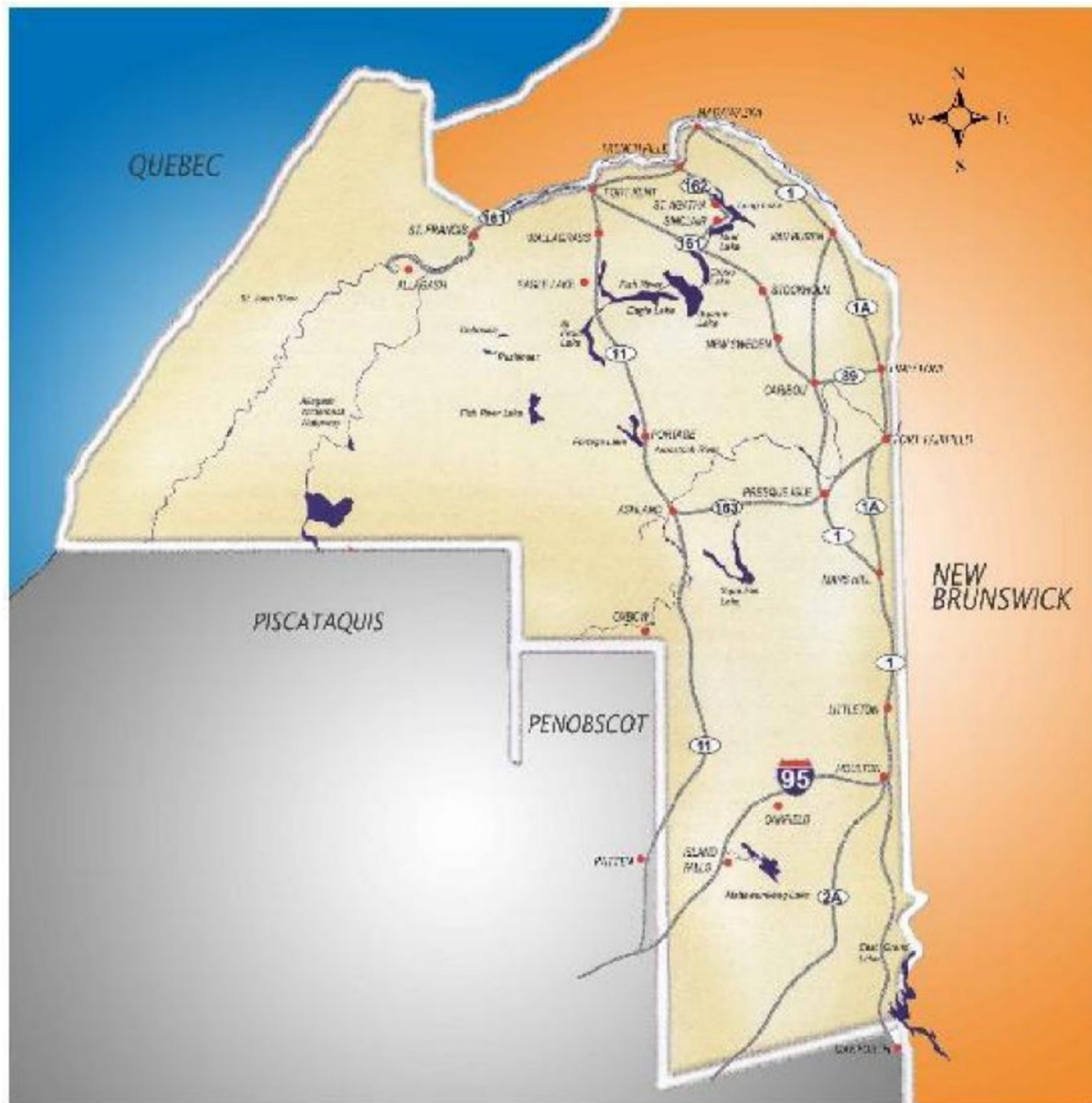
Appendix B

Fort Fairfield Maine Map Resource Packet* Used During Workshop



***Gathered from Aroostook