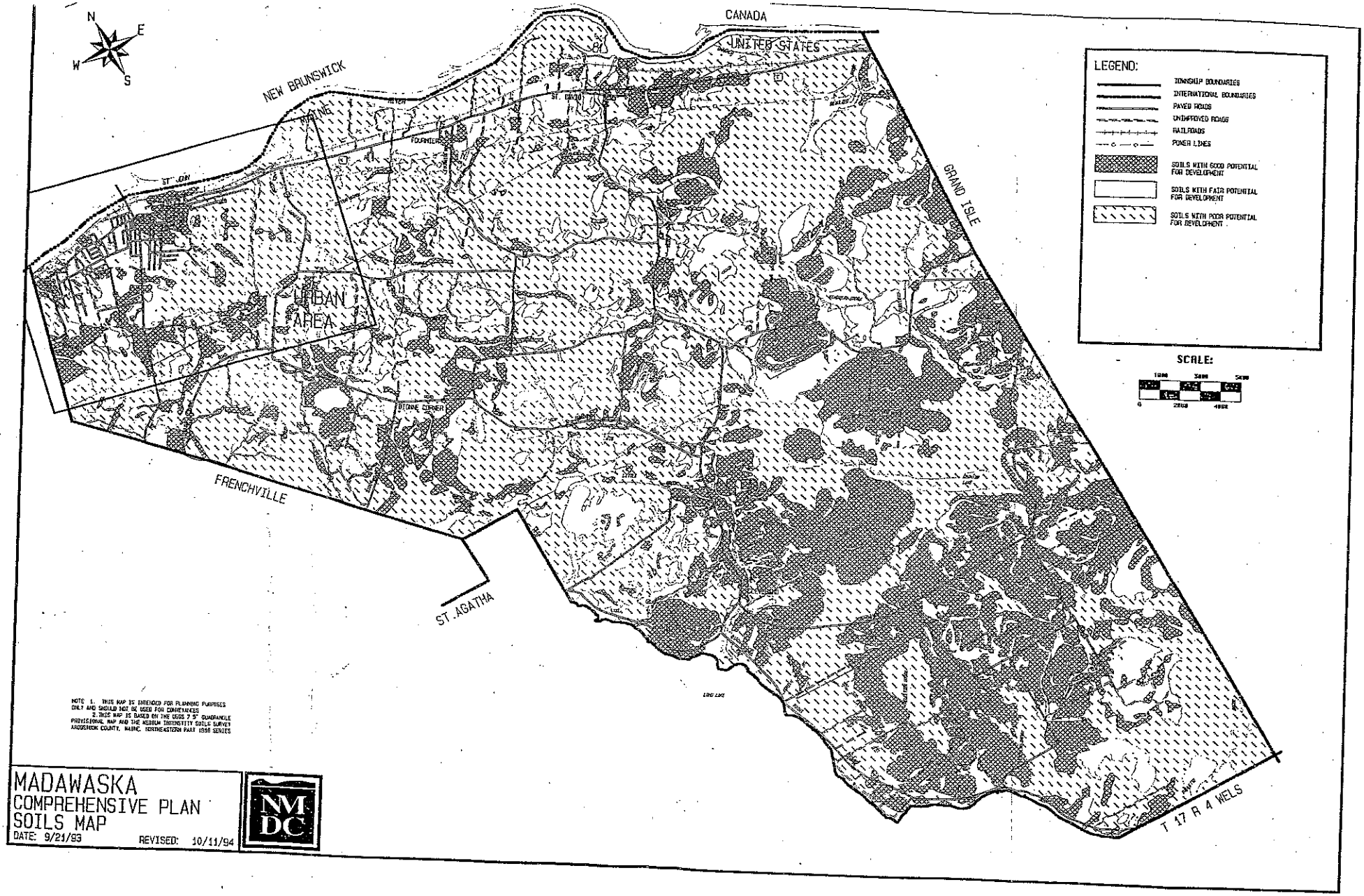

N
E
W
S
CANADA
UNITED STATES
NEW BRUNSWICK
MAINE
ST. JOHN
ST. DAVID
FOURNIER
GRAND ISLE
URBAN AREA
DIONNE CORNER
FRENCHVILLE
ST. AGATHA
T 17 R 4 WELS
LEGEND:
TOWNSHIP BOUNDARIES
INTERNATIONAL BOUNDARIES
PAVED ROADS
UNIMPROVED ROADS
RAILROADS
POWER LINES
SOILS WITH GOOD POTENTIAL FOR DEVELOPMENT
SOILS WITH FAIR POTENTIAL FOR DEVELOPMENT
SOILS WITH POOR POTENTIAL FOR DEVELOPMENT
SCALE:
NOTE 1. THIS MAP IS INTENDED FOR PLANNING PURPOSES ONLY AND SHOULD NOT BE USED FOR CONVEYANCES
2. THIS MAP IS BASED ON THE USGS 7 5' QUADRANGLE PROVISIONAL MAP AND THE MEDIUM INTENSITY SOILS SURVEY AROOSTOOK COUNTY, MAINE, NORTHEASTERN PART 1956 SERIES
MADAWASKA
COMPREHENSIVE PLAN
SOILS MAP
DATE: 9/21/93
REVISED: 10/11/94
NMDC

