TOWN OF BERLIN, VERMONT

TOWN PLAN

March 6, 2012

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I. INTRODUCTION

Berlin's Town Plan is a policy statement for guiding future land use and community decisions within the Town. This Plan documents and analyzes present conditions and includes a vision for the Town's future. That vision is intended to reflect the best interests of the Town as a whole rather than the interests of any particular individual or special group.

The Plan addresses a number of issues that will impact the quality and character of life in the future. Included are discussions of population growth and characteristics, public utilities and facilities, housing, transportation, energy, natural and historic resources, and land use patterns.

The Plan is based on an analysis of the current conditions in the Town, along with a projection of anticipated growth and development in the Town and in the surrounding region. The Plan presents a long term (10 to 20 year) vision of the future, but it is expected that this vision will be re-examined periodically. Vermont's Planning Act, 24 VSA, Chapter 117 (the Act) requires that municipal plans be reviewed, updated, and re-adopted every 5 years. It is important to remember that the planning process is fluid and on-going, and that the Plan will be continually reassessed and revised as goals and objectives are re-evaluated. Only in this way can progress be made toward a constantly evolving vision of the future.

The Planning Commission incorporated the following planning studies and efforts into the Plan: *A New Town Center and The Barre-Montpelier Road Corridor*, dated May, 2000; the Central Vermont Regional Planning Commission's *Vermont Route 62 and Barre-Montpelier Road Corridor Study*, dated September 2001; the *Water and Wastewater Master Planning Study,* dated April 2001; the Wilbur Smith Associate's *Berlin Interchanges Analyses, dated July 2003; and The Berlin Mall Village Center Study, dated November 2004; the Town of Berlin Water Supply Study Addendum, dated November 2007* and *August 2010; the Town of Berlin Economic Development Plan, dated January 2008;* and the *VT 62 and Airport Road/Fisher Road Intersection Study, dated July 2008.* These studies are discussed in greater detail elsewhere in the plan.

PURPOSE

The preparation and adoption of municipal plans are authorized by the Act. That Act presents the overall purposes of the law, which are to be incorporated into municipal plans. In addition to the statutory purpose, this Plan is intended to serve a number of local purposes including:

1. Providing a comprehensive source of current data about the Town for use by Town officials, residents, businesses, and potential residents and businesses.

2. Serving as a basis for a capital budget and program to guide infrastructure developments in the Town.

3. Providing a description of the Town's development objectives for use in the Act 250 process.

4. Providing a basis for updating the Town's Zoning and Subdivision Regulations.

5. Providing a common basis for discussions about the Town's future.

ADOPTION AND AMENDMENTS

Adoption, amendment, or re-adoption of this Plan shall be in accord with the Act. Plans shall be adopted, amended, or re-adopted by majority vote of the Town at a Regular or Special Town meeting.

Prior to final adoption, amendment, or re-adoption, public hearings shall be held on the proposed Plan or amendments by both the Planning Commission and the Select Board.

The Act specifies that municipal plans shall expire every 5 years unless they are re-adopted according to the specified procedures. First adopted in 1971, this Plan was substantially revised in 1997, 2002, and 2005.

II. GOALS AND OBJECTIVES OF THE PLAN

While the Town of Berlin is now and is expected to remain a predominantly rural community, it contains a large commercial and industrial center in the area east of Interstate 89 and north of Scott Hill Road and Airport Road. The Town desires to enhance its current role as a regional economic center. From this starting point, and based upon an inventory and analysis of Berlin's current land uses patterns, and public facilities and infrastructure, the following goals and objectives have been developed to guide planning and future development in the Town.

A. **ECONOMIC DEVELOPMENT GOAL.** Continue to attract commercial, office, and industrial development in appropriate locations that will provide employment opportunities, enhance the Town's tax base, and not generate excessive service requirements.

   1. Total employment and non-residential grand list in the Town should grow at a rate equal to or greater than that of the population.

   2. Encourage efforts to strengthen the economic vitality of the Barre-Montpelier Road.

3. Development in the vicinity of Paine Turnpike and Exit 7 should be designed to prevent commercial strip development (especially along Paine Turnpike) and protect the residential character of existing and planned neighborhoods.

4. Encourage the expansion of the historic town area in the vicinity of Berlin Four Corners to adjacent areas to allow the development of a compact multiple use community center.

5. Industrial and manufacturing uses should be focused within the Town's industrial districts, and those district standards should be reviewed to avoid the development of incompatible land uses in those areas.

6. The Town's role as a regional commercial center should be maintained and enhanced.

7. Health care and other human service providers are important parts of the Town's role as a regional center and must share in the costs of providing needed public services.

B. **LAND USE AND DEVELOPMENT PATTERNS GOAL.** Enhance the commercial/industrial complex that has evolved in the Town's northeast quadrant and recognize that development in most other areas will be predominantly rural.

1. Encourage the concentration of most non-residential land uses in designated portions of the northeast quadrant of the Town where they can mutually reinforce each other, with an emphasis on revitalization of the Barre-Montpelier Road and development of the town center area.

2. Encourage non-residential development in designated growth areas.

3. Protect existing residential neighborhoods and insure transitional buffers (including but not limited to the establishment of heavy landscaping and associated screening, increased setbacks and/or careful attention to site design to minimize noise, glare and related impacts) between such neighborhoods and large commercial and industrial developments.

4. Encourage rural residential development in the remaining three quadrants of the Town, while allowing for appropriate non-residential uses including farming, forestry, resource extraction and home-based businesses.

5. Facilitate development in the more level portions of the Town and discourage development in the steep and mountainous area.

6. Support the goals and objectives of this plan through the administration, enforcement and, where appropriate, revision of the Berlin Zoning Regulations.

7. Coordinate the provision of municipal infrastructure (e.g., water and sewer) with the Town's land use and development policies, and restrict the extension of such infrastructure outside of designated commercial, industrial and higher density residential areas except to address threats to health and safety.

8. Town natural resources, including but not limited to those defined in the Plan, must be carefully protected from incompatible uses and development.

9. Facilitate cluster residential development where appropriate.

10. Encourage the expansion of the town center area to adjacent areas to allow the development of a multiple use, high density neighborhood with a range of housing types.

11. Reinforce the existing neighborhood around Berlin Four Corners through use of community gathering facilities such as parks, meeting places, or recreation facilities.

12. Encourage pedestrian connections within and between residential neighborhoods and other facilities, such as the Elementary School, the town offices, and commercial facilities.

C. **PUBLIC SERVICES AND FACILITIES GOAL.** Provide a system of public services and facilities that will support and reinforce the land use patterns described above.

