CHAPTER THREE Utilities & Facilities

I. EDUCATIONAL FACILITIES

Public Primary Education

All of the region's towns operate their own elementary schools with the exceptions of Bloomfield, Brunswick, Kirby, Lemington, Maidstone, Victory, Westmore, and the Unorganized Towns and Gores. Towns without their own schools arrange for students to attend other public or independent schools locally or elsewhere (via payment) in the state. Other towns combine educational facilities. Jay and Westfield share the operation of an elementary school. Wheelock and Sheffield operate the Miller's Run School (a K-8 union school) jointly. Stannard and Greensboro operate a K-6 union school together. A trend over recent years has been to consolidate schools in some areas to reduce costs. In addition to town school districts, the region's public education is also organized into nine supervisory unions depicted on the following page, in the NVDA Region: Supervisory Unions & Educational Facilities Map (Map 5).

Private Primary Education

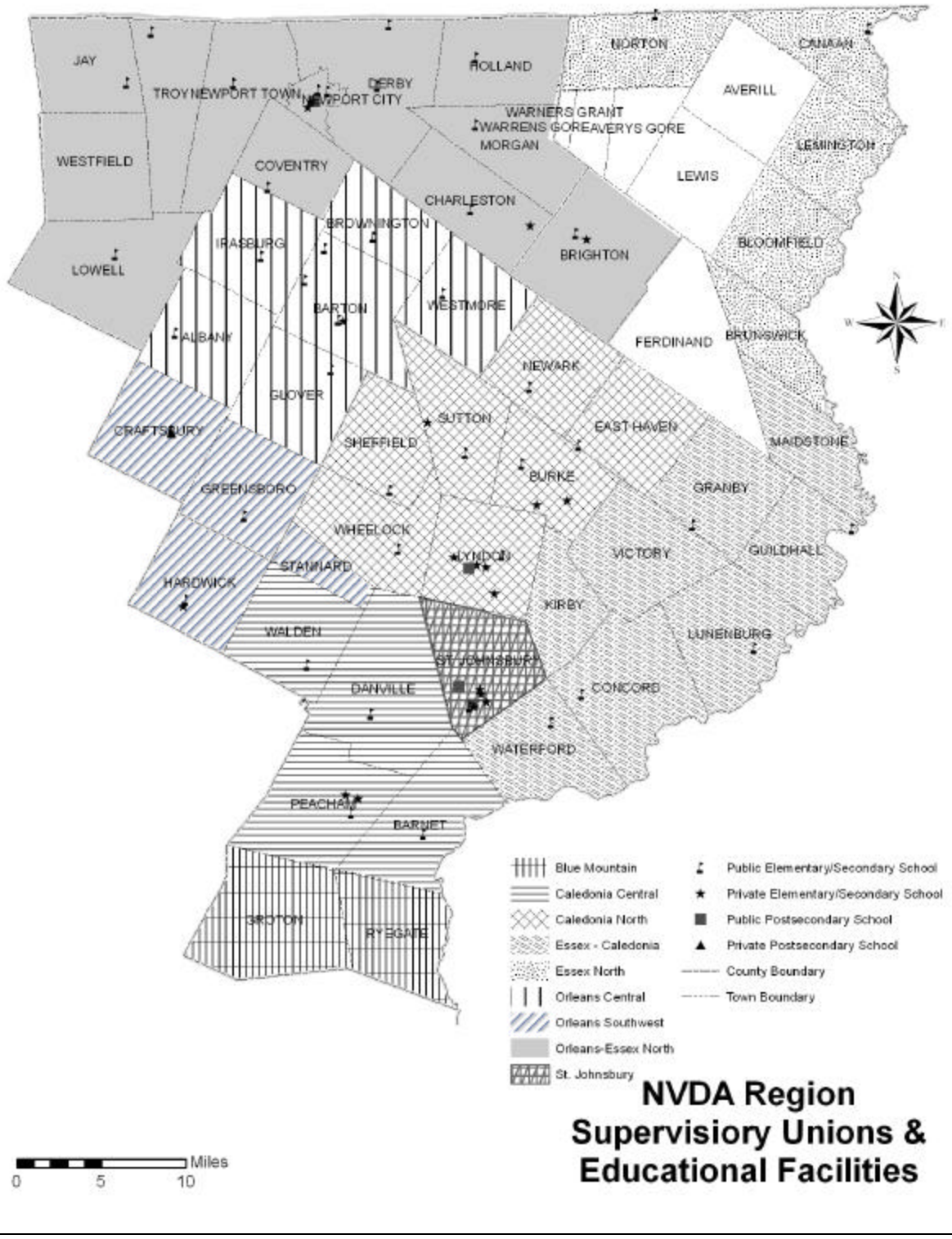
There are many independent schools in the region to supplement the number of public schools. Independent schools (Table 4.0) must be approved by the State of Vermont and are required by state statute to provide a minimum level of curriculum and instruction. Occasionally, independent schools exceed the number of services and opportunities provided by traditional public schools, in part because they may receive both public and private funds, in addition to their independent nature. Independent schools having boarding, or home-stay programs, add greatly to the cultural diversity of the community and act as a generator for the local economy.

Table 4.0: Vermont Dept. of Education "Approved" independent schools

Town	School	Enrollment 2000-2001	Grades / ages	Other
Barton	St. Paul's Elementary School	52	K-8	Roman Catholic Day School
Burke	Burke Mountain Academy	65	8-12	Boarding, college prep. competitive skiing
Lyndon	Lyndon Institute	650	9-12	Day school, some special education
Lyndonville	Riverside Day School	58	4-8	Day School
Newport	Sacred Heart School	102	K-8	Day School
Peacham	The Stevens School of Peacham	16	7-8	Day School
St. Johnsbury	Cornerstone School	30	4-12	Special Education
St. Johnsbury	Good Shepherd Catholic School	127	K-8	Roman Catholic Day school
St. Johnsbury	Intermountain High School	12	9-12	Day school
St. Johnsbury	St. Johnsbury Academy	958	9-12	Day school with some special education
St. Johnsbury	St. Johnsbury Elementary 7th Day Adventist School	6	1-8	Day School

(VT Dept of Education, 2002)

MAP 5:


JAY
TROY
NEWPORT TOWN
NEWPORT CITY
DERBY
HOLLAND
NORTON
CANAAN
AVERILL
WARNERS GRANT
WARRENS GORE
AVERYS GORE
MORGAN
LEMINGTON
WESTFIELD
COVENTRY
LEWIS
CHARLESTON
BROWNINGTON
IRASBURG
BRIGHTON
BLOOMFIELD
LOWELL
BARTON
WESTMORE
ALBANY
FERDINAND
BRUNSWICK
NEWARK
GLOVER
SUTTON
EAST HAVEN
CRAFTSBURY
SHEFFIELD
MAIDSTONE
BURKE
GREENSBORO
GRANBY
WHEELOCK
VICTORY
GUILDHALL
LYNDON
STANNARD
HARDWICK
KIRBY
WALDEN
LUNENBURG
ST JOHNSBURY
DANVILLE
CONCORD
WATERFORD
PEACHAM
BARNET
SHOTON
RYEGATE
Blue Mountain
Caledonia Central
Caledonia North
Essex - Caledonia
Essex North
Orleans Central
Orleans Southwest
Orleans-Essex North
St. Johnsbury
Public Elementary/Secondary School
Private Elementary/Secondary School
Public Postsecondary School
Private Postsecondary School
County Boundary
Town Boundary
Miles
0
5
10
NVDA Region
Supervisiory Unions &
Educational Facilities

Other educational institutions in the region are "recognized" by the State (Table 4.1). For the most part, these are private, religious-based institutions that are not eligible to receive public funds.

Table 4.1: Vermont Department of Education "Recognized" schools

Town	School	Enrollment 2000-2001	Grades / ages
Island Pond	Community in Island Pond	12	Ages 6-16
Lyndonville	Cornerstone Christian School (The Fold, Inc.)	11	6-12
Newport	United Christian Academy	112	K-12
Sutton	King George School	48	9-12
Waterford	Union Baptist Christian School	99	K-12

(VT Department of Education, 2002)

Home Study & Home School

Today, some families opt for "Home Study" programs to educate their children. The child is still taught a minimum course of study according to 16 V.S.A. Section 906, with an evaluation at the end of each school year by a qualified teacher, a standardized achievement test, or a portfolio. In the 2002 - 2003 school year, approximately 170 students within the region covered by the nine Northeast Kingdom supervisory unions were receiving school instruction in the home (Table 4.2). Actual numbers tend to vary throughout the school year.

Table 4.2:
2002-2003 NEK Home-School Students (by supervisory union):

Supervisory Union	# of Students
Blue Mountain #21	14
Caledonia Central #9	19
Caledonia North #08	25
Essex – Caledonia #18	13
Essex - North #19	5
Orleans Central #34	17
Orleans Essex North #31	47
Orleans Southwest #35	21
St. Johnsbury #11	7
Total	**168**

(VT Department of Education, 2002)

Secondary Education

The following table (4.3) shows education comparisons among the three counties of the Northeast Kingdom. Most notable is the fact that five high schools in the region had dropout rates greater than the state average. When students fail to graduate from a secondary level institution (or levels beyond), their opportunities for gainful employment in the future are greatly diminished. It is important that schools and communities strive to help students complete their education.

Table 4.3: FY2003 Regional Education Comparison:

County	Public School Name	Enrollment Grades	Drop Rate 3yr avg.	Student Teacher Ratio
	High Schools	12-Sep		
Caledonia	Lyndon Institute	627	3.00%	11.1
Caledonia	St. Johnsbury Academy	972	0.10%	12.6
Caledonia	Danville School	165	4.00%	11.3
Caledonia	Hazen UHSD #26	288	4.70%	10.5
Essex	Canaan	122	3.50%	11.3
Essex	Concord	78	9.90%	10.3
Orleans	Craftsbury School	59	4.80%	9.1
Orleans	Lake Region UHSD #24	396	4.20%	11.6
Orleans	North Country Sr UHSD #22	1,063	5.70%	12.9
Vermont		31,586	4.00%	11.7

(Adapted from VT Department of Education, 2004)

Table 4.4 demonstrates that a significant number of the region's population is enrolled in an educational institution at some level at any fixed point in time. While early education is required, life-long or adult education is just as important to many.