Water Resources

Water resources can exert their impact on community development by separating land uses and serving as buffer to land development. Conversely, they often provide a common focal point for particular types of development and thus serve to link land uses together. There are twenty-eight water bodies in Madawaska. Of these 24 are brooks which include; Paulette, Thibodeau, Lower Beaulieu, Beaulieu, Ouellette, Big, Little, Gagnon, Factory, Lagasse, Albert, Martin, Lavoie, Fournier and ten unnamed brooks. The remaining four water bodies include two rivers; St. John and Little Rivers, and two lakes; Long Lake and Germain Lake.

Rivers and Brooks

Rivers and brooks have formed over geologic time in response to natural drainage patterns on the landscape. Surface runoff, groundwater, and topography have combined to form these drainage patterns over the entire State of Maine. According to Maine's Natural Resources Protection Act (NRPA), a river, stream or brook means... "a channel between different banks created by the action of surface water with two (2) or more of the following characteristics:

a. It is depicted as a solid or broken blue line on the most recent addition of the USGS 7.5 minute series topographic map, or if it is not available, a 15 minute series topographic map.
b. It contains or is known to contain flowing water continuously for a period of at least three (3) months of the year in most years.
c. The channel bed primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water.
d. The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, within the stream bed.
e. The channel contains aquatic vegetation and is essentially devoid of upland vegetation.

River, stream, or brook does not mean a ditch or other drainage way constructed and maintained solely for the purpose of draining stormwater, or a grassy swale."

The Water classification system, described below, was established by the Maine State Legislature to establish standards, and to empower the Department of Environmental Protection to enforce the standards. As illustrated in Table 8-3, all brooks located in Madawaska are classified as class B. The St. John River to the International Bridge is Class B waters and south of the bridge Class C.

Table 8-3
Standards for the Classification of Fresh Surface Waters

Class B Waters. Class B shall be the 3rd highest classification.

A. Class B waters shall be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; and navigation; and as habitat for fish and other aquatic life. The habitat shall be characterized as unimpaired.

B. The dissolved oxygen content of Class B waters shall be not less than 7 parts per million or 75% of saturation, whichever is higher, except that for the period from October 1st to May 14th, in order to ensure spawning and

egg incubation of indigenous fish species, the 7- day mean dissolved oxygen concentration shall not be less than 9.5 parts per million and the 1-day minimum dissolved oxygen concentration shall not be less than 8.0 parts per million in identified fish spawning areas. Between May 15th and September 30th, the number of Escherichia coli bacteria of human origin in these waters may not exceed a geometric mean of 64 per 100 milliliters or an instantaneous level of 427 per 100 milliliters.

C. Discharges to Class B waters shall not cause adverse impact to aquatic life and that the receiving waters shall be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes in the resident biological community.

Class C Waters. Class C shall be the 4th highest classification.

A. Class C waters shall be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; and navigation; and as a habitat for fish and other aquatic life.

B. The dissolved oxygen content of Class C water may be not less than 5 parts per million or 60% of saturation, whichever is higher, except that in identified salmon spawning areas where water quality is sufficient to ensure spawning, egg incubation and survival of early life stages, that water quality sufficient for these purposes must be maintained. Between May 15th and September 30th, the number of Escherichia coli bacteria of human origin or an instantaneous level of 949 per 100 milliliters. The board shall promulgate rules governing the procedure for designation of spawning areas. Those rules must include provision for periodic review of designated spawning areas and consultation with affected persons prior to designation of a stretch of water as a spawning area.

C. Discharges to Class C waters may cause some changes to aquatic life, provided that the receiving waters shall be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community.