1. Support an integrated infrastructure system (water, sewer, roads, etc.) to support development in the northeast quadrant of the Town, and avoid the extension of such facilities outside of these areas.

2. Plan, develop, and construct a water system to serve the northeast quadrant of Berlin.

3. Foster a strong working relationship and regular communications with adjoining communities and regional, state and federal agencies and organizations to serve the residents of the Town and region.

4. Promote a capital budget and program process which will ensure that public facilities and services are matched to Town needs, and that development projects are integrated into the Town's objectives.

5. Maintain a high level of professionalism in town government while encouraging citizen involvement.

6. Encourage and support the delivery of high quality educational and child care services to all Berlin residents.

7. Work to secure a Post Office in Berlin to promote commerce, public safety and a greater sense of community.

D. **TRANSPORTATION GOAL.** Encourage a multi-modal transportation network that provides appropriate levels of access to support the land use patterns described in this Plan.

1. Encourage a transportation network which protects neighborhoods and residential development.

2. Improve connections between the rural areas west of the Interstate and the commercial/industrial center in the northeast quadrant. Such connections should consider any additional negative impacts on existing and proposed abutting residential uses.

3. Encourage transportation improvements that alleviate high accident locations and attempt to improve pedestrian safety in quality and severity.

4 Improve the safety and efficiency of the Barre-Montpelier Road in a manner that supports the revitalization of businesses served by the highway, improves pedestrian circulation, better manages access and incorporates streetscape improvements (e.g., sidewalks, landscaping) into the roadway design.

5. Encourage energy efficiency in the transportation system.

6. Improve the safety and efficiency of Route 62 in a manner that supports the Town's land use goals, including the development in the area of the town center, and improves pedestrian connections throughout the Four Corners/mall/hospital area, to be referred to hereafter as the Plateau area.

7. Develop integrated infrastructure systems to support non-residential development in designated portions of the northeast quadrant of the Town.

8. Recognize the existing scenic qualities of our Town roads and encourage the maintenance of rural characteristics whenever feasible.

E. **HOUSING GOAL.** Encourage a mixture of housing sizes, types, and costs in order to provide housing opportunities for all persons wishing to reside in Berlin.

1. Maintain the Town's current stock of affordable housing.

2. Continue to accommodate all types of housing.

3. Encourage the development of a variety of housing types, including multi-family, affordable, and elderly housing, in the proposed town center area.

4. Consider the relationship between land use patterns, land use policy, and housing development.

5. Maintain an ongoing effort to understand, educate about, and participate in solutions to Berlin's housing needs.

F. **ENERGY GOAL.** Promote energy efficiency and conservation.

1. Encourage the use of renewable energy development.

2. Support energy cost efficiency.

3. Encourage safe non-automobile travel of all kinds, both between developed areas and within developments.

4. Encourage the use of other conservation measures including mass transit, car-pooling, etc.

G. **NATURAL AND HISTORIC RESOURCES GOAL.** Protect Berlin's natural and historic features in order to preserve the rural qualities of the Town.

1. Protect resource production lands and the livelihoods of the people who use them.

2. Preserve and promote a viable agricultural economy, culture and land base.

3. Accommodate earth resources operations while guarding against their more harmful aspects.

4. Protect and enhance water quality.

5. Protect against flood related hazards.

6. Protect steep slopes and high elevations from development.

7. Protect significant and scenic features.

8. Recognize and preserve historic resources.

III. BRIEF TOWN HISTORY

The Town of Berlin was chartered in June of 1763 by H. Benning Wentworth, Governor of New Hampshire. There is speculation that Berlin was named after the capital of the Holy Roman Empire of Frederick the Great, since Wentworth was a great admirer of Frederick. Alternately, the Town may have been named after Berlin, Massachusetts, a Town next to Worcester, since both Berlin and Worcester, Vermont were chartered on the same day. The name has survived for over two hundred years, even though there was an attempt to change it to "Distoma" during World War II.

While the Town of Berlin has never moved, it has been included in a number of different counties over the years. In 1814 Washington County's name was adopted, and this has persevered ever since. A portion of the Town's area was separated and merged with the City of Montpelier in 1899.

Census records reveal that Berlin grew steadily until 1830 when it reached a population of 1,664. For the next sixty years the Town's population fluctuated between 1,300 and 1,500, and then dropped to about 1,000 with the division in 1899. During the first 40 years of the 20th Century, the Town grew by only 100 persons. Following World War II, Berlin experienced steady population growth, most pronounced during the decade of the 1960's when some 750 new people located here. While not as dramatic, population growth has continued to the present.

Berlin has always been a rural community, with many farms located along the river and stream valleys, on the relatively flat land between Berlin Pond and the Stevens Branch River, and in a few suitable highland locations. The original town center was located at the top of "Turner Hill" at the intersection of Crosstown Road and Hill Street Extension (which formerly continued south along the Pond to Brookfield). When the original meeting house burned in 1838, it was not rebuilt and the center of local government was shifted to the Berlin Corners area where a cluster of homes, businesses (including three mills), and another church evolved.

The original road system had a strong north-south orientation, following the valleys and respecting the rugged ridges. There were, however, more east-west connections than at present.

In 1929 a substantial portion of relatively level land between Berlin Pond and the Stevens Branch River was acquired by a business group representing the cities of Barre and Montpelier and the Barre-Montpelier Airport was constructed. The airport was taken over by the State of Vermont in 1970 and renamed the E.F. Knapp State Airport.

The Barre-Montpelier Road followed the Stevens Branch through Berlin and became the focus of active commercial and industrial development in the post World War II years, a pattern which is still evident today.

In the 1960's, Interstate 89 was constructed along the higher land east of the Pond and west of the Airport. While Interstate 89 includes two exits entirely within the Town and a third at its northern border, the facility also necessitated the severance of several local roads, leaving only Crosstown Road and Hill Street Extension to connect the Town across the expressway.

With proximity to the Barre-Montpelier urbanized area, its access to the Interstate, and the rural quality of its landscape, Berlin has attracted considerable development during the past 40 years. Residential development has dispersed throughout the Town, generally along existing roads. Commercial development and service activities (associated with health care) have concentrated in the northeast quadrant, generally between the Airport and the Stevens Branch.

The Town has grown to nearly 2,900 residents, most of who live in the rural portions of the Town surrounding the commercial/industrial/service center. At the same time, that center has grown to serve the entire Central Vermont region, and contains a hospital, administrative office facilities, a shopping center, and a variety of economic activities.

As the Town of Berlin looks to the future, it does so with a strong foundation in the past.