Table 4.4:

2000 U.S. Census Education Figures				
County:	School Enrollment: *	% of County Population:	% H.S. Diploma or higher:	% Bachelor's Degree or higher:
Caledonia	7,986	26.9	82.6	22.5
Essex	1,543	23.9	75.0	10.8
Orleans	6,344	24.1	78.2	16.1

(U.S. Census, 2000) * Population aged 3 years and over enrolled in school.

Post-Secondary and Adult Education

At the post-secondary level, the region is home to four colleges: Sterling College in Craftsbury, two branches of the Community College of Vermont in Newport and St. Johnsbury, Springfield College in St. Johnsbury (extension campus), and Lyndon State College in Lyndon. Colleges and educational facilities are often viewed as "clean industries" and communities vie to have them. Expanding education institutions within the region is encouraged.

Adult Basic Education Services, with offices in Newport, St. Johnsbury and Derby provides general education and employment skills to many Northeast Kingdom residents. Adult Basic Education has three primary sites located in Newport, St. Johnsbury, and Hardwick. Vermont's Adult Basic Education Program supports persons with the lowest levels of literacy to develop basic reading, writing, and math skills. Instruction is tailored to help adults achieve their own personal goals and function more effectively as parents, workers, and citizens. Their mission is to provide adults with a comprehensive skill foundation equivalent to secondary school completion (GED) and be responsive to the unique needs of individual learners, families and their communities. (http://www.state.vt.us/educ/abe/index.html)

Technical and Alternative Education

Technical education providers in the Northeast Kingdom include; Lyndon Institute Technical Center, St. Johnsbury Academy Applied Technologies Center, and the North Country Career Center (NCCC). The NCCC in Newport serves over 300 high school students and adults annually with 15 different program areas. NCCC also provides a smaller selection of satellite programs and technical training at Lake Region High School. Technical education has become an important and viable part of our educational system, allowing individuals to specialize in work areas typically not addressed by the more traditional public institutions. Specific technical training courses are available at Canaan High School as well.

The Northeast Kingdom Workforce Investment Board (WIB) seeks to identify training needs for the region's industries and businesses, and recommends training opportunities for those industries. The WIB supports and assists other workforce development efforts as well. The Vermont Department of Employment and Training (DET), the Agency of Human Services Department of Economic Services (formerly PATH and the Department of Social Welfare),

the Department of Vocational Rehabilitation, and Employee Assistance Services are members of the Workforce Investment Board.

The Charles E. Carter Business Resource Center, located in the St. Johnsbury – Lyndon Industrial Park, was designed and funded with workforce training in mind. Along with office and warehouse space for new and small businesses, quality conference and training space is also available. The facility has been in operation since February 2003 and use of the facility has been steadily improving.

Along with a need for workforce development and training, there is a need for more vocational/technical education programs and a need for more adult literacy programs. This was identified by 85% of the respondents in the still valid 2001 survey. Additionally, the ongoing need for computer and information technology training was cited by 85% of the respondents in the survey.

Issues and Concerns

The relative burden for providing quality educational opportunities is on the region's supervisory unions, local school districts, and teachers. Educational quality is always important to towns and residents, yet there is often disagreement as to what makes a quality education. This is evidenced by the number of local bond votes that come about and often fail.

Residential growth (or lack thereof) in a community should always be balanced with the capability of the municipality to adequately fund quality education. The capacity of local schools can be overwhelmed. Additionally, questions of where to site new schools, how to incorporate handicap accessibility features, and whether or not to retain local schools adds to the funding dilemma. Matters are sometimes further complicated by the changing standards, entitlements, and incentives offered by the Department of Education.

Increased school spending is a hot issue for most towns. Schools in all three Northeast Kingdom counties averaged a lower spending level ($8,302) per equalized student than the State of Vermont average of $9,087 for FY2005. For individual towns, 13 of 50 towns exceeded the state average. The purpose of Act 60 was to address funding inequities between school districts. Act 60 changed the basic funding mechanisms for local schools, but a number of inequities in the system were apparent (i.e. ties to property wealth). Act 68 is the most recent attempt to improve the school funding situation, and the results of this new legislation are still unclear.

EDUCATIONAL FACILITY GOALS

- Schools should be closely integrated with the local communities they serve, including the business community.
- Educational facilities should have the capacity to benefit both students and local residents.
- Affordable educational and training opportunities should exist for all persons within the region.

STRATEGIES

- Promote cooperation between institutions of higher learning and local businesses to create quality training and employment opportunities for local residents.
- Encourage public involvement in school board decisions.
- Increase involvement of school officials in the local planning processes. Investigate how towns and educational institutions can coordinate projects that would benefit the greatest number of persons.
- Investigate opportunities for shared facilities between municipalities and institutions.
- Support local and regional efforts for workforce development and adult education.
- Support the efforts of local and regional libraries to provide quality facilities and materials for independent learning and education.
- Promote combined public/private educational programs and shared resources. Eliminate boundaries that impede knowledge and resource sharing.

II. RECREATION FACILITIES & PROGRAMS

Many towns in the region offer public recreation facilities in some form, they include town parks or commons, town forests, tennis or basketball courts, ball fields or ice rinks, or public beaches. There are also community centers, school recreation facilities, and municipal buildings hosting local recreation programs. Communities should plan for adequate facilities to meet residents growing and ever-changing needs. A new, multi-purpose, state of the art indoor recreation facility (IROC) was recently completed in Derby. The community facility project is unique in many respects, most importantly in that it combines recreation and education.

Newport and St. Johnsbury are the only communities having year-round, staffed, municipal recreation programs. The St. Johnsbury Recreation Department owns a community center, and rents or is donated the use of other facilities for conducting their year-round recreation programs. They also have some small "ornamental parks" located in various parts of the city. Newport has a municipal ice rink, community building, town beach, and a multi-use park facility. Each city's recreation department offers a variety of programs on a year-round basis. Here, it is important to adequately serve all populations - it is likely that some needs are going unmet.

Other communities in the region offer programs and activities on a seasonal basis (as do a sizable number of private recreation providers, churches, and schools), but many of these are often short in-duration, and under-funded. There seems to be a real programming need for youth and low-income residents, and the elderly throughout the region. Along with providing and funding recreational facilities, this is a challenge that communities must address. Providing an adequate number of recreational programs and facilities adds to the residents overall well-being and the community's quality of life, and thus are important for any town.

(Note: For a complete list of goals related to Recreation Facilities & Programs please see the Chapter One: Land Use Section under V. Recreation Land Use Goals.)

III. CHILD CARE

Since 2003 a thirteenth planning goal is addressed in many local and regional plans. Regional planning commissions are now required to review how municipal plans address child care issues as part of the confirmation process. It is also appropriate that child care issues be examined at the regional level and included as part of this plan.

Child care in the Northeast Kingdom region is seemingly in a constant state of crisis. Many of the region's residents continue to lack accessible, affordable, high-quality child care services. There are not enough child care centers in the region to meet demand. There also exists a very high annual turnover in state-approved child care providers (44% turnover in 2000). Apparently, one reason for the exceptionally high turnover is that many providers lack basic business skills, thus becoming financially unsustainable. For established child care programs, tight budgets and funding cuts are the norm.

The regional child care system is diverse, and includes independent day care homes, relative care, and center based group care. A professional family child care system would go a long way in meeting regional childcare needs. State agencies that offer child care assistance programs in the Northeast Kingdom include:

- Childcare Services Division (AHS)
- Vermont Child Care Apprenticeship Program (VT DET)
- Department of Economic Services
- Department of Health
- Department of Education

Regional agencies and organizations that offer child care programs include:

- Northeast Kingdom Community Action, Inc. NEKCA
- Umbrella, Inc.
- Success By Six

III. CHILD CARE GOALS

- Child care entrepreneurs and child/family service centers should be supported.
- Additional site-based or community child care centers that offer high quality, affordable care should be developed.
- The efficiency and effectiveness of existing child care, early education, and family service programs should be improved.

STRATEGIES

- Support efforts to improve the child care system in the Northeast Kingdom.
- Provide assistance to towns, villages, and non-profits seeking to develop child care facilities and/or programs.
- Assist eligible individuals to become licensed child care providers.

IV. TELECOMMUNICATIONS

Telecommunications are a dynamic medium for community networking, information dissemination, feedback, discourse, collaboration, and discussion. The region can gain many economic, social, safety and cultural benefits with a strong telecommunication infrastructure. Our regional economy can only be enhanced if it is served by a robust telecommunications infrastructure. The current Northeast Kingdom telecommunications infrastructure is depicted in the NVDA Region: Telecommunications Map (Map 6).

Current trends in the development of telecommunication infrastructure suggest that several media will converge into a standardized digital format with high-speed broadband access. With digital high speed access, customers will be able to send and receive voice, video, and data through the telecommunications network with many types of devices such as telephone, cable TV, mobile and desktop computers, and portable and household devices. A redefinition of "basic" service that is accessible and affordable for a converged telecommunications network will require reexamination.

The Statutory goals and principles from the Vermont Legislature (30 V.S.A. § 202c and § 202d) for the telecommunication network are:

- Affordable basic service
- Stable and predictable local exchange rates and toll rates
- Superior quality of service, including consumer protection and privacy rights
- A technologically advanced telecommunications network serving all local service areas in the state
- Benefits including enhanced 9-1-1 and continuous emergency access, improved electronic community, public access, government information and services delivered on-line, associated training and technical support