County HMP (updated 2021), Town of Fort Fairfield Comprehensive Plan (2006) and via Northern Maine Development Commission map resources.**

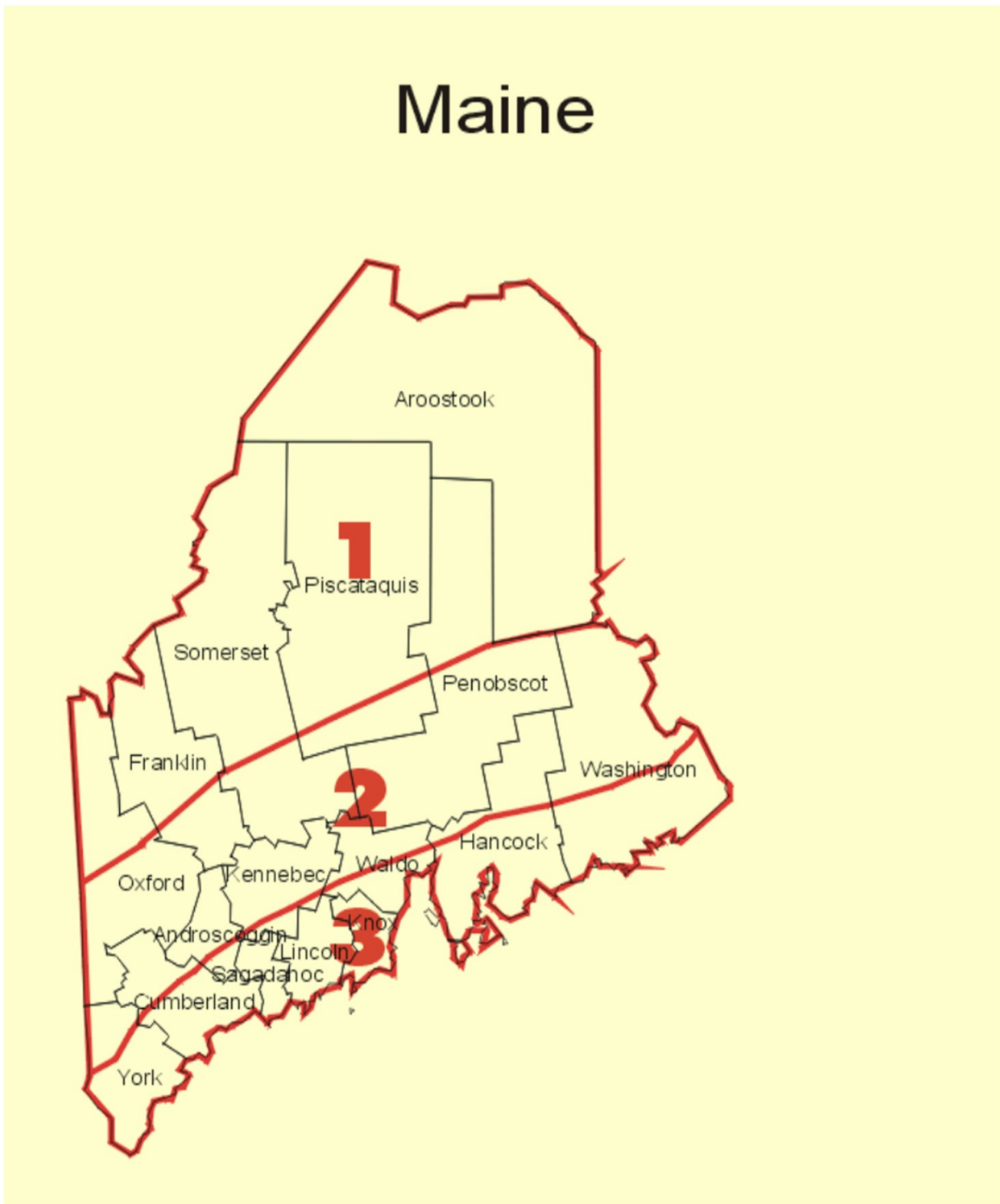




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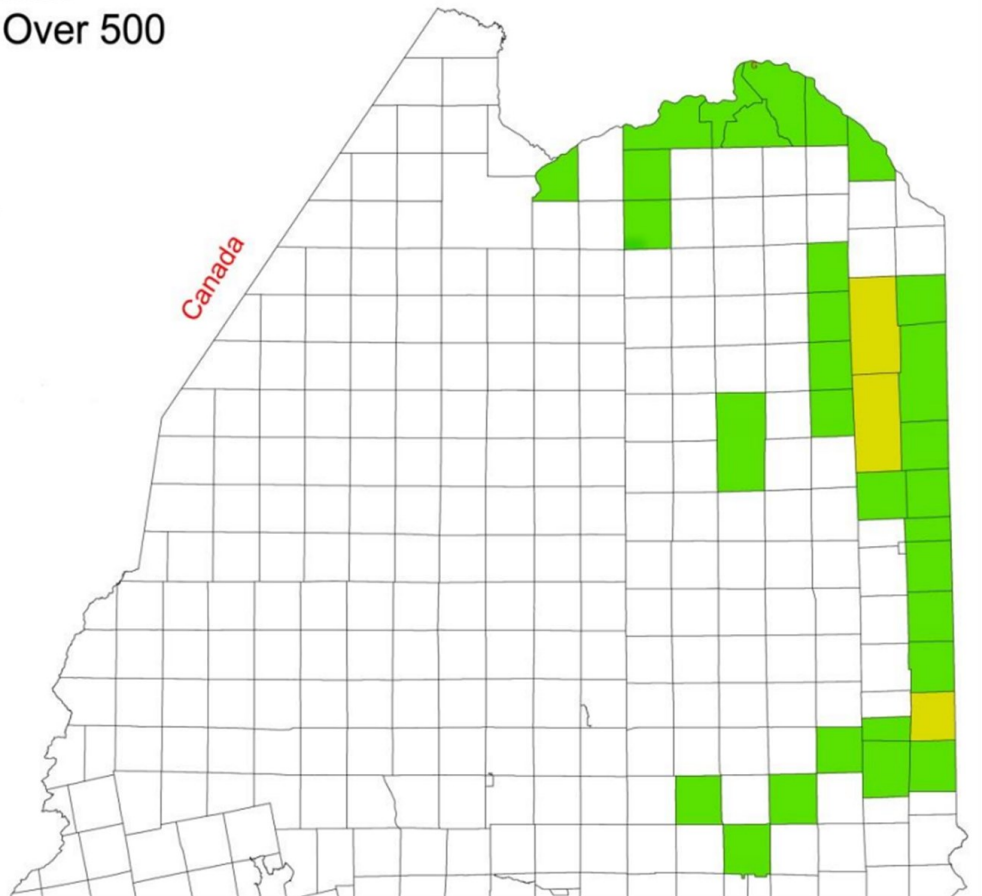