IV. SUMMARY OF EXISTING CONDITIONS

A. POPULATION TRENDS

The Town of Berlin shared in Vermont's expansion during the second half of the last century, growing from a population of 1,158 in 1950 to 2,864 in 2000. As indicated in Table 3, that growth was most pronounced in the 1960's, and slowed during the past 30 years.

TABLE 3
BERLIN POPULATION GROWTH (1950 - 2010)
(Source: US Census Reports and the Central Vermont Chamber of Commerce)

Year	Population
1950	1,158
1960	1,306
1970	2,050
1980	2,450
1990	2,589
2000	2,864
2010	2,898

It is apparent that the Town's population has grown at a much slower rate since the 1980's than it did during the previous two decades.

B. POPULATION CHARACTERISTICS:

1. Age Distribution.

While the Town's population has been and is expected to continue growing, it is also important to examine changes in the composition of that population. Table 4 shows how the proportion of the total population falling in specific age categories has changed over the past decade, and since 1960. Also shown are similar data for Washington County.

TABLE 4
BERLIN POPULATION AGE GROUP DISTRIBUTION
(Percent)
(Source: US Census Reports)

	Berlin				Washington County			
Age Group	1960	1980	1990	2000	1960	1980	1990	2000
0 - 5 yrs	11.4	8.2	6.3	5.2	9.9	8.2	7.1	5.4
6 - 14 yrs	19.2	15.5	16.3	13.1	17.9	16.0	15.7	13.8
15 - 24 yrs	13.3	11.8	9.8	11.3	13.8	16.7	12.7	13.4
25 - 44 yrs	25.1	27.2	29.6	27.0	26.4	28.3	33.2	28.8
45 - 54 yrs	13.3	10.1	11.4	16.6	12.0	9.6	10.6	16.6
55 - 64 yrs	9.4	9.8	9.3	9.9	9.6	8.7	8.2	9.5
65 + yrs	8.4	17.4	17.3	16.9	10.4	12.5	12.5	12.8

The portion of the Town's population falling in the 65 and over age group has more than doubled, from 8.4% in 1960 to 16.9% in 2000. In real numbers this age group has increased from 109 persons in 1960 to 484 in 2000. The growth in this age group in Berlin is considerably greater than growth in the comparable age group for the entire County.

2. Household Characteristics

There has been modest change between 2000 and 2010 in household characteristics with 1,109 total households now compared to 1,236 in 2010. Berlin stays within 2% of the statistics for Washington County for other household characteristics.

3. Labor Force Participation

Of Berlin residents aged 16 and over (the basic working age), 52.3% are female and 47.7% are male. Of this group, those in the labor force constitute 67.8% (slightly below the 70.5% for the county). In Berlin, the labor force participation rate for females is 62.1% and for males is 74%. Similar County figures are 66.3% for females and 75% for males. Of families containing children less than 6 years of age, 73.8% have both parents in the labor force. A total of 124 children less than 6 years of age live in households where both parents are in the labor force. These patterns are not significantly different from those for the County (74.1%).

Berlin's population growth rate slowed substantially during the 2000's. This decrease is due in part to the drop in household size. For planning purposes, a growth range between 0.5% and 1% per year seems consistent with past trends. This yields future population projections as shown in Table 1.

TABLE 1
POPULATION PROJECTIONS

Year	Forecast
1990 (actual)	2,561
2000 (actual)	2,864
2010 (actual)	2,898
2020 (estimate)	2,950

Sources: 2010: U.S. Census; VT Dept. of Health; Central VT Regional Planning Commission

Thus, the Town can expect an increase in population of approximately 50 persons over the coming 10 years. This modest growth in population will be accompanied by corresponding construction of housing. Assuming that the Town-wide ratio of persons per year-round dwelling continues to diminish to a level of less than 2.5 by the year 2010 and then holds constant, a growth of approximately 12 new year-round dwellings per year is consistent with the previously discussed population projections. This yields a range of estimates for future year-round housing stock in the Town as shown in Table 2.

TABLE 2
HOUSING PROJECTIONS

Year	Forecast
1990 (actual)	938
2000 (actual)	1,109
2010 (actual)	1,236
2020 (estimate)	1,485

Sources: 2010: U.S. Census: VT Dept. of Health; Central Vermont Regional Planning Commission.

V. EXISTING LAND USE PATTERNS

Berlin is sparsely populated and characterized by rugged ridges and valleys. There are scattered clusters of residential development where land form and soil conditions are favorable, and there are two traditional centers (Riverton and Berlin Corners). In addition, there is a strong foundation of non-residential development located in the Town's northeast quadrant.

In many respects, Berlin's settlement pattern is typical of much of Vermont – characterized by expanses of sparsely developed countryside interspersed with clusters of more intense development. In some cases, these clusters are small residential neighborhoods. In other cases, however, the clusters are much less compact and lack the densities and pedestrian scale of traditional village centers. As Berlin has emerged as a regional commercial center, the development pattern has become wholly oriented toward the automobile. This pattern, which first emerged along the Route 302 corridor and more recently on the Plateau area, stands in stark contrast to Vermont's traditional landscape. How the Town guides future growth is a key issue for this plan.

With the exception of the recent development in the northeast quadrant of the Town around the Airport and in the Plateau area, most of the Town of Berlin is rural. A few farms operate on the more level lands where soils are productive. Most of the land is steep, rocky, and wooded. The major roads tend to follow the valleys, both the north-south valleys through the Town and the smaller east-west valleys leading up into the ridges. Development has tended to follow a similar pattern. With the exception of the farm operations, most development in the rural area is residential and tends to be quite scattered. There are, however, small clusters that tend to form rural neighborhoods. Examples include the Riverton area centered around the River crossing, the area between Vermont Route 12 and the Dog River just south of Lord Road, the area along the Crosstown Road around the intersection with Rowell Hill Road, the area along Brookfield Road paralleling the Pond, the area around Berlin Corners, and similar clusters northeast of US Route 302. These clusters not only reflect the irregular landscape but also tend to form the social fabric of the Town.

Small scale commercial activities are co-located with residential development throughout the rural portion of the Town. This includes, among others, various home occupations, logging and firewood operations, gravel extraction, and small retail facilities.

Municipal forests occupy considerable land near Berlin Pond and along the southern Town boundary contributing to the rural sparsely developed character of this area.

The exceptions to this rural pattern are two. There is a small concentration of industrial, warehouse, and commercial facilities of a larger scale concentrated around the intersection

of Vermont Route 12 and Junction Road and including Dog River Road. This area makes use of the railroad and its proximity to Montpelier.