Source: Department of Environmental Protection

Table 8-4
Classification of Madawaska's Brooks and Rivers

	Classification		Classification
Brooks			
Albert	B	Lower Beaulieu	B
Beaulieu	B	Martin	
Big	B	Lower half	B
Factory	B	Upper half	B
Fournier	B	Ouellette	B
Gagnon	B	Paulette Brook	B
Lagasse	B	Thibodeau	B
Lavoie	B	Unnamed (1)	B
Little	B	Unnamed (9)	B
River			
St. John			
To International Bridge	B	From International Bridge	C

Source: Department of Environmental Protection

Lakes

There are two lakes located within Madawaska's boundaries; Long Lake, and Germain Lake. Long Lake, with a surface area of 6,711.1 acres, is the Town's most important water resource because of its recreational use. Table 8-5 contains a summary of key characteristics for Madawaska's lakes. The heading labeled "loading factor" refers to the Town's share of the total amount of phosphorus that it would take to raise the phosphorus content of the lake by 1 part per billion. The water quality classification column contains the classification assigned to the various water bodies by the Department of Environmental Protection.

Lakes in Madawaska are classified for phosphorus loading as moderate/sensitive. This is defined as "lakes having clarity, algae, and nutrient levels similar to the moderate/stable lakes, but that have a higher potential for developing algae bloom because of significant summertime depletion of dissolved oxygen levels in the hypolimnion and/or large seasonal fluctuations in algae and nutrient levels.

The two lakes are also rated as Class GPA waters. This means that the water shall be of such quality that it is suitable for drinking water after disinfection, recreation in and on the water, fishing, industrial process and cooling water supply, hydroelectric power generation and navigation, and as habitat for fish and other aquatic life. The habitat shall be characterized as natural.

Class GPA water shall have a stable or decreasing trophic state, subject only to natural fluctuations and shall be free of culturally induced alga blooms which impair their use and enjoyment. The amount of Escherichia coli bacteria of human origin in this water may not exceed a geometric mean of 29 per 100 milliliters or an instantaneous level of 194 per 100 milliliters.

There may be no new direct discharge of pollutants into Class GPA waters. Aquatic pesticide treatments or chemical treatments for the purpose of restoring water quality approved by the MDEP are exempt from the no discharge provision. Discharges into these waters licensed prior to January 1, 1986 are allowed to continue only until practical alternatives exist. No materials may be placed on or be removed from the shores or banks of a Class GPA water body in such a manner that materials may fall or be washed into the water or that contaminated drainage therefrom may flow or leach into those waters, except as permitted. No change of land use in the watershed of a Class GPA water body may, by itself or in combination with other activities, cause water quality degradation that would impair the characteristics and designated uses of downstream GPA waters or cause an increase in the tropic state of those GPA waters.

Table 8-5
Characteristics of Madawaska's Lakes

Water Body	Surface Area (Acres)	Total Drainage Area (Acres)	% of Drainage Area in Madawaska	Loading Factor (Pounds)	Water Quality Classification	Class
Germain Lake	-	1,324	100.0	7.76	Moderate/Sensitive	GPA
Long Lake	6,711.1	14,331	28.7	210.15	Moderate/Sensitive	GPA

Source: Water Quality Division, Department of Environmental Protection.

The Department of Environmental Protection maintains water quality test data for many of Maine's lakes, including Long Lake. In general, data on color, pH, and transparency (secchi disk) are gathered by volunteers. The Department of Environmental Protection generally gathers data on chlorophyll and phosphorus, and calculates the trophic status indices. Table 8-6 contains an explanation of what the various categories mean.

Table 8-6
Explanation of Water Quality Test Results

Secchi (meters)

Secchi disk transparency is a measure of water clarity and quick method of estimating water quality. Transparency values typically range from 3 meters(m) to 7m with 5.6m as an average. Rarely, clarity may exceed 10m or diminish to less than 2m. Unless a lake is highly colored (see explanation of color below), a transparency of 2m or less indicates water quality problems in the form of algae blooms.

Color

The amount of "color" in lake water refers to the concentrations of natural dissolved organic acids such as tannins and lignins, which may give the water a tea color. Clear lakes can be defined as ranging in value from 0-25 standard platinum units (SPU); 26 SPU and over are considered colored lakes. Color does not contribute to algae production, but it can reduce Secchi disk and increase Total Phosphorus readings. A tea-colored lake can be just as unproductive as a clear water lake.

Chlorophyll A (Chl A)

Chlorophyll A is a green pigment in algae. The amount of Chlorophyll A in a water sample is an indicator of the abundance of algae and an indication of productivity in the lake. Typically, values range from 2 to 8 parts per million (ppm). Lake productivity can be rated on average Chlorophyll A values as follows: productive: 7 ppm or greater; moderately productive: 2-7 ppm; unproductive: 2 ppm or less. During algae blooms, Chlorophyll A can reach levels of 30 ppm or greater.