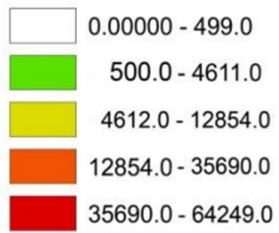
AROOSTOOK COUNTY HAZARD MITIGATION PLAN – 2021 Update

Climate Divisions of Maine



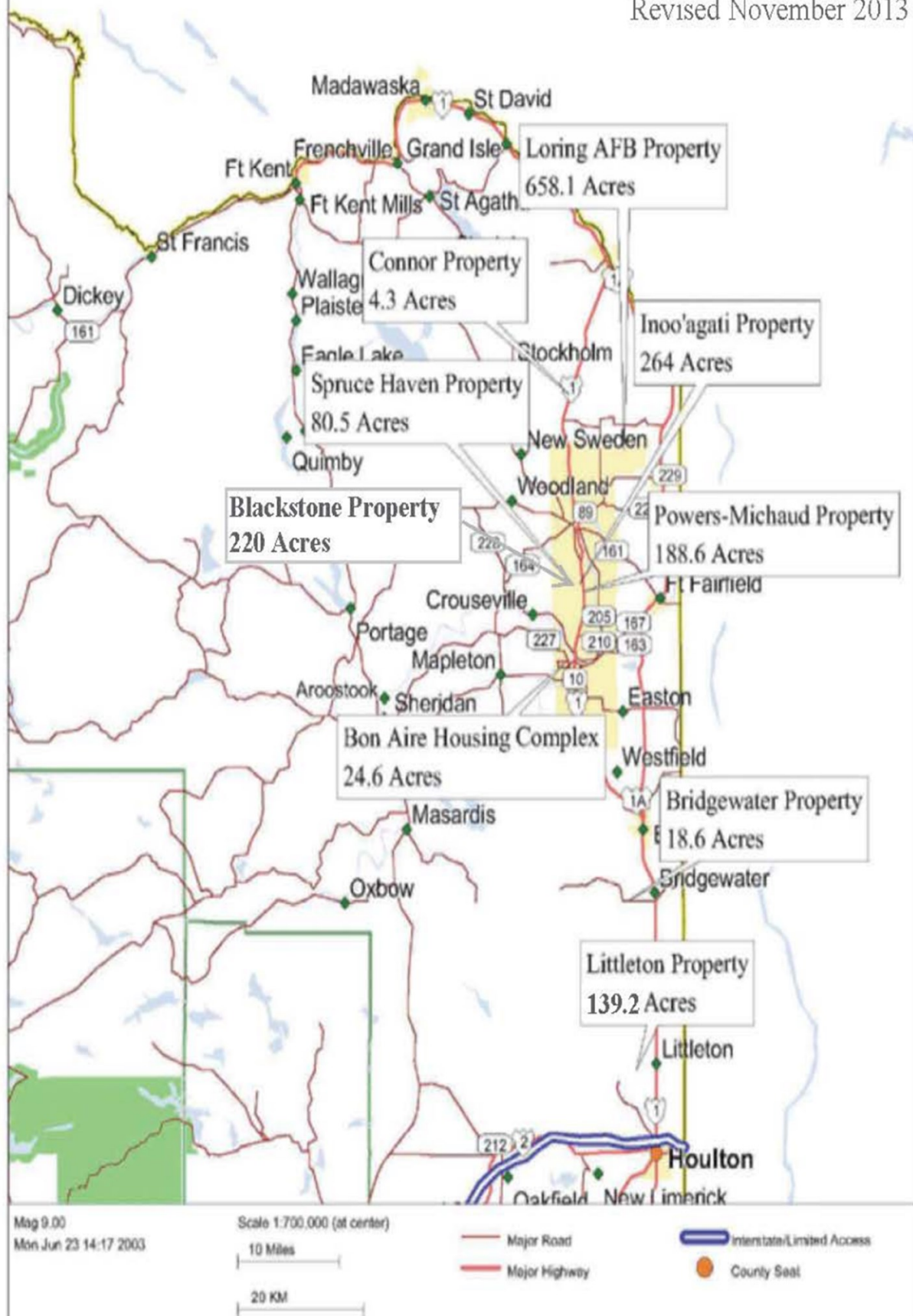