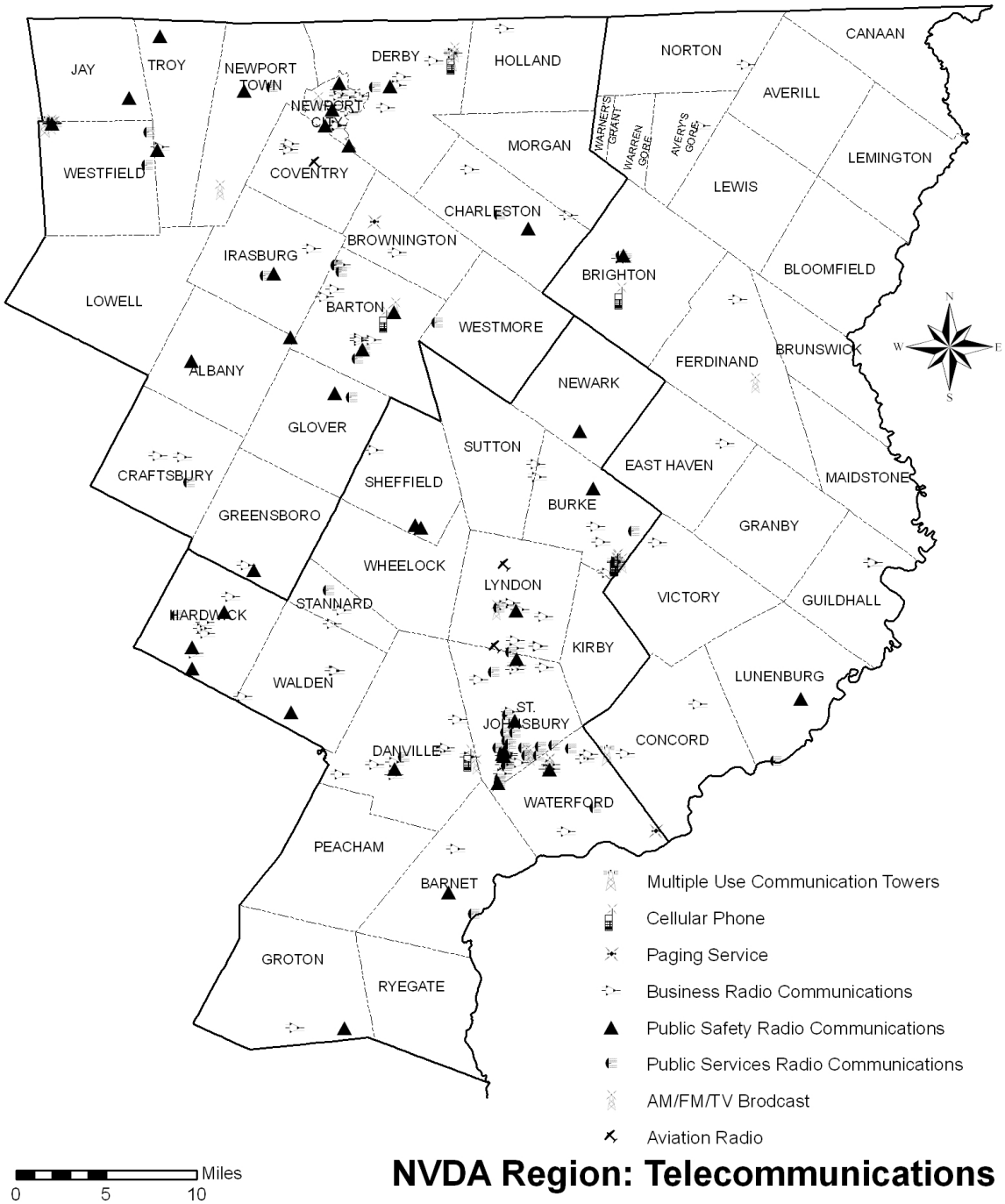
The Vermont Telecommunications Plan issued by the State of Vermont Department of Public Service represents a serious effort to address the important issues that will affect availability and use of telecommunications in Vermont. The current Telecommunications Plan specifically calls upon the regional planning commissions to undertake a coordinated process of planning for wireless development in their respective regions.

Barring unforeseen changes in circumstances, the current Telecommunications Plan (adopted September 2004) sets forth some ambitious goals that will have a significant impact on life in the Northeast Kingdom. Among these goals:

- Consumer-grade and small-business-grade broadband services to 90% of all homes and businesses that have access to telephone by 2007;
- 100% handheld phone coverage along all interstates, plus Routes 2, 4, 7, and 9 on both the GSM/GPRS and CDMA digital standards by 2007;
- 100% handheld phone coverage on all numbered state highways routes on both the GSM/GPRS and CDMA digital standards (or their successors) by 2010;
- Reasonably priced mobile walkabout WiFi in all designated downtowns, all highway rest areas, welcome centers, and in significant resort locales.

For an in-depth description of Vermont's telecommunication goals refer to the Vermont Telecommunications Plan, Version 4 (http://www.state.vt.us/psd).

MAP 6:



Although the technology industry is constantly evolving, the Vermont Telecommunications Service Availability Project conducted by the Vermont Department of Economic Development

(http://www.thinkvermont.com) keeps an updated list of telecom providers for each town and the services offered (ATM, Cable, DSL, Wireless, Frame, ISDN, and T-1).

Geographic distance to markets traditionally posed a barrier for rural businesses. With the development of e-commerce and secure online transactions, rural businesses and residents can join in an expanded modern economy. Tourism information and marketing of local products will be available to customers anywhere at anytime on the Internet. A strong telecommunications infrastructure serves to improve quality of life, supports businesses, and provides information to residents and tourists about the region.

In the coming years, telecommuting may become more popular and possibly lessen road traffic at peak commuter driving times. Settlement patterns may change as more people work in "cyber-jobs" or further away from their employment locations. Video conferencing and teleconferencing will allow people to work while away from their offices, reduce some time and expense of transportation to meetings and relieve the burden to drive in hazardous winter conditions. However, until the overall state of the region's telecommunication system is brought up to date, telecommuting options will be limited.

Vermont Interactive Television (VIT) is an innovative service that uses T-1 lines to provide videoconferencing capabilities to many Vermont communities. By linking to the University of Vermont, VIT also provides national and international videoconferencing. VIT has two primary locations in the region, one at Lyndon State College and another at North Country Union High School in Newport.

Wireless Telecommunication Facilities

Wireless telecommunication facilities are currently regulated at the Federal, State, and local levels. The Federal Communication Commission authorizes the licensing of telecommunication companies in addition to creating legislation for town governments. The Federal Telecommunications Act of 1996 preserves local zoning authority. However, it states that local governments shall abide by the following measures:

(a) Not prohibit or have the effect of prohibiting the service;
(b) Not unreasonably discriminate among providers of functionally equivalent services;
(c) Not regulate Personal Wireless Service Facilities on the basis of radio frequency emission safety if in compliance with FCC's regulations;
(d) Act on all requests within a reasonable time period;
(e) Base any denial on substantial evidence and put that decision in writing.

At the State level, the Vermont Act 250 District Environmental Commissions oversee all telecommunication applications for towers over 20 feet tall. Although the Federal Telecommunications Act of 1996 limits the authority of municipalities to regulate communications towers, towns can still establish appropriate guidelines and regulations related to aesthetics, integrity of residential zones, ridgeline protection, preferred locations (general and specific), and collocation or clustering of tower facilities. In 1997, the Vermont Legislature enacted legislation [24 V.S.A. §§ 2291 (19)] municipalities to regulate telecommunication facilities through either zoning or stand alone ordinances. Chapter 117, the statute that regulates planning and zoning in Vermont, also authorizes municipalities to

adopt bylaw to "regulate wireless telecommunication facilities and ancillary improvements in a manner consistent with federal law." Bylaws can require the decommissioning or dismantling of telecommunication facilities, as well posting of bonds to finance their decommissioning or dismantling. [24 V.S.A. §4414(12)] Towns were previously able to issue a moratorium on development, but that option expired on July 1, 1999.

Municipalities may also describe their visions for telecommunication planning within their town plans. NVDA encourages towns to prepare the most appropriate plans and regulation for their individual needs.

IV. TELECOMMUNICATIONS GOALS

- Northeast Kingdom residents, business, organizations and public entities should be served by an up-to-date telecommunications infrastructure.
- Affordable fixed and wireless communications systems, as well as high-speed Internet broadband, should be available throughout the region.

STRATEGIES

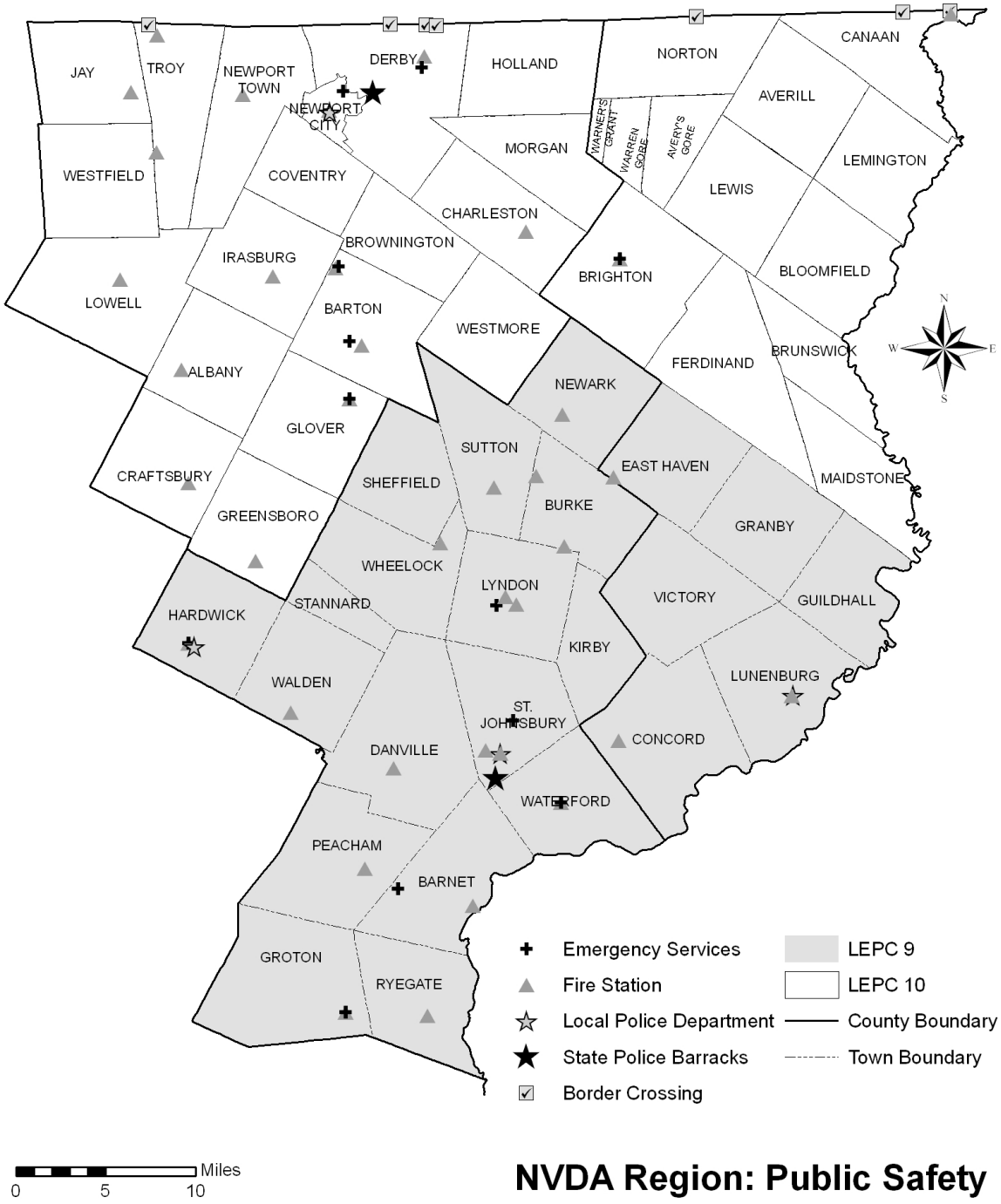
- Create incentives for appropriate telecommunication technologies, infrastructure and services to be implemented.
- Support development efforts that reduce the cost of high-speed telecommunications throughout Vermont and the Northeast Kingdom.
- Actively support the development of a wireless backbone along the region's interstate highway system corridors. This infrastructure should allow for co-location of carriers and platforms whenever possible, as well as virtual information technology for first responders, and wireless broadband.
- Continue to work with state and regional agencies, as well as the private sector, to attain the coverage goals as set forth in the State Telecommunications Plan.