Total Phosphorus (TP)

Total Phosphorus is one of the major nutrients needed for plant growth. In most Maine lakes it is present in small amounts. This scarcity of phosphorus usually limits plant growth in lakes, but when phosphorus is added in large enough quantities by human activities, the result is excessive plant growth, usually in the form of algae blooms. Values generally range from 5 to 12 parts per billion (ppb). Values in excess of 15 ppb are of concern because that

level can support algae blooms. Lake productivity can be estimated using seasonal average total phosphorus as follows: productive: 15 ppb or more; moderately productive: 6-15 ppb; unproductive: 6 ppb or less.

Trophic State Indices (TSI)

TSI is a scale which ranks lakes 0 to 100+ with 0 supporting very few algae, and 100 being very productive. TSI can be calculated from the Secchi disk, Chlorophyll A, and other tests. Lakes with TSI values based on Chlorophyll A that are greater than 60 are likely to have blooms and values over 100 indicate extremely high productivity.

pH

The pH of a lake is important in determining the plant and animal species living there and reflects how acidic or basic levels of the water. Values typically range from 6.1 to 6.8 for most Maine lakes.

Alkalinity (Alk)

Alkalinity is a measure of the amount of calcium carbonate in the water and reflects the ability of water to act as a buffer to limit pH changes. In Maine lakes, alkalinity generally ranges from 4-20 parts per million (ppm). A higher alkalinity (greater than 10 ppm), indicates that a lake will be able to withstand the effects of acid rain longer than lakes with low alkalinity (less than 4 ppm). The first effect of acid precipitation on a lake is likely to be a reduction in alkalinity and not pH.

Conductivity (Cond)

Conductivity is a measurement of the ability of water to carry an electrical current and is directly related to the dissolved ions (charged particles) present in water. The values for Maine lakes are generally low, 20-40 micro umhos per centimeter (umhos/cm).

Source: Department of Environmental Protection

A review of chemical and trophic state parameters for the water quality testing data on file with the Department of Environmental Protection for Madawaska's Long Lake according to the measures of lake water quality defined in Table 8-6, above, Long Lake is clear and will have the ability to withstand the effects of acid rain due to its high alkalinity (ALK) measurement. Total phosphorous levels in Long Lake have been relatively high, with a peak reading of 25 parts per billion (ppb) on the bottom of the lake in 1977. Values in excess of 15 ppb are of concern because higher levels can support algae blooms. This concern is also reflected in some of the higher Chlorophyll A productivity readings.

Watershed

A watershed is the land area draining into a given body of water. Long Lake along with Cross, Mud, Square, Eagle, St. Froid, and Portage lakes and a multitude of tributaries entering and leaving these lakes are all part of the Fish River Lakes Watershed. The Fish River Lakes Watershed has a drainage area of about 890 square miles. Drainage flows from Fish River Lake to Eagle Lake and from Long Lake to Eagle Lake, then following Fish River to the St. John River, which serves as an international boundary between Northern Maine and Canada.

Water quality in the Long Lake watershed is influenced primarily by agricultural, forestry, and residential activities. Major tributaries feeding the Long Lake watershed, and the primary activities impacting on the water quality of each, are: Little River, agriculture; Paulette Brook,

forestry; and Factory Brook, residential and agriculture. (RC&D, 2-1). Long Lake, with a maximum depth of 163 feet and an average depth of 48 feet, is the deepest of the Fish River Chain of Lakes. The average temperatures of Long Lake are 65 degrees Fahrenheit on the surface and 54 degrees Fahrenheit at 150 feet. Covering an area of 6,000 acres, Long Lake is surrounded by both agricultural and forest land. The lake supports a sport fishery of brook trout, land locked salmon (which is stocked) and rainbow smelt, (which is harvested hook-and-line both summer and winter) (RC&D 2-2).

Groundwater and Aquifers

Groundwater is water contained within the open spaces between soil, sand, gravel and till material and within fractures in rock. The water comes from rain and snow melt which soaks into the ground and is held there.

Groundwater usually moves very slowly through the ground from high places toward low places and ultimately discharges to some nearby surface water body such as a stream, river, spring, pond, lake, swamp, or bog. In Maine, groundwater seldom travels more than a mile or two before discharging and becoming surface water. This process is important as the slow discharge of groundwater to surface water bodies helps sustain their levels between storms (Department of Environmental Protection).

Groundwater exists in formations called aquifers. Aquifers are rocks that can yield usable quantities of water. Wells that are properly constructed in these aquifers have the capacity to yield large volumes of water. The Maine Geological Survey has identified an area along the St. John River as well as two areas near Long Lake, one located near the Madawaska/St Agatha townline, and a second along Little River, as having surface deposits with moderate to good potential ground water yield, yields generally greater than 10 gal/min to a properly constructed well. Deposits consist primarily of glacial sand and gravel, but can include sandy till and alluvium in areas.