Towns with Population Over 500

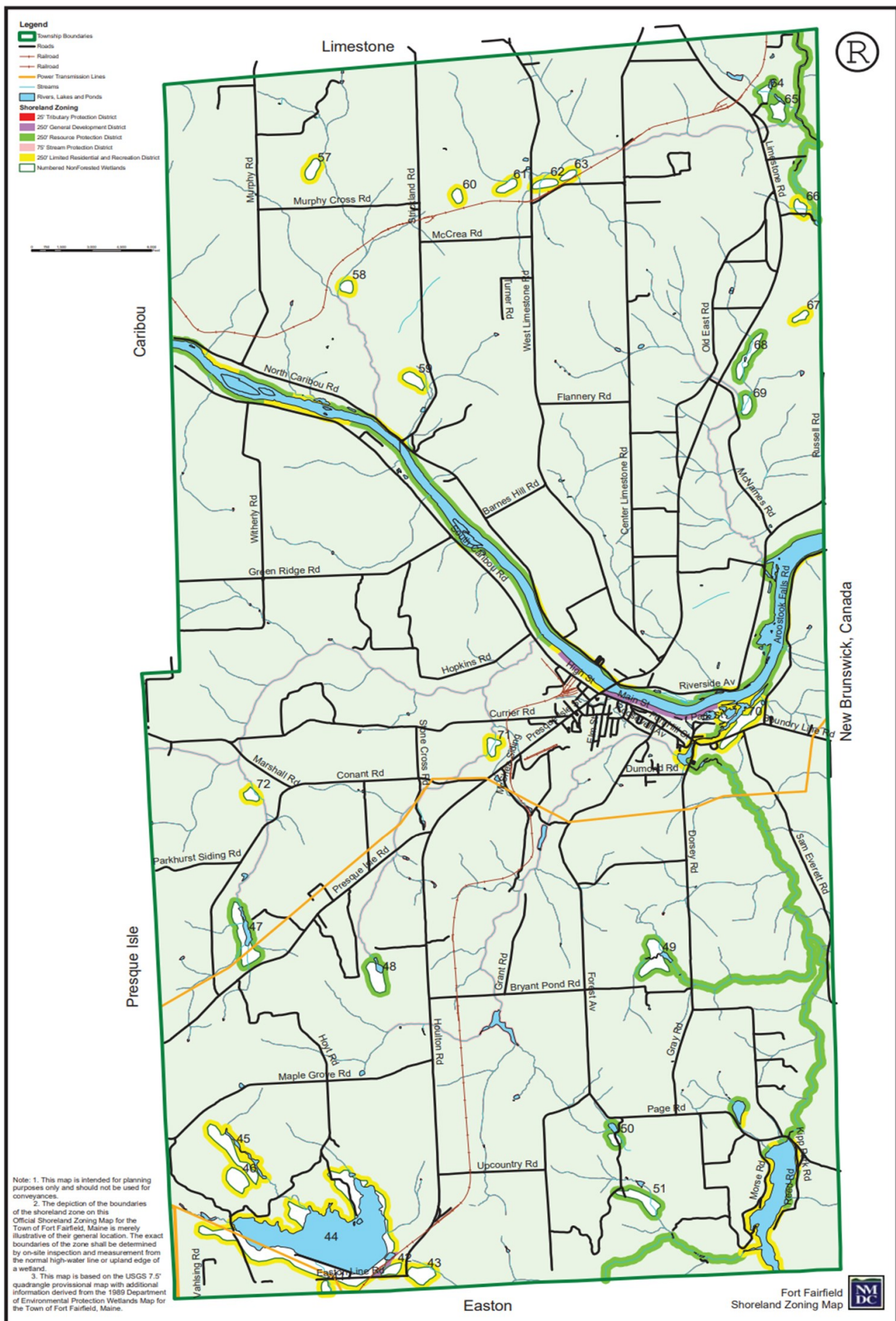
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