V. SECURITY & EMERGENCY SERVICES

Enhanced 9-1-1

Since 1998, enhanced 9-1-1 dispatch service has reduced the response time of emergency services for Northeast Kingdom towns. A person dialing 9-1-1 is automatically routed to the appropriate Public Safety Answering Point (PSAP), regardless of telephone exchange boundaries. The Derby State Police Barracks is the regional PSAP. The PSAP call taker will have the caller's phone number, locatable address (from a Geographic Information System (GIS), (coverage does not yet cover cell phone callers), and contact information for the nearest emergency services (police, fire, ambulance, EMS). This enhanced service shortens response time in the dispatch of appropriate local emergency services and finding the location of the caller without having the caller provide that information.

MAP 7:


JAY
TROY
NEWPORT TOWN
DERBY
NEWPORT CITY
HOLLAND
NORTON
CANAAN
AVERILL
WARNERS GRANT
WARREN GORE
AVERYS GORE
LEMINGTON
LEWIS
MORGAN
WESTFIELD
COVENTRY
CHARLESTON
BROWNINGTON
IRASBURG
BRIGHTON
BLOOMFIELD
LOWELL
BARTON
WESTMORE
FERDINAND
BRUNSWICK
ALBANY
NEWARK
GLOVER
SUTTON
EAST HAVEN
MAIDSTONE
CRAFTSBURY
SHEFFIELD
BURKE
GRANBY
GREENSBORO
WHEELOCK
LYNDON
VICTORY
GUILDHALL
HARDWICK
STANNARD
KIRBY
LUNENBURG
WALDEN
ST. JOHNSBURY
CONCORD
DANVILLE
WATERFORD
PEACHAM
BARNET
GROTON
RYEGATE
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E
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Emergency Services
Fire Station
Local Police Department
State Police Barracks
Border Crossing
LEPC 9
LEPC 10
County Boundary
Town Boundary
Miles
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5
10
NVDA Region: Public Safety

Fire Protection

The region is served by a variety of local fire departments. The majority of incorporated towns have their own fire protection. Other communities do not have a fire department and rely on neighboring towns to provide their protection. The types of departments vary from combination full/part-time to paid on-call, to all volunteer. The responsibilities of each department vary according to the population they serve. Major responsibilities of fire departments continue to be fire suppression, prevention and education. The majority of housing in the region (older, wood buildings) was constructed without modern building or fire code standards, making fire prevention a challenge in buildings with outdated wiring or heating. Fire departments also respond to calls for auto accidents, hazardous materials spills, Emergency Medical Services (EMS), and natural and man-made disasters. The capability of these departments to handle such incidents ranges from very good to very poor. If a technical response is needed that a department is not suited to handle, such as rope rescue or hazardous materials mitigation (Haz-Mat), the services will come from the nearest available department. All towns have a fire warden.

Within the three counties there are mutual aid organizations which enable the departments to work collaboratively to mitigate problems in each other's communities. Some departments may travel as much as 40 to 50 miles if needed. One of the major hindrances for small towns is the lack of local firefighters to respond to incidents. Many communities are without immediate fire response because their staff/volunteers work outside the town and will not be able to respond quickly. In addition, departments face challenges to recruit new members due to the high level of training required and responsibilities within fire departments. It is necessary to maintain the proper level of skill and knowledge to respond to the wide range of complex emergencies in our communities. Our communities have fire departments made up of a large number of dedicated individuals who are called upon frequently to perform in emergencies. Increased funding for equipment and training would assist our fire departments with keeping up with the demand for their services.

Ambulance Service

The towns of the Northeast Kingdom belong to one of three State Ambulance Districts. Within the districts there are several ambulance services. Parts of the region are served by ambulance services based in New Hampshire. Ambulance services provide medical first aid, CPR training, non-emergency medical transportation, and back up service to neighboring ambulance coverage areas. The chart below is a summary of the statistics and level of service provided by emergency medical teams operating in the region. Many of the trained first aid responders are volunteers. The "level of service" ranges from low to high service for technical certification and training. The towns listed in table 4.5 include the base locations for ambulance service. The level of service definitions are as follows:

FR-B	First Responder EMT Basic Service
FR-I	First Responder EMT Intermediate Service
FR-P	First Responder EMT Paramedic Service
EMC-B	Emergency Medical Certification Basic Ambulance Service
EMC-I	Emergency Medical Certification Intermediate Ambulance Service
EMC-P	Emergency Medical Certification Paramedic Ambulance Service

Table 4.5: Ambulance base location.

Base Town	District #	Level of Service	Base Town	District #	Level of Service
Barnet	5	FR-I	Newport	2	EMC-P
Barton	2	EMC-I	Orleans	2	EMC-I
Brighton	2	EMC-I	St. Johnsbury CALEX	5	EMC-P
Concord	5	FR-I	St. Johnsbury Fire Dept.	5	FR-B
Danville	5	EMC-I	Walden FAST Squad	5	FR-B
Derby Line	2	EMC-I	Waterford Fire Dept.	5	FR-B
Gilman – Lunenburg	5	FR-B	Colebrook, NH	2	EMC-B
Glover	2	EMC-I	Groveton, NH	5	EMC-B
Groton-Ryegate FAST Squad	5	FR-B	Lancaster, NH	5	EMC-I
Hardwick	4	EMC-I	Pittsburg, NH	2	EMC-B
Jay Peak FAST Squad/Ski Patrol	2	FR-I	Stratford, NH	5	EMC-B
Lyndon	5	EMC-I	Woodsville, NH	5	EMC-P
Missisquoi (Troy)	2	EMC-I		(NVDA 2003)	

Medical Services

The region is fortunate to have two full-service health care centers available, the North Country Hospital (www.nchsi.org) in Newport, and the Northeastern Vermont Regional Hospital (www.nvrh.org) in St. Johnsbury. The Northeastern Vermont Regional Hospital is a member of the larger, regional Dartmouth-Hitchcock Alliance. Other hospitals near the region include the Copley Hospital in Morrisville, the Littleton (NH) Regional Hospital, the Cottage Hospital in Woodsville (NH), and the Weeks Medical Center in Lancaster (NH). Fletcher Allen Health Care, located in Burlington, is available for many specialized medical services.

Emergency mental health services, substance abuse counseling, and crisis support is provided by Northeast Kingdom Human Services on a twenty-four hour basis. The region's towns and villages also contain small medical clinics or physician offices, providing a greater level of access for local residents. Similarly, veterinarian services are available in a number of towns for pet and livestock care.

Border Protection

The Border and Transportation Security Division, under the Department of Homeland Security, patrols the Northeast Kingdom portion of the Canadian border. The Division has six border crossings on the Canadian border in the region. The main border crossing facility is at Derby Line on I-91 and provides monitoring services of the movement of people and goods and processes immigration and emigration. The amount of security and level of surveillance at border crossings has been dramatically increased over the past few years.

Police Protection

Municipal police departments are located in Hardwick, St. Johnsbury and Newport City. County Sheriff's Departments are located in the towns of St. Johnsbury (Caledonia County), Newport (Orleans County), and Lunenburg (Essex County).

The Vermont State Police have barracks in St. Johnsbury (Caledonia County) and Derby (Orleans County). The St. Johnsbury State Police barracks covers 21 towns in Caledonia and southern Essex counties. The Derby barracks serves 32 towns in Orleans and Northern Essex. Trooper activities include patrolling rural roads, responding to auto accidents, and reducing the number of speeding and intoxicated vehicle operators. Troopers investigate domestic assaults, burglaries, child abuse, and arson.

The St. Johnsbury barracks provides dispatch service for Enhanced 9-1-1 service including four ambulance squads (Lyndon Rescue, Calex Rescue in St. Johnsbury, Danville Ambulance, Concord FAST Squad), Hardwick Police, Department of Fish and Game, Sheriff's Department (Caledonia, Essex, and Orange counties), and Bradford State Police. The Derby barracks provides dispatch service for State Police as well as Newport Police, Orleans County Sheriff's Office, Brighton Constable, as well as sixteen fire departments and seven ambulance squads. The Derby Marine Patrol covers Lake Memphremagog, an international waterway with Canada as well as many other lakes. Snowmobile patrolling is also a big part of police activity in the winter months, with the Orleans/Northern Essex County area having the most extensive trail system in the state (Source Vermont State Police, Derby, http://www.dps.state.vt.us). Crime statistics are also available at the Department of Public Safety website.

Facilities, Prisons, and Courts

Correctional facilities are located in St. Johnsbury and Newport. St. Johnsbury hosts the Caledonia Community Work Camp, the Northeast Regional Correctional Facility, The St. Johnsbury Community Correction Center, and the St. Johnsbury Court and Reparative Services. Newport hosts the Northern State Correctional Facility, the Newport Court and Reparative Services, and the Vermont Correctional Industries. Courts in the region are located in each of the three counties (Caledonia, Orleans, and Essex) and serve as district, family, probate, small claims and superior courts.

Disaster Planning and Services

The key to responding to disasters is to have sound emergency planning in place. Many services and grants at the federal, state and local levels support such planning efforts. The Directorate of Emergency Preparedness and Response, a division under the Department of Homeland Security, has designated mitigation as the cornerstone of emergency management. Mitigation begins with local communities assessing risks and repetitive problems and making a plan for creating solutions to these problems.

The Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 requires each state government to establish a State Emergency Response Commission (SERC). The SERC is charged with developing integrated plans for responding to chemical emergencies and making chemical information available to the public. The SERC appoints Local Emergency Planning Committees (LEPC) to prepare for and respond to emergencies at the local level. Two LEPC's work in this region: one, serving Orleans County, and the other serving Caledonia and Essex counties.

LEPC's have completed Rapid Response Plans for all towns in the region. These are efficient guides for use in the early stages of disaster response. The plans give contact information for the organizations and people responsible in an emergency including: emergency medical services (EMS), fire chief, hospital, select board chair, road foremen, law enforcement, town clerk, state contacts, and other resources. The plan describes the method for alerting and evacuating the population if necessary, the site of an alternate "emergency operations center", and locations of local emergency shelters. Other towns have Hazard Mitigation Plans which aim to prevent damage from natural hazards and outline improvements to structures and facilities in the event of damage.

Committees and partnerships aid in the ability to respond to disasters. For example, most of the states and territories have adopted a legal mechanism called the Emergency Management Assistance Compact, which allows states to assist one another during emergencies, but does not force a state to help if that state is unable. Vermont has recently become a partner in this mutually beneficial compact. Other local organizations like the Connecticut River Watershed Council have joined in cooperation with state and local emergency management and planning organizations to create plans for preventing disasters within the Connecticut River Watershed.

Disasters such as severe winter storms, droughts, floods, wildfires, high winds, earthquakes, and tornados have all been known to affect our region. The Vermont Emergency Management agency focuses on preparing and responding to these emergencies. In light of the past few years of drought throughout the state which has left groundwater and surface water reservoirs at very low levels, the Vermont Drought Task Force recommends that every town have an emergency plan to deal with drought preparedness.

The National Flood Insurance Program encourages each town to plan for flood hazards by designating flood prone areas in the town and restricting construction and development in these areas. Most of the towns in our region have adopted Flood Hazard Regulations to limit development in flood hazard areas.

Other aid agencies are designed to provide services in the event of disasters. The Northern Vermont Chapter of the American Red Cross offers service to the three counties of the region including training (First Aid, CPR, AED), HIV/AIDS education, disaster relief, armed forces emergency services, international tracing and communication services, language bank and youth services. In the event of a disaster, the American Red Cross provides shelter, food, health and mental health services to address basic human needs.

V. SECURITY & EMERGENCY SERVICE GOALS

- Emergency services should be provided to all residents of the Northeast Kingdom through Enhanced 9-1-1, local departments, and mutual aid districts.
- Towns should have up-to-date rapid response and emergency operations plans.
- All buildings should meet current state fire code and safety standards.
- Emergency services training should be available to keep all emergency service providers current with regard to service provision and certification.

STRATEGIES

- Support regional approaches to disaster planning and mitigation, including partnerships between neighboring communities and states and Canada.
- Support local efforts for disaster planning, response, recovery and mitigation.
- Assist communities to apply for safety and emergency equipment grants by disseminating information on available funding programs.
- Assist interested municipalities with the adoption of building and fire codes for non-public buildings and rental properties.
- Ensure that adequate emergency services (personnel, facilities, and equipment) are available for new developments prior to placing additional demands on existing services.
- Assist Local Emergency Planning Committees (LEPCs) and Towns to identify gaps in disaster planning, such as increased flood and drought protection, and work to eliminate gaps through an interagency, inter-jurisdictional approach.
- Encourage all communities to participate in the National Flood Insurance Program (NFIP) and to adopt the Vermont Transportation Highway Codes and Standards.
- Discourage development in identified or known flood prone areas to avoid costly potential damage to life and property.

VI. WATER SUPPLY

The Northeast Kingdom region has a number of lakes, ponds, rivers, streams, and springs providing fresh water for our residents. The water supply in the region is used for a multitude of residential, agricultural, industrial, and commercial purposes. Thus, it is important that we work to ensure an adequate supply of usable water to meet the needs of all the region's residents and businesses. Generally, the water quality throughout the area is considered excellent. The majority of the region's water supply comes from groundwater, and the majority of water supply systems are privately-owned, on-site wells.

Results of regular testing by municipal water systems seems to indicate Vermont's water quality is generally good, but that contamination can and does occur. Common threats to our water supply systems come from agricultural runoff, salt storage areas, road salt, contaminated runoff from paved surfaces, and failing septic systems. Occasional contamination is a primary reason the state requires many public water systems to have source protection plans, well-head protection areas, test regularly for contaminants, and report those results to water customers.

Public Water Supply

The *Vermont Water Supply Rule* is applicable to all Vermont water systems, including public and non-public water supply systems, privately owned wells, and bottled drinking water facilities (only portions of the rule apply to each type of system). Its primary purpose is to regulate water systems in the state for the provision of clean and safe drinking water for Vermont's citizens, regardless of the type or size of system involved.

All water systems are initially classified as Public or Non-public. Classification as a Public water system depends on the number of service connections (15 or more) or people served (25 or more) by the system. Public systems are required by the state to have Source Protection Plans. The NVDA Region: Sewer & Water Map (Map 8), included on page 53, shows the municipalities with public water supply facilities.

Public water systems are further divided into Public Community water systems (serving residents on a year-round basis) and Public Non-Community water systems (serving non-residential groups of people such as schools, restaurants, etc.). These Public Non-Community water systems are subdivided into Non-Transient, Non-Community (NTNC) systems whose non-residential users don't change over time (i.e. schools and offices), and Transient Non-Community (TNC) systems whose non-residential users do change over time (i.e. restaurants and motels). Each type of public system requires a different level of chemical monitoring with Transient, Non-Community systems requiring the least. Owners and operators of public water systems must restrict the land use within 200 feet of the public water supply source to uses that pose no threat of contamination.

Non-Public water systems are divided into those requiring permits and those not requiring permits. Subdivisions of nine lots-or-fewer, and public buildings serving less than 25 people, are examples of Non-Public systems requiring a permit. Single family homes are Non-Public systems not requiring permits, but they are still subject to regulation (i.e. permits are required for well construction).

All Public water systems are subject to regulation under the federal Safe Drinking Water Act. These federal regulations are administered by Vermont's Department of Environmental Conservation (DEC). Non-Public, NTNC, and TNC water systems are generally administered for construction permit purposes by the regional offices of the Wastewater Management Division of the DEC. Jurisdiction over the protection of public water supplies rests with the Water Supply Division of the DEC.

The NTNC, TNC, and Non-Public systems requiring permits are considered Small-Scale water systems, and serve public buildings, mobile home parks, campgrounds, and subdivisions. Permits for operating requirements, fees, and other non-construction requirements are administered by the Water Supply Division of the DEC. The active public water systems in the Northeast Kingdom are:

Table 4.6: Public Community Water Systems – Caledonia, Essex, & Orleans Counties

Public Community Water Systems - Caledonia County		
System Name:	Primary Water Source Type:	Est. Population Served:
Barnet Water System, Inc.	Ground Water	205
Burke FD 1	Ground Water	60
Burke Mountain Water System	Ground Water	1622
Danville Fire District 1	Surface Water	450
East Hardwick Fire District 1	Ground Water	300
Green Lantern Mobile Home Park	Surface Water*	150
Hardwick Town Water System	Ground Water	1500
Karme Choling	Ground Water	100
King George School I, Boys Dorms – *Private*	Ground Water	50
King George School II, Girls Dorms – *Private*	Ground Water	50
Lyn Haven Fire District 1	Ground Water	114
Lyndonville Water System	Ground Water	3200
McIndoe Falls Fire District 3	Surface Water	200
Passumpsic Fire District 1	Surface Water*	170
Peacham Fire District 1	Ground Water	150
Ryegate Fire District 2	Ground Water	260
Sheffield Village Water	Ground Water	70
South Ryegate Water Co-op	Ground Water	36
St. Johnsbury Fire District 1	Ground Water	370
St. Johnsbury Water System	Surface Water	4500
Sutton Water System	Ground Water	54
West Burke Housing – *Private*	Ground Water	32
Wheelock Fire District 1	Ground Water	60
Private = Privately Operated	* Purchased	

Public Community Water Systems - Essex County		
System Name:	Primary Water Source Type:	Est.Population Served:
Aqua Haven – *Private*	Ground Water	150
Bloomfield Water System	Surface Water	40
Brighton Water System	Surface Water	2200
Canaan Water System	Ground Water	970
Guildhall Water System	Ground Water	120
Lunenburg Fire District 1	Ground Water	320
Lunenburg Fire District 2	Ground Water	700
Riverside Water Works Co.	Ground Water	336
Sorrell Mobile Home Park – *Private*	Ground Water	90

Public Community Water Systems - Orleans County		
System Name:	Primary Water Source Type:	Est.Population Served:
Albany Water System	Ground Water	200
Alpine Haven – *Private*	Ground Water	600
Barton Water System	Surface Water	1500
Beebe Plain Water System	Ground Water	1030
Campbells Water System – *Private*	Ground Water	45
Coventry Fire District 1	Ground Water	110
Craftsbury Fire District 2	Ground Water	420
Derby Center (*Connected to Newport System*)		1100
Derby Line Village Water District	Surface Water	900
Derby Mobile Home Park – *Private*	Ground Water*	150
Greensboro Bend Water Co-op	Ground Water	55

Greensboro Fire District 1	Surface Water	650
Holbrook Bay Commons – *Private*	Ground Water	138
Irasburg Water Department Co-op	Ground Water	200
Jay Peak Basin Complex – *Private*	Ground Water	32
Jay Peak Subdivision II – *Private*	Ground Water	30
Jay Peak Village Phase I – *Private*	Ground Water	116
Maple Lane Nursing Home – *Private*	Ground Water	68
Newport Center Water System	Ground Water	246
Newport City Water System	Ground Water	5500
North Troy Water System	Surface Water	750
Orleans Water System	Ground Water	825
Shattuck Hill Mobile Home Park – *Private*	Surface Water*	90
Slopeslide Condominium – *Private*	Ground Water	256
Trillium Woods Water System – *Private*	Ground Water	40
Troy Water System	Ground Water	300
Union House Nursing Home – *Private*	Ground Water	40
Westfield Fire District 1	Ground Water	120
Private = Privately Operated	* Purchased	

(ANR Water Supply Division, 2002)

In Vermont, water supply systems may be owned and operated by municipalities or privately-owned (either individually or cooperatively). Municipally-owned water systems may be managed by the town or a fire district. Jurisdiction over protection of public water supply sources rests with the Department of Health and the District Environmental Commission.

Public water system violations are published in an annual report made available to the public by the Department of Environmental Conservation. "*Consumer Confidence Reports*" are made available by public water suppliers for public community residential systems on an annual basis.