The major concentration of development is in the northeast quadrant of the Town in the area bounded by Interstate 89, Scott Hill Road, and Airport Road. Development in this area takes advantage of access to Interstate 89 and US Route 302 and 2, along with the relatively level land.

1. Around the Airport, primarily west of the Airport, is a cluster of warehouse and industrial establishments including a United Parcel Service facility. Also, this area has office facilities such as the Blue Cross/Blue Shield offices, and the USDA Service Center.

2. North and west of Vermont Route 62 is a cluster of retail, office, and community service (i.e., hospital, State library, school, etc.) facilities which is collectively known as the Plateau area. This includes the intersection of Vermont Route 62 and the Paine Turnpike.

3. Along US Route 302 is a strip of commercial and retail establishments and small shopping centers.

North and east of the Stevens Branch are some small pockets of new suburban residential developments extending up the valleys from the river. These are in areas served by the municipal sewer service. There is also some residential development east of the Paine Turnpike near the Montpelier City line.

Around the Berlin Corners, the historic center of the Town is a cluster of residential development, a monument, and a church. The Town Office Building and Garage are also in this general area

VI. Future Land Use Patterns

The concept of Berlin in the next 10 to 20 years is not drastically different from what we see today. Residential development will continue, at a modest rate, with a majority of the future homes being single family dwellings erected where conditions are most receptive; along existing Class II unpaved roads, where soils and slopes make on-site sewage disposal possible, and where vehicular access is not a challenge. Where these conditions exist, it is anticipated that development densities may reach the maximum levels permitted by the current zoning. Where conditions are less favorable (the predominant area of Town), the continuation of the pattern of sparse development is probable.

Into the future, however, concentrated housing developments will begin to appear, primarily on high quality (paved) access roads and where connection to a municipal sewer

system (extended during the 1990's) is feasible. The majority of Berlin's land area will be sparsely settled on relatively large lots with on-site sewage disposal.

Non-residential development and, in appropriate locations, residential development at relatively high densities, is expected to continue in the northeast quadrant, essentially along Route 302, extending westerly to Interstate 89. In concept, growth served by existing highways will be encouraged, with most intense development envisioned in an area outlined roughly by Fisher Road, Airport Road (part of which is also known as Berlin State Highway), Scott Hill Road, and Paine Turnpike North.

Also, this concept would see a large part of this area served by municipal water and sewer, development-supported improvements to road and traffic control systems (such as on Fisher Road), and execution of plans and construction such that anyone traveling this area, including Route 62, would be pleasantly impressed with the aesthetic harmony created by the non-residential development.

The general concept of Berlin in the future includes modified, expanded or, in appropriate instances, relocated municipal facilities such as the Town Garage and the School.

The Berlin Four Corners neighborhood, which is just west of the Four Corners, will continue to exist in the future and will still function as a pleasant concentration of dwellings. The preservation of this area will help to demarcate the transition between the well developed non-residential section to the east and the more sparsely settled areas to the west. This historic scale and pattern of development can be reinforced with the enhancement of the town center area, contiguous to the historic settlement, to serve as a location of a mix of small-scale commercial, high density residential and civic uses in a traditional village setting. The Town desires to encourage the expansion of the historic town area in the vicinity of Berlin Four Corners to adjacent areas to allow the development of a compact multiple use community center.

Rural Areas. Growth in the sparsely developed rural portions of Berlin will generally take the form of rural residential development along existing roads or in small valleys leading away from existing roads. Where soil and slope conditions are suitable, small clusters of dwellings should be encouraged. In addition, the existing hamlet of Riverton should be encouraged to expand slightly where appropriate.

Clusters of dwellings, or neighborhoods, should be encouraged through the use of planned development designs and innovative zoning provisions. Where such clusters currently exist, and where new ones are created, they should be reinforced as neighborhoods by providing such amenities as meeting spaces, paths linking dwellings, and/or play areas.

Although agriculture is no longer a dominant economic activity in Berlin, the open landscape created by agriculture is still an important feature in some parts of town. There are only a few commercial dairy farms in operation, although some smaller specialty farms also exist. While the outlook for the future of agriculture is uncertain at best, many

landowners have maintained open fields for personal use which contribute to the town's rural character.

Future land use policy should reflect the expectation that development in the interior or upland portions of the Town will be rural and will occur at lower gross densities. Development in the valley areas may be at slightly higher densities, but will be limited by soil capability and slope. At the same time, flood plain conditions must be respected.

The Town should evaluate land uses as patterns and demands change. For example, the conditional use of land in residential areas of non-intrusive home offices should be evaluated. Uses determined not to have a negative impact on the residential character of a neighborhood such as: doctors' offices, non-kenneled veterinarians' offices, or other office uses after evaluation, could be included. Such land use allowances could actually become the nucleus of a population center, or be part of a planned residential development. In addition, current home occupation provisions under zoning should allow for a greater degree of flexibility with regard to home businesses. In the Rural Residential District, allowing "cottage industries" may be an appropriate strategy for encouraging economic development that does not undermine the community's rural character.

To manage growth and development throughout Berlin's rural areas, the vast majority of the land area has been included in the Highland Conservation and Rural Residential Districts. Several smaller districts are located in the Town's rural areas. These districts include the Residential District adjacent to portions of Crosstown Road and an area designated as an Industrial District within and adjacent to Riverton. Additional small parcel(s) zoned industrial are also located adjacent to the Junction Road south of Montpelier.

As noted above, the historic settlement of Riverton is presently designated as Rural Residential and/or Industrial. Within the area designated as Rural Residential, the mix of uses that are permitted is limited and traditional village commercial businesses, such as a general store, may not be established. Likewise, the extensive area designated as industrial does not permit new residential development that could expand the hamlet's traditional pattern. An alternative to the current zoning could be the creation of a multiple use village designation that would permit appropriate, small scale commercial enterprises while encouraging residential and associated uses at historic densities.

Historic Town Area: The Berlin Four Corners area is considered the historic area of the Town, clustered just west of the intersection of Crosstown Road and the Paine Turnpike (which was severed by the Interstate). In this area, there is a Town Office, Town Garage, church, cemetery, and a number of dwellings dating from the previous century mingled with several more modern dwellings and a monument. Part of the area is described as a Historic District with boundaries generally as shown on a map prepared by the Vermont Division for Historic Preservation (dated November 1980, and February 1986).

This area should remain as a compact residential area with modest residential densities. In a sense, it is a small village, and serves as a transition between the rural areas to the west and the suburban commercial/industrial areas to the east. To facilitate this, it may be necessary that the proposed plan for integrated and unified sewer and water service discussed under the commercial/industrial center also serve the Historic District.