An area near the St John River, (location of the aquifer is identifiable by the flow of Factory Brook to the river), has been identified by the Maine Geological Survey as having surface deposits with good to excellent potential ground water yield. Yields are generally greater than 50 gal/min to a properly constructed well. Deposits consist primarily of glacial sand and gravel, but can include sand till and alluvium in areas (Maine Geological Survey, 1989).

Point Sources of Pollution

Point source pollution can be traced to an identified pipe or value and is regulated through a waste discharge license issued by the state and/or federal government. Point source pollution comes from the discharge of pollutants directly to surface waters. Such discharges, usually in the form of treated wastewater, can come from municipal and industrial sewage treatment plants and from individual treatment systems called overboard discharges. The amount and type of pollution in the wastewater depends on the number and types of residences, businesses and industries discharging to the treatment facility and the facility's ability to treat the wastewater to remove the pollutants (Department of Environmental Protection). The Department of Environmental Protection and Environmental Protection Agency are aware of two point sources

of pollution in the Town of Madawaska; one located at Fraser Paper Limited and the other at the Madawaska Pollution Control Plant.

Non-Point Sources of Pollution

Non-point sources of pollution can be caused by rainfall or snow melt moving over the through the ground. As the runoff moves across the landscape, it carries along natural and man-made pollutants, depositing them in lakes, rivers, streams, and wetlands. Sources of non-point source pollution include: 1) excess fertilizers, herbicides, insecticides, insecticides draining from agricultural and residential areas; 2) oil, grease and toxic chemicals from energy production; 3) winter road salt; 4) bacteria and nutrients from livestock, pet wastes and faulty septic systems; and 5) destruction of natural habitat by paving, rip-rap, stabilizing projects, lawns, or removal of natural vegetation (Department of Environmental Protection).

The Department of Environmental Protection has identified twenty-two underground tanks in sensitive areas in Madawaska. These tanks are primarily being used for the storage of kerosene, #2 fuel oil, regular, premium, unleaded, premium unleaded and diesel fuels. Five areas in Madawaska have been identified as potential point sources for contamination;

1. Madawaska Water District's treated discharge into the St. John River,
2. Town of Madawaska's sand-salt storage facility located at the public works building,
3. Maine Department of Transportation's sand-salt storage facility located on Fournier Road,
4. Town of Madawaska's sand-salt storage facility located on Lavertu Road, and
5. A septic disposal site located near Cote Farm Road.

In order to reduce non-point sources of pollution in Madawaska, the Community Development Office has been involved with the Department of Environmental Protection's Small Community Grant Program. The program can provide up to 80% grant funding of sewage treatment and disposal systems to eliminate wastewater discharges which impact drinking water supplies, degrade water quality, or cause a public nuisance. The program is intended to provide facilities in rural areas of the state not served by public sewers (Department of Environmental Protection). The program covers 80% of the replacement cost of a year-round residence, 50% of a business, and 25% of a seasonal residence.

The Community Development Office administers the program on a walk-in basis. Since 1882, a yearly advertising campaign has been taken to encourage the citizens of Madawaska to apply for funding. Grant awards are made on income eligibility, whether the applicant is the owner of the home or business, and the Department of Environmental Protection's approval. The Community Development Office repairs or replaces five septic systems yearly.

Floodplains

The National Flood Insurance Program is administered by the Federal Emergency Management Agency (FEMA). The program has been designed to provide flood insurance for existing properties and to discourage additional development within the 100-year floodplain. A 100-year flood is a flood with a one percent chance in any given year of being equaled or exceeded. Floodplains are best suited for uses such as open space, recreational uses not requiring major structures, and wildlife habitat.

The Federal Insurance Administration (FIA) has identified areas along the St. John and Little Rivers; Ouellette, Thibodeau and Paulette Brooks; along Germain and Long Lakes; and near Wetlands number 37, 62, and 63 as floodplains. Railroad lines historically mark the edge of the floodplain.