In addition to providing adequate water supply systems to meet the demands for domestic, commercial and industrial uses, there must be a level of flow necessary for fire protection. This depends, in part, on the amount of water stored or available, the size of the water mains and the level of pressure needed.

Vermont Act 250

Criteria 2 and 3 of Vermont Act 250 deal with the issue of permitting for water supplies:
(a) Before granting a permit, the board or district commission shall find that the subdivision or development…

(2) Does have sufficient water available for the reasonably foreseeable needs of the subdivision or development.

(3) Will not cause an unreasonable burden on an existing water supply, if one is to be utilized. [10 V.S.A. Section 6086 (a)(2) and (3)]

Source Protection Plans

The *Safe Drinking Water Act* was passed in 1974 to protect the quality of drinking water in the U. S, and was amended in 1996. The *Source Water Assessment Program (SWAP)* is the federal

program for Public Water Systems that states are required to implement under the *Drinking Water* Amendments of 1996. In Vermont, Source Protection Plans are used to cover the three basic requirements of the SWAP, which are to:

1. Delineate the water source protection area;
2. Inventory potential sources of contamination (such as waste generating sites, underground storage tanks, septic systems, etc.); and
3. Assess the susceptibility of the water system to contamination from these sources and have management and contingency plans ready in case of water system failure or contamination.

Vermont's Source Water Assessment Program includes different requirements for the three types of public water systems:

1. Public Community water systems (serving at least 25 year-round residents, or 15 service connections) are required to have Source Protection Plans. The system is responsible for developing the plan. The Water Supply Division is available to provide technical assistance in preparing the plan.

2. Non-Transient, Non-Community public water systems (serving at least 25 of the same people, more than six months of the year) are also required to have Source Protection Plans. Each system is responsible for developing the plan, with the Water Supply Division available for technical assistance.

3. Transient, Non-Community public water systems (serving at least 25 people per day more than 60 days a year) are required to have a Source Water Assessment for the system (rather than a Source Protection Plan). The management and contingency plans are not prepared as part of the assessment. The system assessment is done by the Water Supply Division of the DEC.

Table 4.9: NEK Community Water Systems by Type.

Public Water System Type:	Number:	% of Total:
Community Water Systems	60	38.7
Non-Transient, Non-Community Water Systems	25	16.1
Transient, Non-Community Water Systems	70	45.2
Total	155	100.0

(ANR Water Supply Meeting, 2002)

Public community water systems in Vermont are required to develop Source Protection Plans (SPP). As of 2000, 84% of Vermont's Public Community Water Systems had source protection plans. It is expected that this number will reach 98% by June 30, 2005. The Water Supply Division of the DEC is available to provide specific technical advice for completing or updating these plans.

Public Water Issues

Source Protection: The Vermont Department of Environmental Conservation's goal is to increase the number of public water systems having Source Protection Plans (or Source Water Assessment) to 100 percent. The Water Supply Division of the DEC is available to assist

communities with preparing Source Protection Plans. The Water Supply Division will conduct Source Water Assessments for each Transient, Non-Community public water system in lieu of a Source Protection Plan.

Training: The state's strategy to ensure water quality and supply is to provide resources and education to water system owners/operators so that their systems will be able to comply with all state and federal rules. Therefore, training and development programs are encouraged to assure water system capacity. Capacity, in this instance, means that a public water system can demonstrate the technical, financial, and managerial capabilities to consistently comply with current performance standards, including the requirements of the Safe Drinking Water Act, as amended.

Capacity and Conservation: In years past, it seemed there was an endless supply of fresh water available for use. Recently, prolonged droughts have occurred in some areas. Public water systems may also have experienced an increase in the number of users, thus reducing the available supply. For public water systems that have reached or may be nearing their system's physical capacity, strategies can be implemented to reduce water consumption. Some of these are billing customers based on metered water use; repairing leaks in the system; and structuring billing rate schedules so that heavier users pay more. These strategies, along with individual conservation efforts, have worked in many communities.

System funding and Development: The most common problem facing towns or communities having, or seeking, a public water supply system is obtaining the funds to acquire or upgrade facilities. This is also the case for the Northeast Kingdom. It is important to note that centralized water systems allow more residents to share the high costs of acquisition and maintenance. Public water supply systems are also generally easier to maintain and protect than individual supplies in more densely populated areas. Also noteworthy is that extensions to existing, public community water systems greatly affect the location, density, type, and future pattern of development within a community. Therefore, considerable public discussion should occur regarding proposals for water main extensions.

VI. WATER SUPPLY GOALS

- Water supplies and water systems should not be contaminated, depleted, or degraded
- There should be sufficient quantities of water to meet existing and future residential, agricultural, commercial, industrial and recreational needs.
- Public investments should be made in utility facilities, services, and lands to support existing and future development within town centers, villages, or other designated and planned growth areas.
- Effective, efficient, and accessible public services should be promoted.

STRATEGIES

- Support local proposals to upgrade existing water supply systems.
- Support water conservation measures to reduce the demand for water and protect water supplies.

- Discourage development in Source Protection Areas, identified groundwater recharge areas, or other areas where water supplies are likely to be adversely impacted.
- Assist interested communities to identify, map, and plan for the protection of surface and groundwater resources.
- Assist towns and communities with the preparation of capital improvement plans and budgets to complement local plans and this plan.

VII. WASTEWATER, SEWAGE & STORMWATER MANAGEMENT

The treatment of wastewater is necessary to remove solids, destroy pathogens, and remove pollutants. Municipal sewage, domestic septage, and industrial wastewater are the types of wastewater typically treated. Wastewater is either treated centrally by a municipal wastewater treatment facility, or by a decentralized "on-site" system, typically a septic tank with leach field.

Public Wastewater Facilities

Public sewage disposal systems that collect and treat wastewater before discharge help to protect public water supplies are the preferred types of systems. Wastewater treatment facilities are categorized as primary, secondary, or tertiary. Primary treatment physically removes suspended particles by screens, sediment chambers, and/or skimmers. Secondary treatment involves the digestion of organic wastes by bacteria in a controlled setting, in addition to the removal of suspended particles. Tertiary treatment takes additional steps to remove solids and other difficult to extract compounds, beyond the steps involved in primary and secondary treatments. All municipal wastewater systems in the Northeast Kingdom region have secondary treatment systems or better.

Wastewater treatment facilities may be industrial, municipal, or private in nature. Some of these facilities are required to have state-certified operators due to their size, and require permits. Table 4.10 below shows the permitted municipal wastewater facilities in the Northeast Kingdom region. Permits are typically re-issued when applications are submitted in a timely manner (e.g. before the expiration date), allowing the facility to continue operating until the application is approved.

Table 4.10: Permitted Wastewater Treatment Facilities:

	---------- Gallons Per Day (7-9/2002)---------		
Municipal Wastewater Facilities:	Avg. Annual Flow:	Committed Flow:	Uncommitted Reserve Capacity:
Caledonia County			
Danville	38,051	5,050	16,899
Hardwick	164,083	15,186	191,731
ndonville	227,833	3,570	518,597
egate (Town)	1,687	0	4,313
egate Fire District #2	3,264	0	7,036
Johnsbury	1,197,417	80,412	322,171
Essex County			
Brighton (Island Pond)	77,500	3,033	69,467
Canaan	137,750	3,388	43,862

Lunenburg Fire District #2	48,167	0	27,833
Orleans County			
Barton	134,833	4,432	125,735
Glover (West Glover)	2,286	450	4,264
wport (City)	597,750	172,358	429,892
Newport Town	6,195	27,803	7,502
North Troy	87,875	3,395	18,730
Orleans	73,417	335	116,248
Troy / Jay	30,583	6,600	162,817

(ANR Wastewater Division, 2002)

In the 1960s-1970s, federal funding typically paid up to 90% of the cost for public sewage treatment plants. Today, it is exceedingly difficult for small towns to finance new facilities due to the high per user cost associated with central sewage treatment projects, and reductions in federal funding. While centralized, municipal treatment facilities may be the preferred types of systems, the rural nature of our region makes it difficult and expensive to provide such facilities for towns without a sufficient population density. Therefore, the majority of the region's wastewater continues to be handled by on-site systems. Current on-site septic design options offer less expensive alternatives to central facilities, making development possible at locations where it has been historically difficult to install effective systems.

Alternative Wastewater Systems

Conventional wastewater systems (both on-site and centralized systems) tend to be large-diameter (pipes), gravity-fed systems. Alternative wastewater systems are often smaller-diameter systems that may, or may not, be gravity fed. They differ from conventional systems in their pre-treatment, collection, treatment, and dispersal methods.

Prior to 1996, on-site septic system designs in Vermont were limited to a few choices that, if properly installed and maintained, were known to be effective in treating wastewater. With the passage of the *Small Scale Wastewater Treatment and Disposal Rules* of 1996, and later the *Wastewater System and Potable Water Supply Rules* (effective January 1, 2005), the numbers and types of acceptable alternative systems have increased. The decision of whether or not an on-site system is permitted remains limited by site constraints such as soil type and depth, degree of slope, proximity to surface water, or lot location (proximity to property lines).

On-Site Wastewater Systems

For our region, on-site systems (i.e. traditional septic systems) are by far the most common for wastewater treatment. Limiting the number of on-site system designs occurs with good reason. Approximately one-third of the on-site septic systems installed each year in Vermont are replacements of failed systems (*Small Flows Quarterly*, Winter 2000, Vol. 1, p.12). Poor siting, installation, or maintenance of on-site systems often contributes to their failure and can result in human health risks through the contamination of public surface or ground water supplies. Maintaining and repairing on-site systems is important to prevent the deterioration of ground and surface water quality, and has associated costs far lower than those for purifying contaminated water supplies.

In years past, many wastewater and water supply systems in Vermont were designed and constructed with little or no oversight, sometimes leading to problems for homeowners when systems failed. In 2000, only one-half of Vermont towns had some form of review or permitting process for on-site system design. The slow pace of regulation and oversight could have potentially contaminated a large number of local water supplies due to poor design or failed systems, thus leading to significant public health risks.

The Agency of Natural Resources, Department of Conservation *Wastewater System and Potable Water Supply Rules* are in effect as of January 1, 2005**.** The rules "apply to the subdivision of land, the construction, modification, or change in use of a building or structure, the creation or modification of a campground, and the construction, modification, replacement and operation of their associated potable water supplies and wastewater disposal systems." The new rules regulate soil-based disposal systems with design flows of less than 6,500 gallons per day, and sewerage connections of any size.