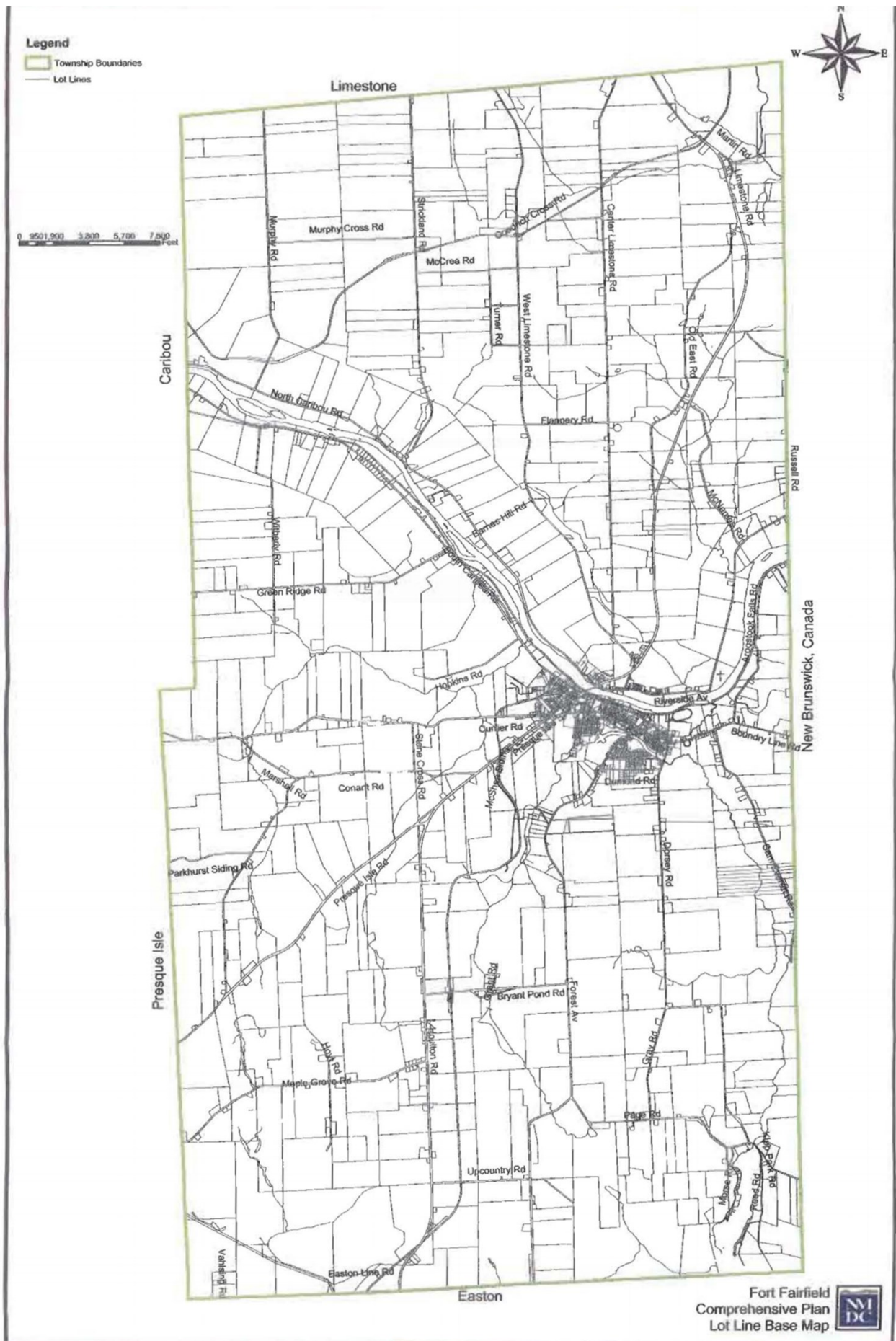


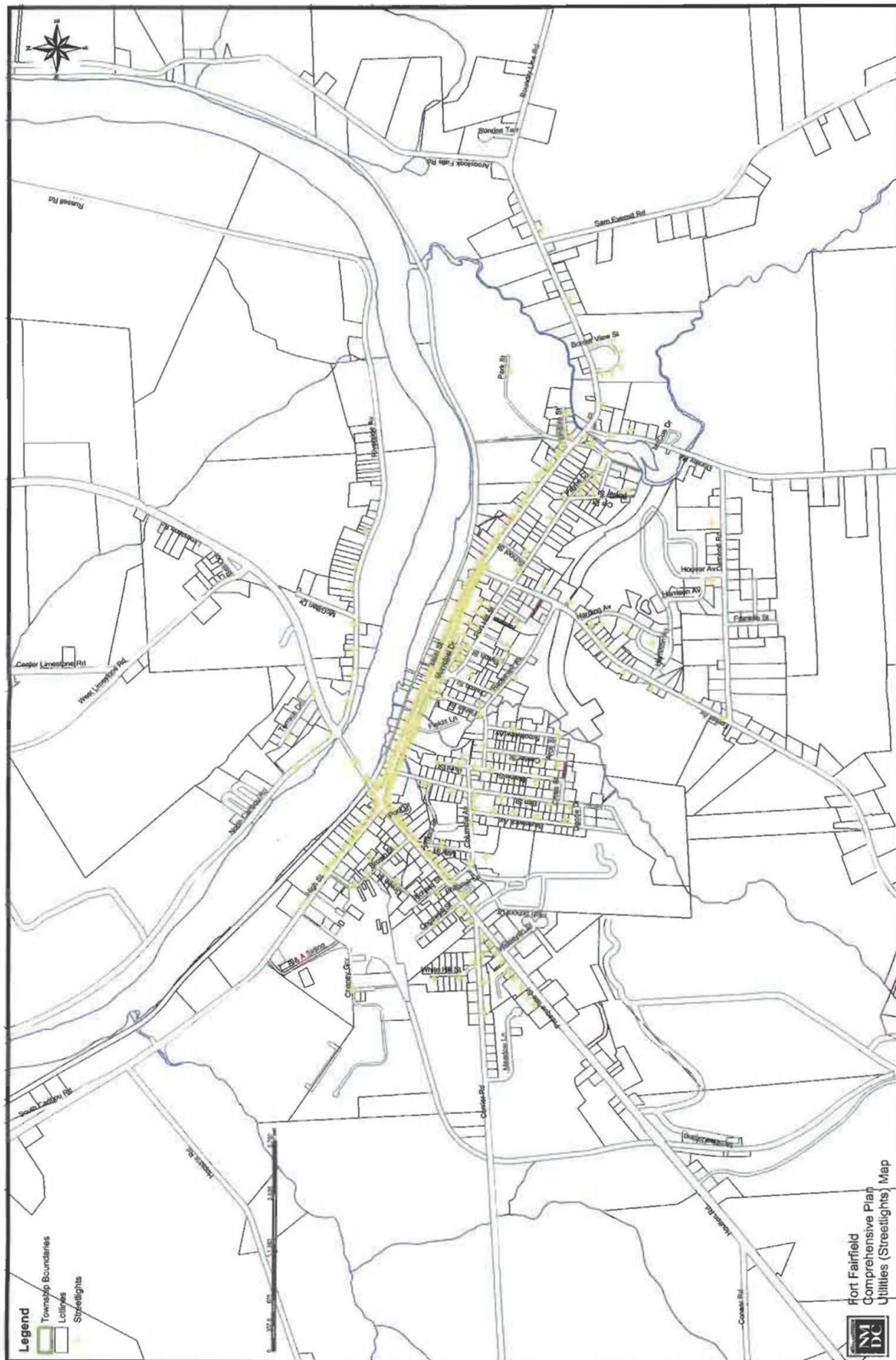
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