Wetlands

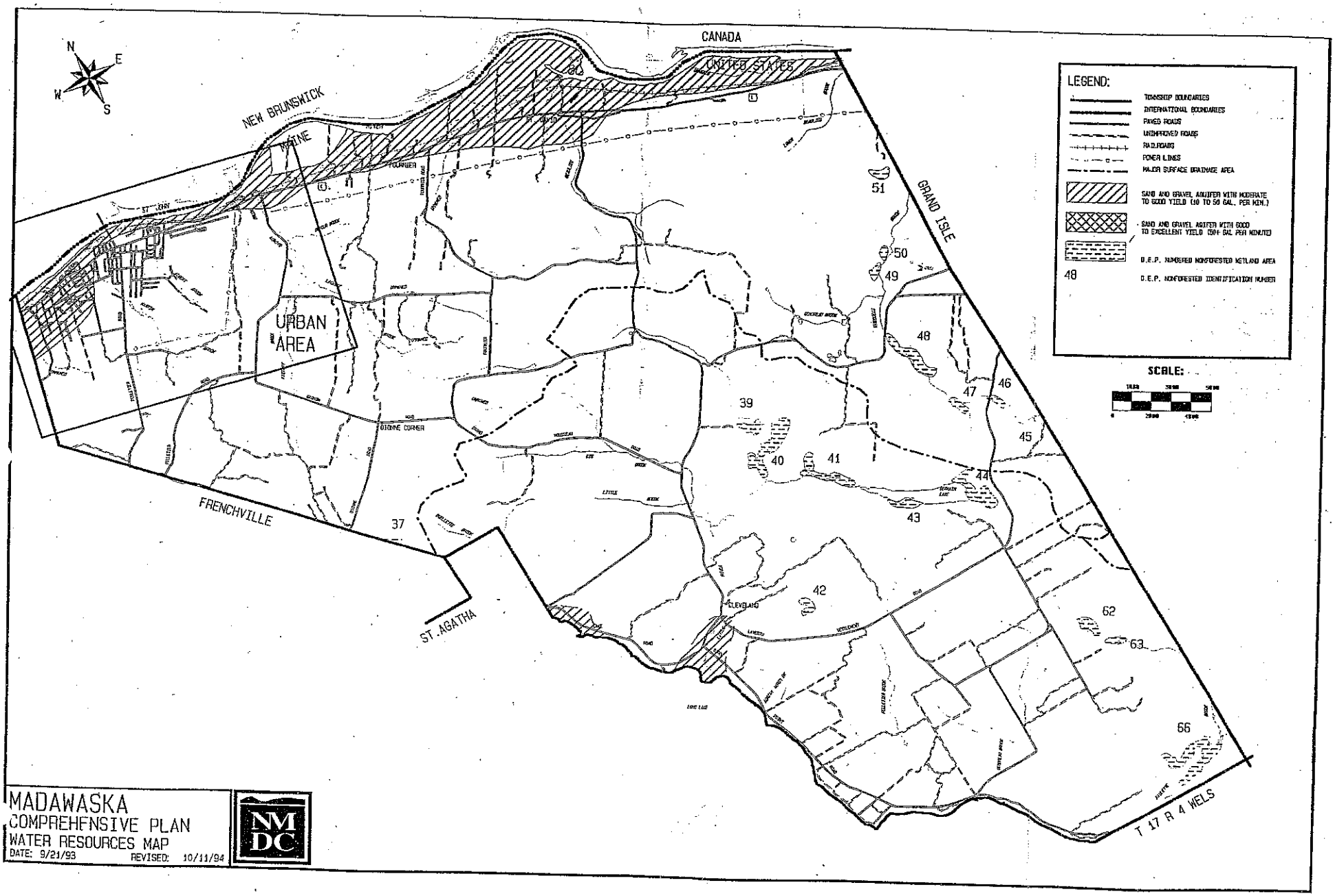
By definition, a freshwater wetland is an area that is inundated or saturated with water at a frequency and duration sufficient to support vegetation adapted to growing in saturated soil. Wetlands will form under a number of climatic and topographic conditions, yet all are dependent on water. The water may come from other surface water bodies, such as a river or lake. Some wetlands are fed solely by groundwater or precipitation (Department of Environmental Protection).

Table 8-7 provides a summary of Madawaska's wetlands by identification number, Maine Inland Fisheries and Wildlife Wetland type, soil type and Inland Fisheries and Wildlife rating. The wetland ratings used in the wetlands map are based on a wetlands inventory and assessment completed in 1972 by the Maine Department of Inland Fisheries and Wildlife.

Table 8-7
Description of Wetlands

Wetland #	IF&W Wetland Type	Soil Types	IF&W Rating
37	-	Monarda and Burnham silt loam	Not Rated
39	-	Monarda and Burnham silt loam	High
40	Shrub swamp	Howland gravelly loam and Monarda and Burnham silt loam	High
41	-	Monarda and Burnham silt loam	Medium
42	Open freshwater	Monarda and Burnham silt loam	Not Rated
43	Open freshwater	Peat and Muck	Medium
44	Open freshwater	Peat and Muck	Medium
45	-	Monarda and Burnham silt loam	High
46	Shrub swamp	Monarda and Burnham silt loam	Low
47	Shrub swamp	Mixed Alluvial soils	Low
48	Open freshwater	Howland gravelly loam, Mixed Alluvial soils, and Monarda & Burnham silt loam	Low
49	Wooded swamp	Mixed Alluvial soils	Not Rated
50	-	Mixed Alluvial soils	Not Rated
51	-	Mixed Alluvial soils	Not Rated
62	Open freshwater	Monarda and Burnham silt loam	Medium
63	Shrub swamp	Monarda and Burnham silt loam	Medium
66	Shrub swamp	Monarda and Burnham silt loam	Medium