Town Center District: Most recently, *The Berlin Mall Village Center Study* prepared by Wilbur Smith Associates expanded on the Town Center principles developed in the Town Center Study and resulted in the creation of a new zoning district: The Town Center (TC) District. This recent study applied the Town Center principles of compact, multiple use development to the area around the existing Berlin Mall. Additionally, this plan proposed a new village center connecting the mall with the hospital and the elementary school; concentrating new growth in the area where growth is already occurring. The goals of this District are to create an economically viable core with a mixture of retail, office, residential, and service uses, built on a small-scale that is conducive to pedestrian activity. This will result in an aesthetically pleasing public realm of streets and sidewalks framed by building facades, enhanced by street trees, plazas, parks, natural and recreational areas, and other public amenities. Additionally, the Town Center will become an area that is safe and appealing for pedestrians and bicyclists, where the need to move traffic through is balanced against the need to make the pedestrian experience safe and enjoyable. The study and creation of the Town Center zoning district represents a significant opportunity for the Town to guide future development in a manner that will encourage a compact, pedestrian-friendly, multiple use village center.

The Town of Berlin will need to make a continual effort to realize the goals of expanding and enhancing the town center area, as described in the Wilbur Smith Study. It may be appropriate to appoint a committee to focus on town center area enhancement, coordinate the efforts of various boards and committees, work with affected landowners, and keep the public informed as to the effort.

Commercial/Industrial Center. The northeast quadrant – in particular the Plateau area – enjoys significant access advantages, relatively level land, and a location central to the Barre-Montpelier urbanized area. This area has developed, and will continue to develop, as a regional commercial and service center. As such, it will continue to attract customers, clients, workers, patients, and visitors from the surrounding region.

In order for the Town to make the best use of the potential of the Northeast quadrant, it is recommended that a comprehensive, integrated plan be developed which addresses access and circulation, potential land uses, and provision of water and sewer service. At the same time, the public design objectives for this area should be specified. While actual implementation of such a plan may be done by developers in conjunction with specific projects, the existence of an overall plan will help to ensure that the Town is able to derive as much benefit from development in the area as possible.

This plan could include such objectives as mixed commercial and residential uses to minimize vehicular travel between home and shopping or service facilities, a pedestrian

network to facilitate walking between retail, office, service, and residential establishments, and a unified, coherent vehicular circulation system. Densities should be reviewed relative to the land use and growth management objectives of the area, as identified in the Berlin Town Plan.

Transition Areas. Along the border between Berlin and Montpelier are several areas that serve as a transition between the rural portions of Berlin and the more urbanized Montpelier. This area is primarily residential at varying densities, and is quite steep in places. These characteristics extend across the line into the City, but much of the area in the City is designated as "conservation" with limited development densities. It is recommended that the portion of Berlin adjacent to this boundary develop as a residential area with modest densities and lot sizes of less than one acre.

The western edge of this transition area abuts commercial and industrial areas between the Winooski River and US Route 2. Some of this type of development activity has extended into Berlin along the Dog River, VT Route 12, and the railroad. This location has some access potential and commercial and industrial activities in the area should be encouraged, extending as far south along Route 12 as the first bridge over the Dog River. An important aquifer exists along the Dog River in the area where commercial and industrial development is encouraged along Route 12. Local and State regulations should be followed to protect this resource from inappropriate development activity.

The US Route 302 Corridor. The US Route 302 corridor is a commercial strip along both sides of the busy road between the cities of Montpelier and Barre. There is a great variety of commercial activities including fast food establishments, furniture stores, auto sales facilities, and personal service establishments. This is clearly a high potential area that benefits from water and sewer service and good access to the urbanized area and to the Interstate.

The objective is to retain and re-energize this important commercial area while minimizing the adverse impacts of traffic congestion and improving pedestrian safety and amenity. To this end, the Planning Commission included a study of this important corridor in the aforementioned White Study and the Central Vermont Regional Planning Commission's *Vermont Route 62 and Barre-Montpelier Road Corridor Study*, dated September 2001 (a.k.a. Dubois & King Report). The final reports included several recommendations for better managing access and improving pedestrian circulation. While the reports did not offer detailed recommendations related to land use and development within the corridor, several suggestions were made during the public process that, in combination, should improve the visual appearance and function of the corridor and stimulate re-development. These include:

Improve site design along the corridor by locating parking areas to the side and rear of buildings, where practical, and establish landscaping standards for front yards.

- Encourage better building design, including multi-story buildings, which are oriented to relate to the highway both functionally and visually.

- Establish a consistent streetscape by siting buildings close to the road.
- Promote greater pedestrian access by requiring sidewalks along all road frontage, and ensuring that sidewalks are provided within a site to connect building accesses with parking areas and public sidewalks.
- Reduce the amount of land area devoted to parking by requiring shared parking in appropriate locations, and reducing the amount of parking required for shared facilities serving multiple uses.
- Better manage highway access by requiring the consolidation and/or narrowing of curb cuts and, in appropriate locations, shared access between parcels and driveway connections to adjacent parcels in the rear of buildings.

Exit 6 Area. The land in the southeast quadrant of Exit 6 is designated commercial due to its access to Interstate 89 with limited use of local roads.

The land in this area north of Route 63 with the exception of the current small 500' deep commercial zone is designated Highland Conservation District due to the residential nature of the area, environmental concerns regarding runoff to Berlin Pond, and potential traffic impacts to East Road.

The Northeast Corner. In the extreme northeast corner of the Town, falling between the main branch and the Stevens Branch of the Winooski River is a small segment of land which is somewhat separate from the rest of Berlin. The land in the river valleys is relatively level, but rises fairly steeply toward Goldsbury and Beckley hills in Barre Town. Water and sewer lines are able to follow several valleys leading away from the Stevens Branch; this has facilitated a suburban pattern of residential development.

VII. UTILITIES, FACILITIES, AND SERVICES SECTION

Overview

The Town of Berlin provides a range of public services and facilities for its residents and residents of the surrounding region. It is important that the Town's facilities continue to provide the desired quality of services, be properly maintained and prepared to accommodate the types of development anticipated in the future. What follows is a series of recommendations designed to ensure that the Town's public facilities and services will be adequate for the foreseeable future. The **Public Facilities and Services Map** shows the location of present and anticipated public facilities.

There are a great many public facilities and services located in the Town of Berlin. **The Public Utilities and Facilities Map** indicates the location of specific buildings, roads, bridges, Town-owned cemeteries, and other cultural features. This map also delineates service areas for existing water and waste water systems.