The Rules primary purposes are:

1. To protect human health and the environment;
2. To prevent the creation of health hazards or unsanitary conditions;
3. To ensure the availability of an adequate supply of potable water;
4. To ensure that there is adequate effluent dispersal and drainage for the proper functioning of wastewater systems.

The rules also allow the use of alternative and experimental treatment and disposal systems in the appropriate circumstances and offer investment protection to homeowners through a remediation process for failed systems; and ensure that system designs are reliable, cost effective, and sustainable.

In 2002, the only Northeast Kingdom towns with zoning-based sewage regulations (i.e. through municipal ordinances) were Barnet, Barton, Danville, Hardwick, Kirby, Lyndon, Newport City, Peacham, St. Johnsbury, Stannard, and Waterford. After June 30, 2007, all municipal ordinances and zoning bylaws that establish technical standards and criteria for the design, construction, operation, and maintenance of potable water supplies and wastewater systems will no longer be in effect. Local regulations will later be superseded by the technical standards and criteria of the *2004 Wastewater Systems and Potable Supply Rules* and the *Vermont Water Supply Rules.*

It is likely that the *Wastewater System and Potable Water Supply Rules* will increase the flexibility of siting conditions for on-site wastewater systems. Briefly, the new rules allow:

1. Consider use of advanced treatment technologies.
2. Revisions to required site conditions, such as increasing the maximum allowable slope of a site from 20% to 30%, and decreasing the minimum depth of native soil to groundwater from 24" to as little as 12" if certain approved treatment systems are used.
3. In the repair of failed systems, allow cost as one factor in deciding what the "best fix" system must be.

It has been estimated that the combined effect of the 1996 and these new rules could potentially open an additional 30% of the state's land area up for development, under Vermont Act 249 (ANR Environmental Protection and Subdivision Rules). (*Alternative Wastewater Treatment/Environmental and Land Use Impact Study Committee Report*, Vermont Department of Housing and Community Affairs, January 2001, p.2). There are concerns that this could lead to an increase in 'sprawl-like' conditions in some areas. Municipalities that encourage and plan for denser development would benefit, however, by being able to share the costs of providing centralized wastewater facilities due to a higher number of residents being served by the system.

Act 249 created the state subdivision permitting process, where lots larger than ten acres in size were not required to have a state subdivision permit, nor any review of wastewater treatment systems. With the new rules, subdivisions of any size now require permitting for wastewater and water supply systems. The provisions of any local subdivision regulations less stringent than the state regulations will be superseded by the new state rules.

The new rules also provide minimum site conditions that must be met before a wastewater system can be constructed. These conditions must meet one of three sets of requirements (related to a site's soil, slope, and drainage) outlined in the new rules. There are minimum site conditions (outlined in the new rules) that can be used by towns that have adopted a variety of zoning and land use regulations designed to manage development.

The new rules reflect the state permitting authority's belief that Vermonters are better served by a standardized subdivision permitting process conducted at the state level than by piecemeal regulation conducted at the town level. ANR does not plan to cut towns entirely out of the process, however, as it hopes that towns will sometimes be able to implement the state's permitting scheme on ANR's behalf.

Sludge and Effluent Disposal

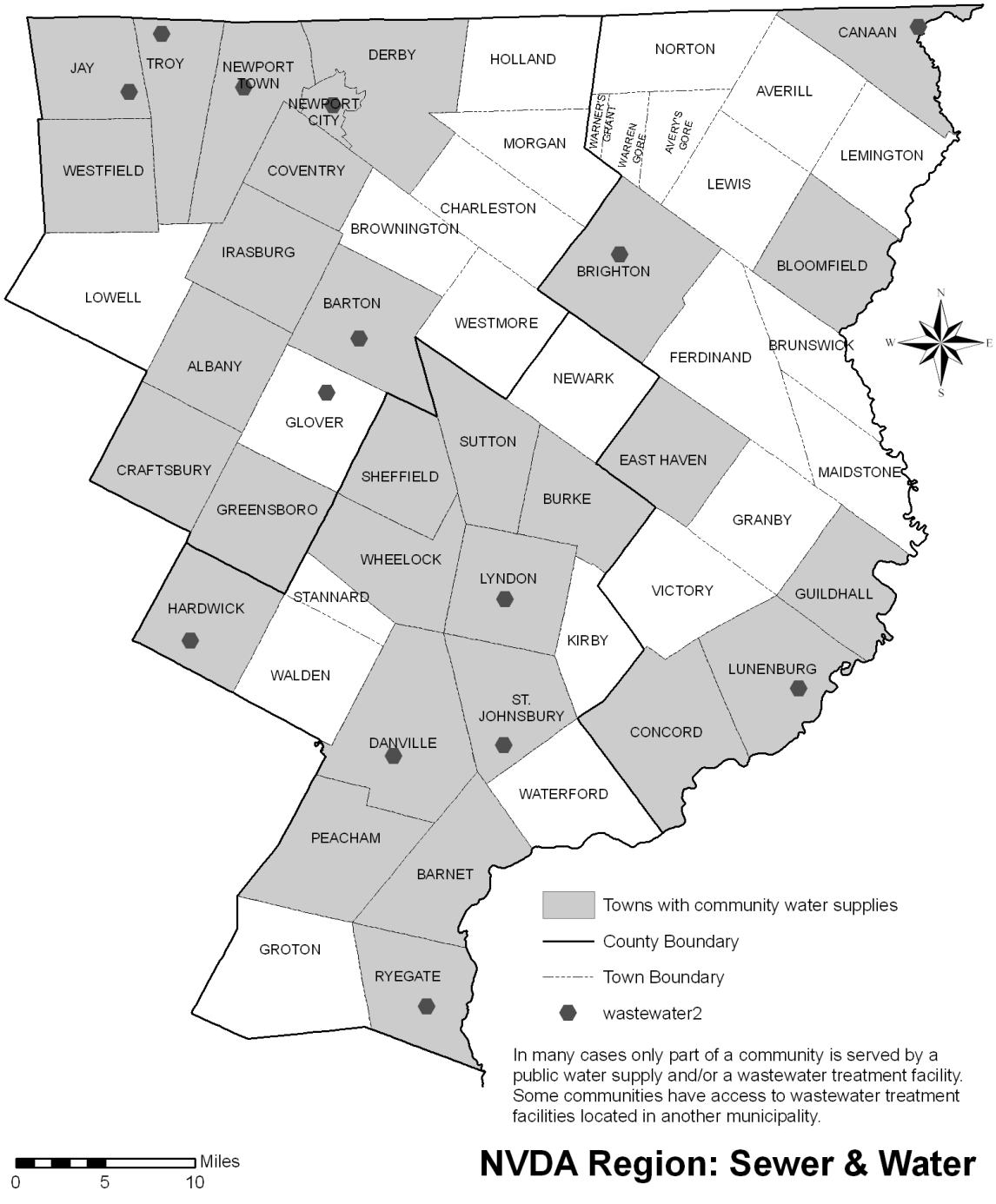
After wastewater is treated, there is the issue of sludge and effluent disposal. Sludge in the Northeast Kingdom is typically disposed of by land application, or it is de-watered and sent to a landfill. Shipping sludge to a landfill takes up valuable space. Incineration is not permitted in Vermont, but a few small communities may transport their sludge out of state for incineration.

Effluent is what remains after solids have been removed from wastewater. Once wastewater has been treated, effluents are usually discharged to ground or surface waters. However, there are regulatory requirements that include testing for pH, residual chlorine, dissolved oxygen, suspended solids, bacteria, various metals, and organic compounds before discharge can occur. In communities with small wastewater systems, effluents may be discharged in a leach-field type of system similar to those used for on-site septic systems.

Whether an on-site system or municipal wastewater treatment plant is used, the sludge and effluent are treated similarly. In our region, private haulers currently manage the septage (generated by septic tanks from on-site facilities) in municipalities without wastewater treatment facilities. Management options to dispose of septage are: treatment at municipal

wastewater facilities, land application, de-watering and landfilling of bio-solids (sludge and septage), composting, and management at suitable out of region or state facilities.

MAP 8:



Stormwater

An important issue related to water supply and wastewater is storm water. When it rains, or snow melts, the resulting "stormwater" is absorbed into the ground or it becomes "runoff" and flows over the land to a nearby lake, stream, or estuary. Stormwater runoff from vegetated land is typically low, since most rain or snow filters into the ground or is lost to evaporation. Stormwater runoff increases as the percentage of impervious surface cover increases (e.g., paved streets, parking lots, and rooftops), since the land's ability to absorb water is restricted. In addition to washing pollutants (e.g., hydrocarbons, nutrients, or bacteria) into our surface waters, improperly managed stormwater runoff can result in soil erosion and flooding. Stormwater does recharge the groundwater supply, and helps to reduce flooding and surface water contamination. Some municipalities have designated "groundwater recharge areas", for storm water collection.

The Vermont Agency of Natural Resources, Water Quality Division requires a Multi-Sector General Permit (MSGP) for stormwater discharges associated with industrial activities. The goals are to eliminate contaminants from entering receiving waters or municipal sewer systems through storm runoff, and to keep contaminants from being exposed to rain or snow and subsequent runoff. The MSGP is an Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) permit, thus the permit is required for compliance with federal regulations. This permit covers new and existing discharges associated with certain types of industrial activity. Typically, municipal industries that will require the permit include wastewater treatment facilities and public works garages. Private industry usually includes auto salvage facilities, paper mills, manufacturing plants, food processing facilities, landfills, and auto repair and maintenance facilities.

VII. WASTEWATER, SEWAGE & STORMWATER MANAGEMENT GOALS

- The region's towns should have adequate wastewater treatment facilities with sufficient capacity to meet current needs and projected future development.
- Public investments in utility facilities and services should be in agreement with local plans and be directed toward town centers, villages, or other designated and planned growth areas.

STRATEGIES

- Support proposals to upgrade and improve existing wastewater treatment facilities.
- Encourage the proper disposal of hazardous materials, particularly household hazardous materials that are difficult to treat in secondary systems.
- Provide advice and technical assistance to communities and groups interested in developing community wastewater systems.
- Assist communities to interpret and abide by changes to state and federal laws regarding municipal and on-site wastewater systems and stormwater regulations.
- Assist communities with advanced planning activities for future upgrades and financing of local systems.