Sources: Maine Department of Inland Fisheries and Wildlife and the Northern Maine Development Commission



MADAWASKA
COMPREHENSIVE PLAN
WATER RESOURCES MAP
DATE: 9/21/93 REVISED: 10/11/94

NMDC

Significant Wildlife Habitat

Significant wildlife habitat refers to an area that is critical to maintaining a population of certain species of wildlife which are considered to be of value to the State. As defined under the Natural Resources Protection Act (NRPA), the following areas, to the extent that they have been mapped by the Department of Inland Fisheries and Wildlife (IF&W), are considered significant wildlife habitat: 1) habitat for species appearing on the official state or federal lists of endangered or threatened species; 2) high and moderate value deer wintering areas and travel corridors as defined by the IF&W; 3) high and moderate value waterfowl and wading bird habitat, including resting and feeding areas as defined by the IF&W; and 4) critical spawning and nursery areas for Atlantic sea run salmon as defined by the Atlantic Sea Run Salmon Commission, and IF&W.

Generally, significant wildlife habitat areas are locations frequented by these species during all or a portion of their life cycles. The are utilized because of their unique characteristic, which may include cover, a nearby food source, a certain type of bottom substrata or the areas' lack of human disturbance (Department of Environmental Protection). Only waterfowl and wading bird habitats have been found in the Town of Madawaska.

Waterfowl and wading birds are a diverse group of species which make significant but not exclusive use of wetlands. Waterfowl are defined in Maine statue as species of the family Anatidae, which include ducks and geese but not grebes and loons. Wading birds are considered to include bitterns, herons, egrets, ibis, rails, coots, and moorhens (IF&W). Table 8-9 lists IF&W identified waterfowl and wading bird habitat areas by location, Maine Department of Inland Fisheries and Wildlife (MDIFW#) assigned number corresponding to an area on the Significant Wildlife map, and rating. The areas receiving indeterminate ratings were researched through aerial photographs, while all other areas were rated through ground research.

Table 8-9
Waterfowl and Wading Bird Habitat

Location	MDIFW#	Rating
Tributary of Thibodeau Brook	130438	Moderate
Thibodeau Brook	130440	Moderate
Tributary of Lavels Lake	130443	Moderate
Germain Lake	130444	High
Little River	130445	Indeterminate
Tributary of Paulette Brook	130446	Moderate
St. John River	130448	High
St. John River	130449	Indeterminate
St. John River	130450	Indeterminate