Water Supply

Berlin residents are served by a variety of potable water systems:

(1) The area along Route 302 from Montpelier to Evergreen Drive is served by Fire District #1 (FD#1) which currently serves approximately 140 customers and distributes roughly 100,000 gallons of water per day. The FD#1 system is based on a 12" main which runs along US Route 302 and serves several branch lines.
2) The area along Route 302 from Evergreen Drive to the Barre City line is served by the Berlin Water Company, a private system which serves approximately 55 customers. This system draws water from a spring and maintains a large reservoir. It is capable of expansion but is limited by the lack of developable land.
(3) The Central Vermont Medical Center (CVMC) constructed a waterline from the Montpelier Water Treatment Facility along Paine Turnpike North and Fisher Road to serve its facilities.

There are a number of smaller private systems, most notably those serving mobile home parks, which draw from wells or springs and serve from 20 to 85 customers.

The two existing water systems serving development along Route 302 will continue to provide adequate service, although there may be some low pressure problems in certain parts of the Berlin Water Company service area.

The Berlin plateau, an area roughly bordered by Paine Turnpike, Fisher Road, Airport Road to Scott Hill Road, and Crosstown Road to Interstate 89, is served mainly by wells and is in need of a new source. There are approximately 17 contaminated wells in the plateau in need of replacement, and the lack of a public water supply has resulted in the loss of potential development opportunities for Berlin. A water main extension from the Montpelier Treatment Plant to the CVMC, constructed in 2002, provides a potential source of municipal water to a portion of the plateau. However, a recent report by Otter Creek Engineering concludes that Berlin could develop its own water supply by drilling bedrock wells and supply property owners in the plateau water at half the cost of that currently offered by the Cities of Montpelier and Barre. Accordingly, the Town of Berlin is progressing towards the development of a municipal water system to serve the needs of its citizens and compliment part of the existing wastewater collection and treatment system that presently serves the town. A municipal system will provide a safe water supply for the many public and private systems in town, many of which are compromised by salt or other pollutants as well as provide fire protection and enhanced value for other developed and undeveloped properties in the service area.

The town has drilled three bedrock wells on the Dodge farm at the south end of the airport, and has successfully tested the wells for quantity as well as quality. The State approved sustainable volume is 108,000 gallons per day. The quality testing completed on all three wells indicates that the quality of the water is excellent. All testing indicates that a municipal system using water from the existing three wells is very feasible. In response to the successful testing of the three wells, the Town executed an option agreement and purchased the access rights and rights to the wells and

control of the surrounding land necessary to protect the long term quality of the water. The wells are a valuable asset for the town now and for the future.

As a result of the successful development of the wells, the City of Montpelier has countered with an offer to sell the town water, and the City and Town are beginning discussions to explore the option of developing a system together.

Based upon the above, it is recommended that the Town continue to develop a Berlin community water supply system to serve not only the areas presently developed, but the entire northeast quadrant of the Town (the area east of the Interstate and north of Scott Hill Road/Airport Road) in anticipation of focusing future development in that area. Also, a Berlin system should include connections to a regional system which would include Berlin, Barre, and Montpelier as well as other Central Vermont communities. **The Public Utilities and Facilities Map** presents the current water service areas and a general indication of the recommended study area for the integrated infra-structure plan. Even with the current agreement with the City of Montpelier, it should be recognized that the municipal supply of potable water is a limited resource in Berlin; as a result, the Town actively encourages conservation of water.

Wastewater

A portion of the northeast quadrant of the Town is served by a municipal waste water collection system connected to the Montpelier Sewage Treatment Plant at the corner of Junction Road and Dog River Road on the Montpelier/Berlin town line. The Town has an agreement with Montpelier for allocation with availability for additional capacity in the future.

The principal collection main runs along Route 302 to Montpelier and serves the dense development in that area plus several areas extending to the northeast up into the Plateau. There is also a secondary line extending up to the Berlin Hill area and tied to numerous local lines, some of which are force mains. The geographic area served by the system and the agreement with Montpelier both have capacity for future development. The remainder of the Town relies on individual subsurface treatment and disposal systems.

During the past several years, the Berlin Sewer Commission has eliminated three sewer pump stations and installed over 2,000 feet of new gravity flow sewer lines. These improvements will reduce costs and help stabilize sewer rates.

As developable land becomes more difficult to find, and planned residential type development is anticipated, the use of community waste disposal systems will become more of a reality. In the near future, this land of "intense" development is expected near the limits of today's sewer system or where large areas of favorable soils permit waste water disposal. Proper sewage disposal will govern the pattern of residential development. It is anticipated that concentrated housing developments will begin to appear, primarily on high quality (paved) access roads and where connection to a municipal sewer system (extended during the 1990's) is feasible. The majority of Berlin's land area will be sparsely settled on relatively large lots with on-site sewage disposal.

It is recommended that the Town develop a plan for a unified sewer system to serve not only the areas presently served, but also the entire northeast quadrant of the Town in anticipation of focusing future development in the area. This should be done in conjunction with the plan for unified road and water systems described above. The result should be an integrated infra-structure plan for the area. To ensure ongoing integration of the provision of public facilities and land use objectives, a wastewater allocation policy should be developed based upon the completed facilities study.

The Public Utilities and Facilities map shows the existing sewer lines and the general area proposed for the integrated infrastructure plan.

Municipal Buildings/Property

Town Offices

The Town municipal building is located at 108 Shed Road. Originally built in 1968, renovated and expanded during the 1993-94 period, and again in 2006, it is shared by the Town Administration, the Police Department, Sewer Commission, and Berlin Historical Society. The expanded building provides space for both Town Administration and the Police Department as well as a meeting room suitable for Select Board, Planning Commission, Development Review Board, and other community meetings.

The Town completed a building energy audit of the Town municipal building and garage in 2006, and the audit recommended several energy related improvements be completed on these buildings. There are several State and Federal grant programs that offer funds to Towns for building weatherization. These programs are administered through Efficiency Vermont and the Regional Planning Commission.

Several years ago, a special committee was organized to make recommendations to the Select Board to meet the Town's current and future space needs. The Committee recommended that the Town explore a way of providing improved access to the Town Office and Town Garage - particularly to the east. Such improved access would not only more strongly link these public facilities to the rest of the Town, but would also improve the overall circulation pattern in this area and could support the enhancement plans of the greater town center area.

Town Garage and Equipment

The Highway Department is based in the Town Garage located adjacent to the Town Office Building. The Town contains a total of 76.4 miles of highways, including over 9 miles of Interstate and 16.6 miles of State and US highways. At the present time, the facility and equipment owned by the Town are seen as adequate for maintaining the current road network.