VIII. SOLID WASTE MANAGEMENT

Municipal Solid Waste Plans

Vermont statute [24 V.S.A. subsection 2202(a)] requires that all municipalities, either individually, or through a solid waste management district or inter-municipal association, adopt a Solid Waste Implementation Plan (SWIP) that conforms with the State Solid Waste Management Plan (2001 Plan Update). The Waste Management Division of the Agency of Natural Resources offers a Guidance Document/Template that is intended to help towns, districts, and associations to assemble a plan. The Guidance Document may be requested from the Waste Management Division by calling (802) 241-3888, or may be downloaded from the Agency's website: http://www.anr.state.vt.us/dec/wmd.htm.

Although mandated solid waste plans mean that municipalities still have the primary statutory responsibilities for solid waste management, the private sector has increasingly taken on a majority of collection, transport, processing, and disposal services required in the state. The State Solid Waste Management Plan holds the Agency of Natural Resources, municipalities, and the private sector responsible for maintaining environmental protection and economic competitiveness. Each should also initiate and play a role in educating the public about waste reduction.

Solid waste services are provided for 34 towns by the Northeast Kingdom Waste Management District (NEKWMD). Walden and Hardwick are part of the Central Vermont Solid Waste Management District, while Craftsbury is a member of the Lamoille Regional Solid Waste Management District. Seventeen towns have approved their own individual plans for solid waste, and are not members of a Waste Management District (See Map 9, page 56).

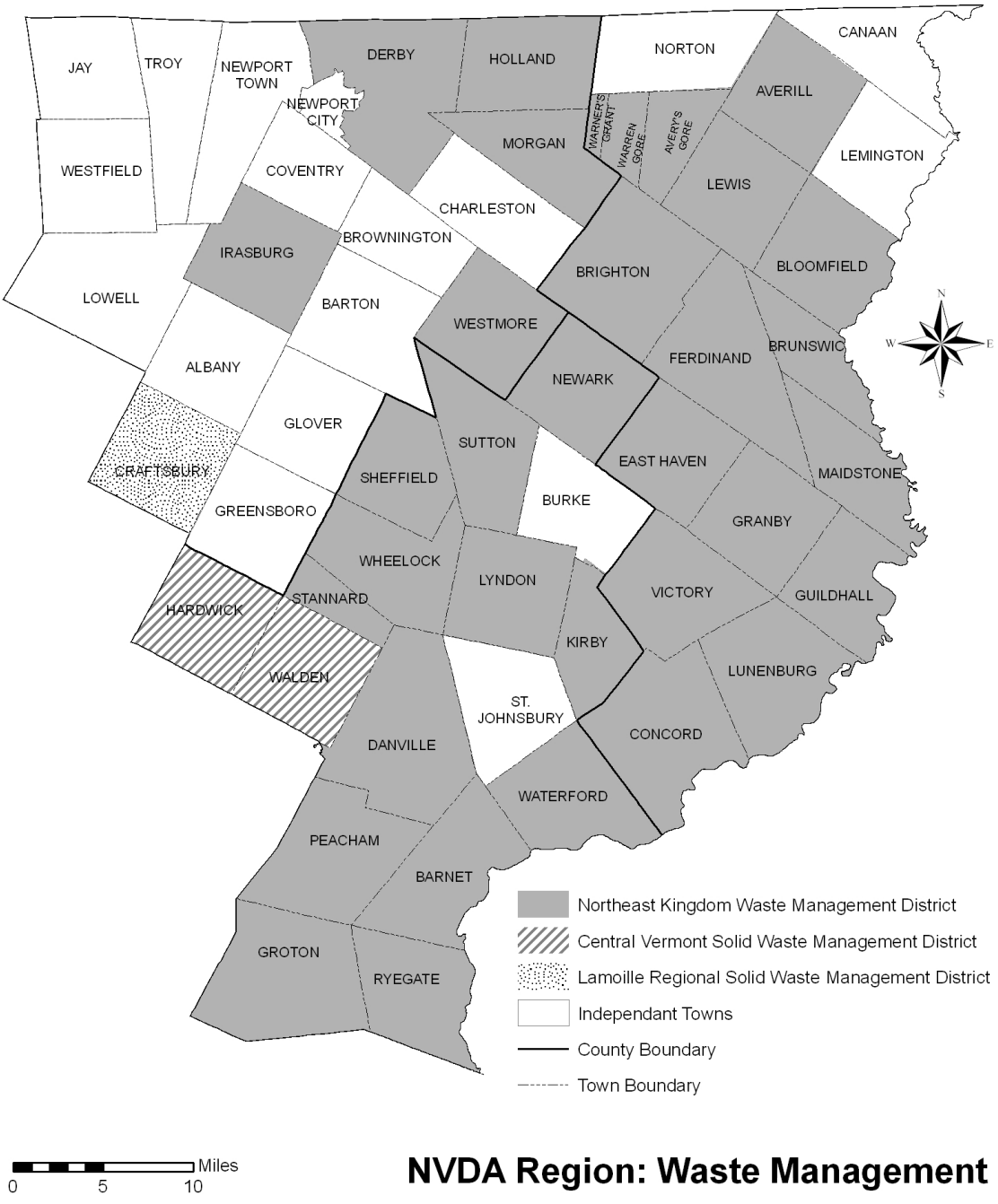
Landfills

As of 2004, the only permitted landfill within the region is located in Coventry. This is a lined facility, privately owned and operated by Waste USA, a subsidiary of New England Waste Services of Vermont. Waste USA estimates that approximately one-half of the solid waste generated in Vermont goes to the landfill in Coventry. This makes the region a net importer of municipal solid waste. The useful life of the Coventry landfill (in its present configuration) at its current rate of fill (240,000 tons per year) is approximately five to seven years. Waste USA is presently in the process of permitting for another cell. They also expect the Coventry landfill to remain in operation for another 20 years. In addition to the landfill services that Waste USA provides, they also provide recycling services (including tires and metals), composting, and have plans for a generating facility that will convert methane gas into electricity.

Act 78, sometimes referred to as the Solid Waste Act, challenged Vermont communities to develop management plans to increase source and waste reduction, reuse, recycling, and decrease the disposal of solid wastes. The highest priority was placed on source and waste reduction, something that has not been successful. The Act did result in the closure of a number of older, unlined landfills and requires greater planning by local officials when siting new facilities. Landfills in Lyndon, Concord, Waterford, and Brighton were closed prior to

1989 and are exempt from post closure monitoring requirements. Landfills in Barnet, Morgan, and Westmore were closed after 1989 and are subject to the post closure monitoring requirements.

MAP 9:



Some former waste disposal sites within the region also remain on the federal EPA's list of Superfund sites. These include: Darling Hill Dump (Lyndonville), Derby Line Dump, Fairbanks Morse Foundry (St. Johnsbury), Nadeau Landfill (Coventry), Parker Sanitary Landfill (Lyndon), and St. Johnsbury Dump. These sites require continued monitoring as existing or potential sources of groundwater pollution.

Transfer Stations and Recycling

There are several waste transfer stations and recycling collection centers within the region. Waste transfer stations allow municipal wastes to be collected locally for transport to the regional landfills. Local transfer stations that collect recyclables help to reduce the amount of waste going to the regional landfill, thus lengthening its useful life. This is important because the siting of new landfills can certainly be quite controversial. Recycling has become more important to many communities and lets individuals play a direct role in protecting the environment.

To a large degree, waste collection (and handling) services within the region are carried out by private sector companies. This is in line with a nationwide trend and aids in reducing the amount of municipal funds required for solid waste management. The Northeast Kingdom Waste Management District requires that all waste haulers conducting business in the District first register, and then report to the district on a monthly basis.

The Northeast Kingdom Waste Management District has a variety of recycling and composting programs, to carry on the function of the former NEK Recycling Cooperative. Recyclables within the NEK Waste Management District are collected at the various transfer stations and transferred to the Lyndonville facility for processing and bundling. They are then sold to brokers who ship the recyclables to their end destinations for final processing (usually in ME, CT, or Canada).

Hazardous and Radioactive Wastes

The sub-categories of hazardous wastes include Household Hazardous Wastes, Industrial Wastes, and Radioactive Wastes (low-level and high-level). Household Hazardous Wastes (HHW) are the most prevalent of all hazardous wastes generated within the region. Despite their availability and relative ease-of-use for residential and commercial sources, the toxins in many of these products can pose serious health and environmental hazards (oil, batteries, cleaning solvents, insecticides, fluorescent bulbs, etc.). Therefore, the proper disposal of wastes, empty containers, and the unused portions of products is essential. The Northeast Kingdom Waste Management District periodically collects HHW for shipping and disposal. Some towns also have oil and battery collection facilities.

Low-level radioactive wastes are generated within the region. Typically, low-level wastes come from hospitals, medical, and research institutions. Low-level radioactive wastes generated in Vermont are disposed of in Texas under a radioactive waste disposal compact. High-level radioactive wastes are not directly generated in the Northeast Kingdom. As consumers of nuclear power, the region is partially responsible for wastes generated through the Vermont

Yankee nuclear plant in southern Vermont. However, until a decision is made regarding a future long-term storage facility in Nevada, the high-level wastes will remain on-site.

Solid Waste Management Initiatives

- Unit based pricing (for non-recyclables). The pay per bag (or, pay as you throw) system is an effective way to reduce the amount of waste generated and increase the amount of waste recycled. The built-in economic incentive allows customers to pay less as they dispose of less.
- Reuse/Recycling Programs. These have proven to be economically successful and popular in most communities. Establishing re-use zones at local transfer stations (residents drop of unwanted usable items and others can take them for reuse) has worked in some areas. Some communities continue to charge fees for resident to recycle. Recycling fees may actually be a disincentive for getting residents to recycle.
- Grants for education. Education grants are available to establish curriculum guides for waste management and recycling education, and to promote in-school recycling and composting.

VIII. SOLID WASTE MANAGEMENT GOALS

- Municipal and regional solid waste disposal systems should be cost-effective, environmentally sound, and promote reduction, reuse, and recycling.
- Hazardous wastes should be disposed of at secure, environmentally sound disposal sites.

STRATEGIES

- Promote recycling, re-use, and waste reduction efforts throughout the region.
- Support public education to promote proper waste disposal efforts.
- Assist municipalities to adopt illegal dumping and burning ordinances.
- Encourage communities to meet the waste management and recycling goals established by the Northeast Kingdom Waste Management District and municipal waste management plans.
- Encourage communities to create or expand local recycling facilities.
- Encourage communities to eliminate or clean up illegal dump sites and Brownfields in the region.