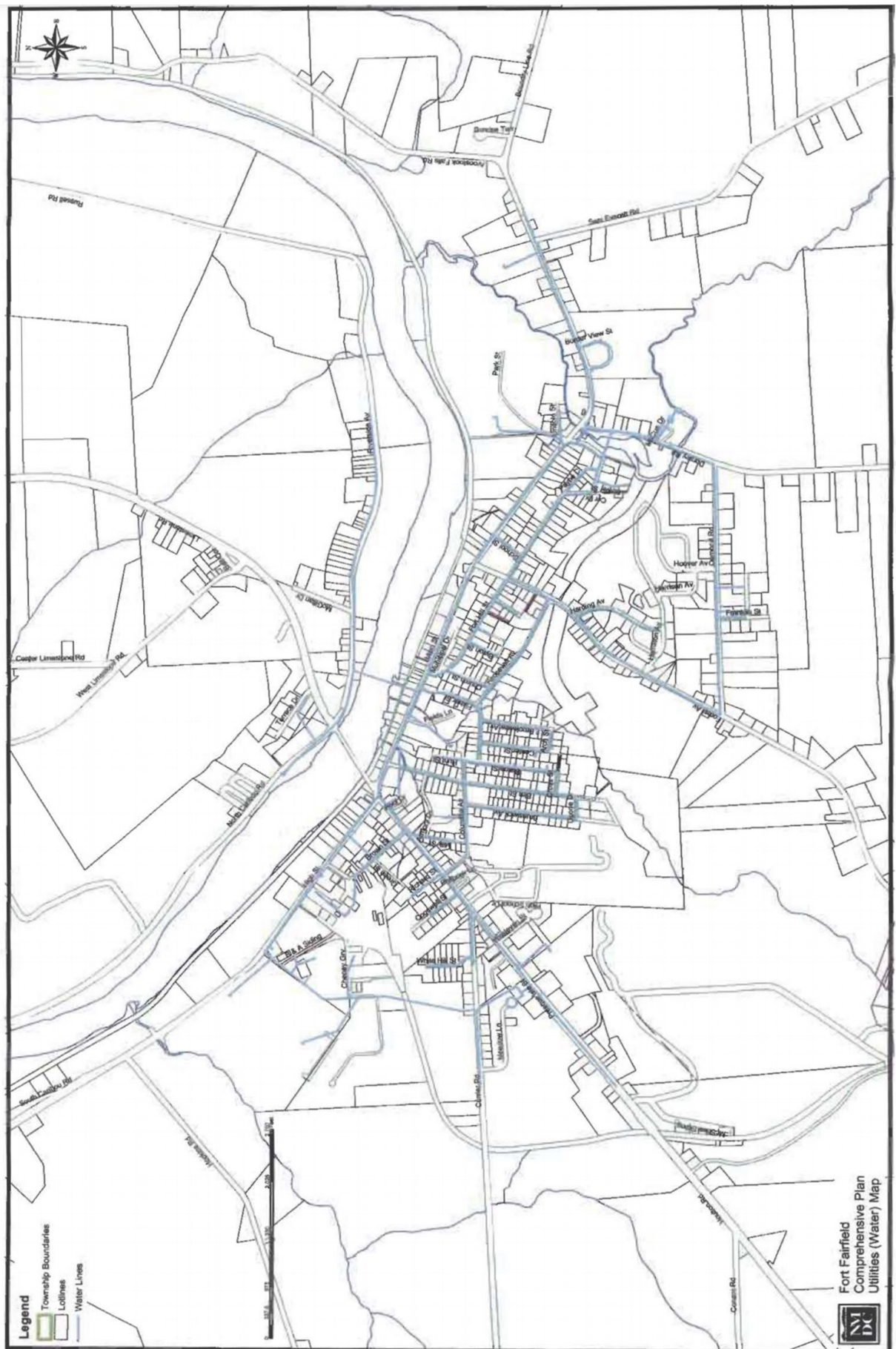
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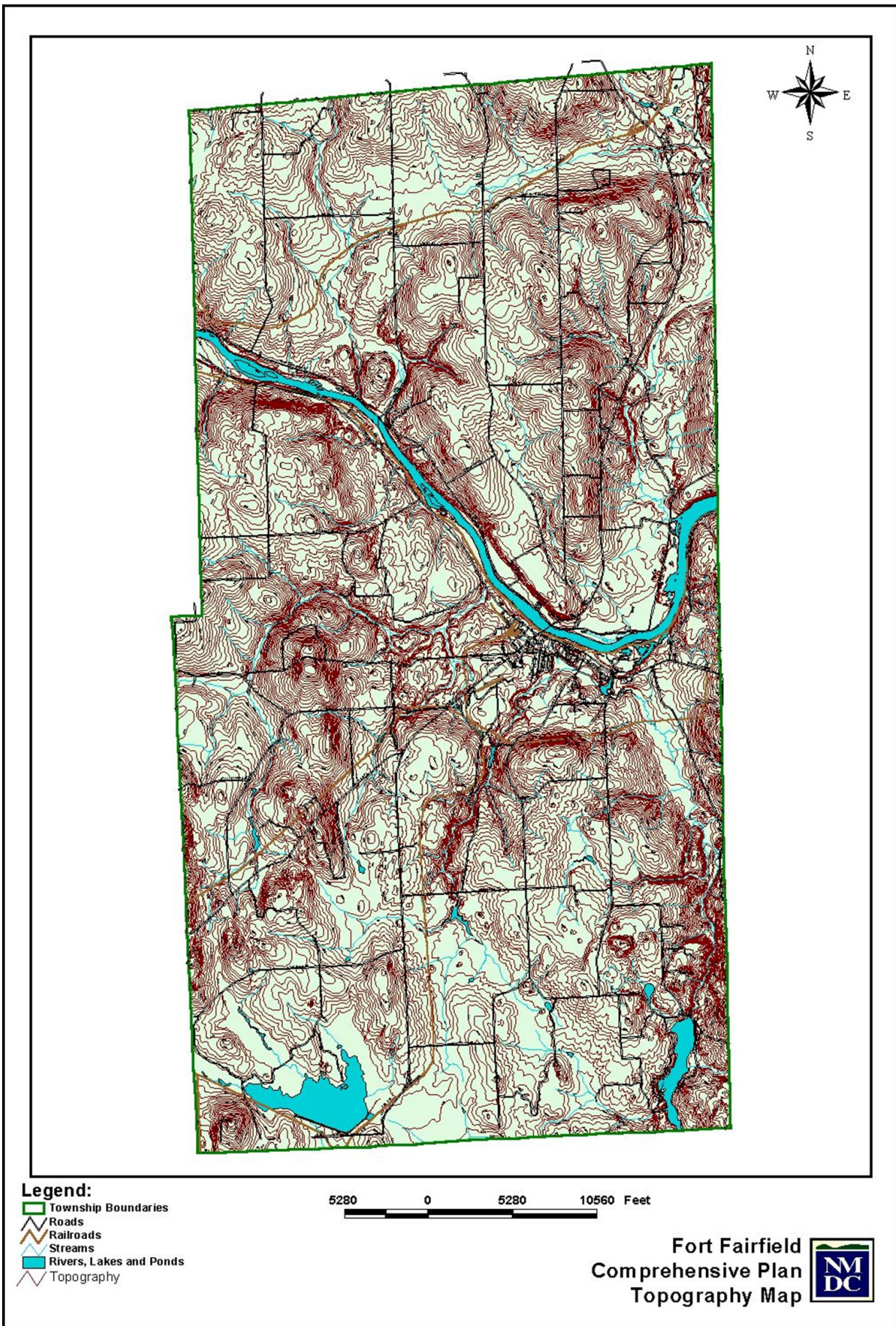