As the Town moves forward with the enhancement of the town center area, however, alternative uses for the Town Garage site should be considered that would strengthen the area's function as a pedestrian oriented village center. This would obviously require the relocation of the facility to a

suitable site, most likely within the Industrial District. Equipment, however, has a finite useful life, and it will be necessary to replace trucks and other items on a regular basis as they wear out. As equipment is needed or replaced, on-going economic analyses should be undertaken to determine whether purchase, lease, or rental of such equipment is in the Town's best financial interest. Investigation, information development and implementation of a capital budget to address this are a priority of the Select Board and Planning Commission.

Cemeteries

The Town of Berlin currently owns 9 cemeteries maintained by the Cemetery Commission:
Black Cemetery on Black Road,
Dewey-Wright Cemetery on Rowell Hill Road,
East Road Cemetery on Industrial Lane,
Colby Cemetery on Junction Road,
Johnson-Sawyer Cemetery on Vermont Route 12,
Cox Brook Cemetery on Glinnis Road,
West Berlin Cemetery on Vermont Route 12,
Boles Cemetery on Vine Street, and
Howard Cemetery on Crosstown Road.

The Berlin Cemetery Commission is responsible for general maintenance and upkeep of town cemeteries and receives an annual budget from the Town. In addition to mowing, trimming, and clearing brush within the cemeteries, the Commission has an on-going program to repair and replace damaged or deteriorated head stones. Berlin's cemeteries are of great historical value to the town, and as a result, the town supports the Commission's annual maintenance program and their efforts to refurbish head stones.

Town Owned Land

The following is a list of town owned land:

Town Forest, 514 acres, located off Darling Road
Town municipal offices, 9.70 acres, at 108 Shed Road
Dog River Natural Area, 17 acres of recreation land

The Town forest serves primarily as a recreation resource for the Town of Berlin; however, the town does harvest trees within the forest for forest management purposes and to generate revenue for town conservation and recreation related projects. The Town should continue and encourage (through the Conservation Commission and Tree Warden) proper forest management efforts within the Town Forest.

Recreational Resources

At present there are several municipal recreation facilities in Berlin, including (a) the playground and ball fields at the Berlin Elementary School, (b) the outdoor skating rink at the municipal

building, and (c) public recreation areas such as the Boyer State Forest, the expanded Municipal Forest, and (d) the Dog River Natural Area. As the Town grows and demand increases, the Town should consider establishing a program for community recreation facilities. This program could include a centralized "park" or recreation area connected to the community by a trail system, or paths for alternative transportation modes as discussed in the Transportation section of this Plan. Potential locations for such a park(s) include areas near Berlin Pond or somewhere along Crosstown Road.

Recreation opportunities for Berlin residents could be improved, such as, including more hiking and bike trails. The extension of a paved bike path along the existing rail line near the Barre-Montpelier Road is an example of such an improvement. The feasibility of a path connection linking that path with the Four Corners area and Berlin Elementary should be explored.

Public Services

Police Protection

The Berlin Police Department was established in 1991 with two patrol positions. The Police Department office is located in the Town Municipal building. The Department has changed significantly in size and scope of responsibilities. The present sworn staffing is seven officers, who include a chief, sergeant, corporal, four fulltime patrol officers and six part-time officers. Additionally, a full-time office manager is on duty during regular business hours to assist in research, office organization, and customer service. The department's complaint totals have steadily increased throughout the years and totaled 3,560 in 2010. Commercial growth has outpaced residential growth significantly and accounts for approximately seventy percent of the departments' resources. Additionally, for the past five years, the department has contracted with CVMC to provide onsite police protection eight hours per day, 365 days per year.

Fire Protection

The Berlin Volunteer Fire Department, Incorporated has provided fire protection and emergency response to the Town of Berlin since 1957. They maintain a primary fire station at 338 Paine Turnpike North near Vermont Route 62, and a secondary fire station in West Berlin at 2095 Vermont Route 12. The Department is a founding member of the Capital Fire Mutual Aid System and has been providing fire assistance to the surrounding communities.

The all volunteer fire department regularly responds to the report of fires, alarm activations, motor vehicle accidents, hazardous materials spills, and other emergencies. They are also a licensed fast squad with the State of Vermont, and respond with a dispatched ambulance to medical emergencies within the community. Beyond emergency response, the department provides various community services, to include education, prevention, and community relation activities.

The Berlin Volunteer Fire Department is an independent corporation consisting of unpaid volunteers that are dedicated to the protection of life and property for the citizens, visitors, and businesses of the Town of Berlin. They consist of more than forty volunteers that provide thousands of hours annually in service of emergency response in Central Vermont.

Ambulance Service

Ambulance service in Berlin is provided through separate agreements with the Towns of Barre and Northfield, and the Town of Berlin pays a portion of the cost for these services. Barre's equipment for Berlin is housed at the Fire Department at Route 62 and Paine Turnpike North; Northfield's coverage is volunteer and covers the southwest quadrant of Berlin out of Northfield.

Barre Town EMS is a regional ambulance serving six towns, and provides 24 hour, seven days per week coverage. Annual run volume in Berlin has varied the last five years, increasing and decreasing differently in all three categories. Future run volumes changes will be based on population, new skill nursing facilities (SNF), or treatment services outsourcing by CVMC. Annual run volume is expected to follow the average of the past five years, unless any of the aforementioned changes were to occur.

Annual EMS calls for service for the Berlin service area from FY 2005 through 2009 as follows:

FYE	911	TX*	CCT*	=	TOTAL
2005	526	1101	343	=	1,970
2006	570	969	425	=	1,964
2007	617	946	304	=	1,867
2008	631	1106	242	=	1,979
2009	604	1102	353	=	2,059

*Transfers (TX), Critical Care Transfers (CCT)

It is estimated that the annual number of service runs in Berlin will be at 1,975 during the next three years.

Barre EMS has provided EMS service to Berlin for nearly 15 years, and the Berlin Select Board recently renewed the contract with Barre EMS for three years.

Regional Public Safety Services

The Central VT Chamber of Commerce is hosting a study committee (started in 2010) charged by the governing bodies of Barre Town, Barre City, Montpelier, and Berlin to analyze and develop a governing structure for the consolidation of regional public safety services in Central Vermont. Public officials are hoping that this effort will result in the creation of a governing structure that will realize increased efficiencies and cost savings in the delivery of public safety services to their citizens.