Source: Department of Inland Fisheries and Wildlife

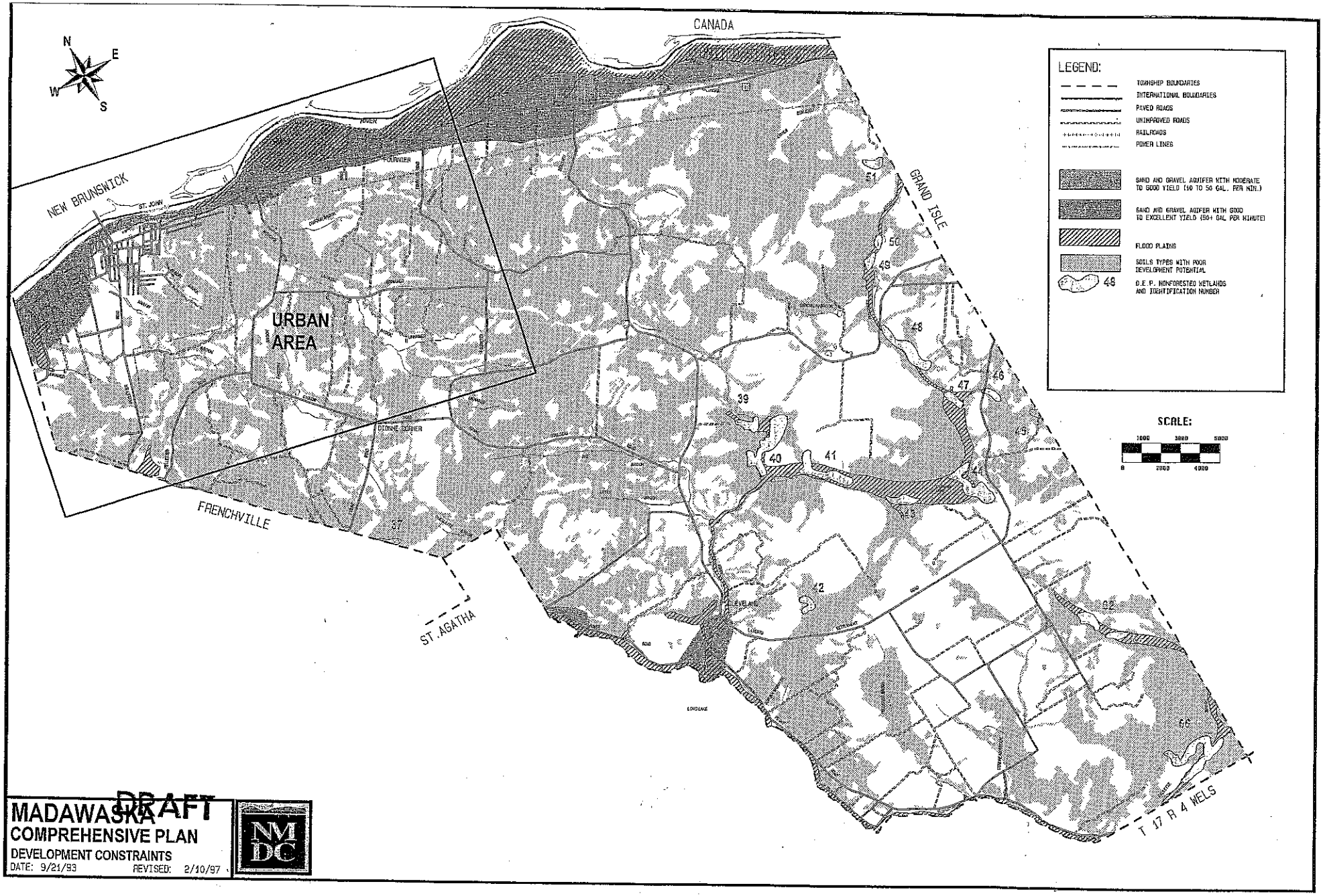
Critical and Unique Natural Heritage Areas

Unique natural areas include any occurrences of endangered, threatened, or rare plants, animals, and natural biological communities as identified by the Natural Heritage Database of the Maine Department of Economic and Community Development. The Maine Natural Heritage Program (MNHP) has documented ten rare plant species in Madawaska. The MNHP is a state-wide inventory and data management system for rare plants, animals, and natural communities. It's primary objectives are to monitor the location and statue of these rare features which contribute to our natural diversity and to provide data for permit review, land use planning, and conservation planning. Table 8-10 illustrates these plants by scientific name, common name, survey site and State of Maine rank.

Table 8-10
Critical and Unique Natural Areas in Madawaska

Scientific Name	Common Name	Survey Site	Family	Habitat	MNHP Rating	Maine Rating
Riverside seep	Riverside seep	St John River	-	Fen-like environment that can support a number of rare plant species.	S2	-
Tanacetum bipinnatum	Huron tansy	St John River	Aster	Exposed gravelly or sandy river shores, often calcareous.	S3	T
Hedysarum alpinum	Alpine sweet broom	St John River	Pea	Calcareous rocks and gravels; in Maine, along northern river-shores.	S3	SC
Primula mistassinica	Bird's-eye primrose	St John River	Primrose	Wet calcareous (limy) rocks and gravels; in Maine, along seepy, limy rivershores.	S3S4	WL
Viola labradorica	Alpine violet	St John River	-	Wet to dry rocks, sands, woods, swamps or openings.	S1S2	-
Carex atratiformis	Black sedge	St John River	-	Brooksides, ravines, and damp slopes.	S2	SC
Carex hassei	Garber's sedge	St John River	-	Calcareous marshes, damp ledges, and shores.	S2	WL
Tofielda glutinosa	Sticky false-asphodel	Cemetery Seep	-	Calcareous marshes, damp ledges, shores.	S3S4	WL
Impatiens pallida*	Pale jewel-weed	Madawaska	Touch-me-not	Wet or springy places, often in shade and chiefly in calcareous areas.	S2	T(SC)
Goodyear oblongifolia* plantain	Giant rattlesnake	Madawaska	Orchid	Dense woods, usually coniferous, may be mixed.	S2	E(T)

KEY: MNHP Rating: S1 - Critically Imperiled; S2 - Imperiled; S3 - Rare; S4 - Secure;. ME Rating: T - Threatened; SC - Special Concern; WL - Watch List
Source: Maine Natural Heritage Program * Information based on historical records; location information not site-specific.



DRAFT

MADAWASKA
COMPREHENSIVE PLAN
DEVELOPMENT CONSTRAINTS

DATE: 9/21/93 REVISED: 2/10/97

NMDC