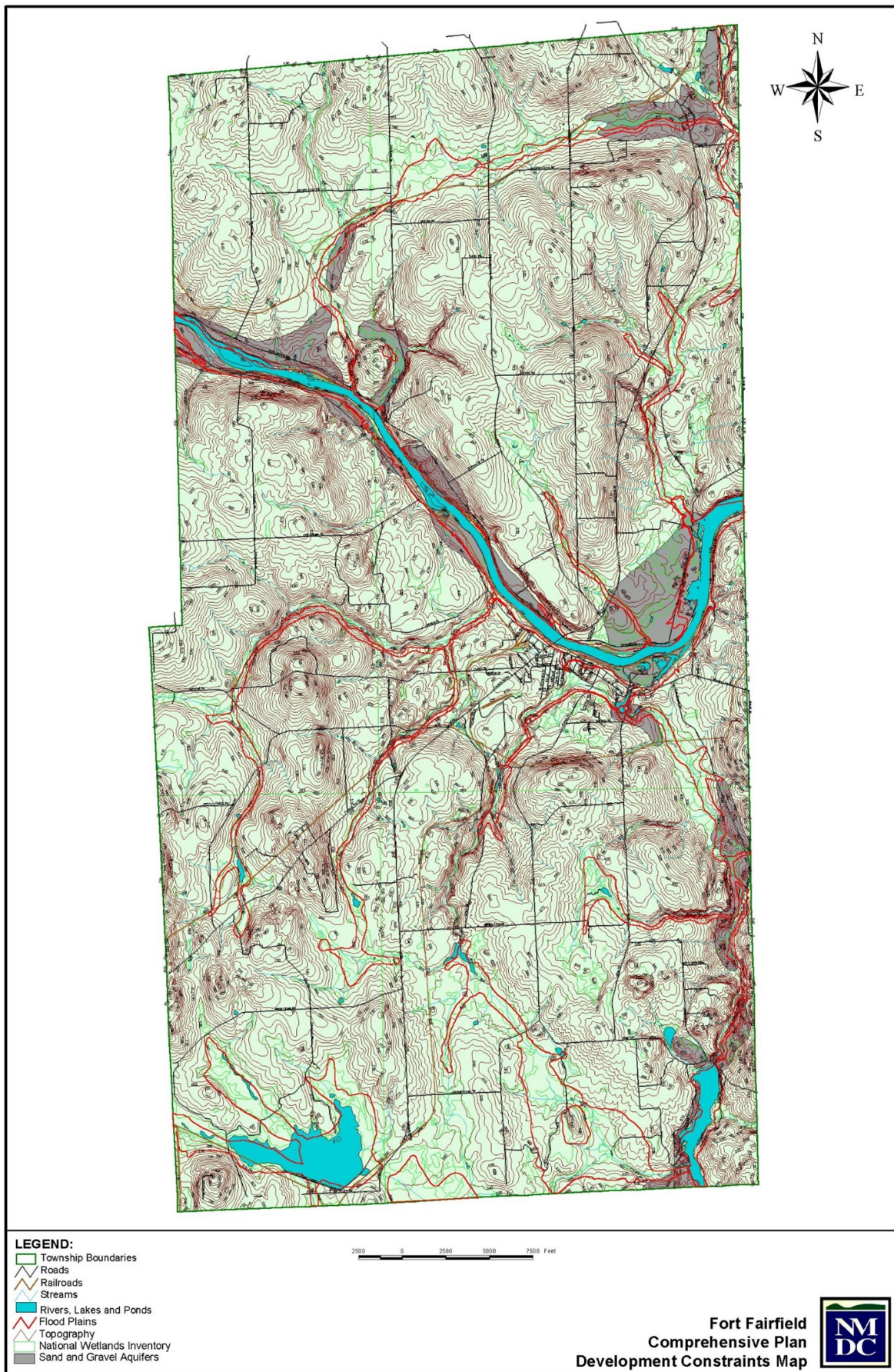


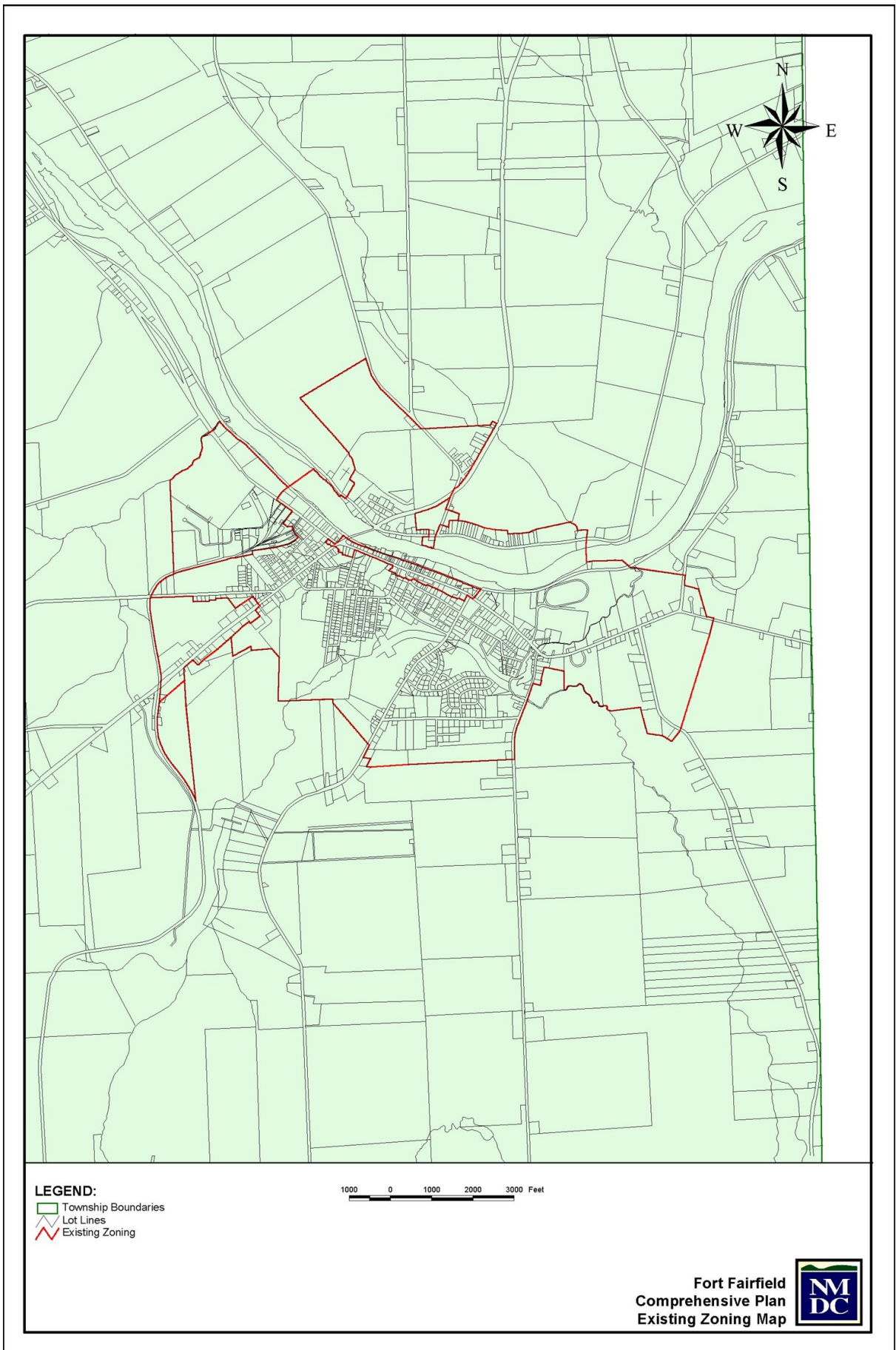
















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