Hospital Services

Berlin is home to the Central Vermont Medical Center (CVMC). This facility, including, Woodridge Rehabilitation and Nursing, the National Life Cancer Treatment Center and Medical Group practices, has 121 physicians and employs nearly 1400 full and part-time workers. CVMC

is an important asset for the Town of Berlin and Central Vermont as this facility serves a population of 66,000, and more than 25,000 patients visit CVMC's Emergency Center each year. The Town of Berlin and the CVMC maintain regular communications and a good working relationship whereby Town and CVMC officials meet on a regular basis to discuss issues of mutual concern, including: public safety, water, and other issues. In addition, the Town of Berlin provides police service to CVMC on a contractual basis whereby a police officer is stationed within the hospital from 7:00 PM to 3:00 AM seven days a week.

Childcare

The Town of Berlin has four licensed day care centers, two of which are affiliated with and located within the Berlin Elementary School. The elementary school daycare programs include the "Early Education Program at Berlin Elementary School" before school program and the "Kid Watch" after school program. Both programs are well attended and provide a much needed service to Berlin parents and their children.

There are no known registered home daycare facilities in Berlin, although there are registered day care in the neighboring communities of Montpelier and Barre.

The Town of Berlin understands the importance of decent and reliable child care for its residents and thus supports the goal to ensure the availability of safe and affordable child care for the children of Berlin.

Library Services

Berlin residents are members of the Kellogg-Hubbard Library in Montpelier. Without support of town funds, Berlin residents would be asked to pay a fee for service. In 2010, there were 930 Berlin residents who registered for library cards, including over 200 children, which is an increase of 11% over 2009. This increase is partially attributed to the closing of the Mid-state Library during 2009. Berlin residents bring their children to pre-school story times; attend programs and lectures; reserve meeting space; and use library computers.

Education

Public education is provided by the Berlin School District which operates a Pre-Kindergarten through 6th grade facility. The Town is a member of Union School District Number 32 (U-32) for middle and high school students.

The Berlin Elementary School is located on a 26 acre site at the corner of Route 62 and Paine Turnpike North shared with the Berlin Volunteer Fire Department. This facility currently serves 228 children in pre-kindergarten through sixth grade. Each of 13 classrooms is staffed by a professional classroom teacher.

Berlin Elementary School Enrollment 2005-2010

2010 – 217
2009 – 211
2008 – 223
2007 – 227
2006 – 234
2005 – 230

Support services, such as special education and speech and language therapy, are provided by on-staff specialists. Instructional support staff members assist professionals under close supervision and guidance. This year, teacher leaders in the areas of literacy and mathematics were added with the goal of creating sustained instructional improvements in those areas. Last year, the school completed an audit of its literacy program and the staff is currently working to implement the recommendations from that audit.

The school completed numerous safety and building security upgrades this year. With the completion of this project, the school has a new fire alarm, telephone and public address systems. Additionally, exterior door and window units were replaced, and handicapped accessible bathrooms were created in the lobby.

Berlin Elementary continues to serve as the hub of the community, hosting countless evening and weekend events including sports and various public meetings. Three sports fields adjacent to the playground are home to soccer, baseball and other sporting events.

The Berlin Elementary School is one of five elementary schools in the Washington Central Supervisory Union (WCSU).

Berlin's secondary education (grades 7 through 12) is provided on a regional basis through U-32. The high school has classroom capacity for over 850 students. The present enrollment (fall of 2004) of U-32 is 877. Of the 877 current students, 257 are from Berlin.

In 2002, Union 32 High School completed a major renovation/expansion to enhance its total student capacity to meet anticipated needs and to meet health and safety programmatic requirements. The new wing provides a separate space for middle school students and the additional gym allows opportunity for expanded co-curricular activities. The new facility provides a community center for residents of all ages from the five sending communities.

Postal Service

The Town of Berlin is currently without a post office or its own zip code. This results in most Berlin businesses and residents having either a Barre, Northfield, or Montpelier zip code; which in turn often results in a loss of customers and revenue for Berlin businesses, and is a major inconvenience for Berlin residents. The zip code issue also creates problems for emergency service providers.

The Town of Berlin is very concerned about the lack of a post office for the above stated reasons, and that a post office and zip code help a community establish an identify. As a result, of these concerns, the Town of Berlin established a Post Office Committee, and has been lobbying the US Postal Service to locate a post office or station in Town.

Solid Waste

The Town of Berlin is a member of the Central Vermont Solid Waste District (CVSWMD), which consists of 18 member cities and towns and includes nearly 52,000 residents. The District has four full-time, and two part-time office staff, and two full-time field staff. CVSWMD's primary goal is to assist member communities in reducing and managing their solid waste to protect public health and the environment. The District also assists its members in complying with the Vermont solid waste management requirements.

Berlin residents have access to several solid waste disposal drop off sites for disposal of their waste, including: the CV Transfer Station in East Montpelier, the trash and recycling drop in Montpelier, the Moretown landfill, and the Barre Town Depot. In addition, there are a number of private waste haulers in the region that serve Berlin residents.

As a district member town, Berlin has representation on the CVSWMD Board. Berlin supports town representation on the District Board to ensure that Berlin's solid waste current and future needs are met.

Organizations

Churches

The following is a list of the churches in the Town of Berlin.

Bible Baptist Church
66 Vine Street

Christ the Redeemer Evangelical Lutheran Church
46 Warner Road

Church of Jesus Christ of Latter Day Saints
224 Hersey Road

First Congregational Church
1808 Scott Hill Road

Methodist Episcopal Church
3746 Airport Road

Northern New England Conference

7th Day Adv. Church & School
397 & 317 Vine Street

PUBLIC SERVICES AND FACILITIES GOALS AND POLICIES

1. Goal: Provide a system of town public services and facilities that will support and reinforce the land use patterns described above.

Policies:

- Support an integrated infrastructure system (water, sewer, roads, etc.) to support development in the northeast quadrant of the Town, and avoid the extension of such facilities outside of these areas.
- Plan, develop and construct a water system to serve the northeast quadrant of Berlin.
- Promote a capital budget and program process which will ensure that public facilities and services are matched to Town needs, and that development projects are integrated into the Town's objectives.
- Maintain a high level of professionalism in town government while encouraging citizen involvement.
- Facilitate and encourage the planning and construction of public recreational facilities and seek to provide varied recreational opportunities and programs to serve the residents of the Town.

2. Goal: Foster a strong working relationship and regular communications with adjoining communities, and regional, state, and federal agencies and organizations to ensure the efficient and cost effective delivery of services to all residents of the town and region.

Polices:

- Maintain and foster continued and regular communications and relations with the CVMC, adjoining communities, and the state, regional and federal agencies and organizations.
- Encourage and support active town representation on the CVSWMD Board.
- Actively participate in efforts to study the feasibility of developing regional agencies for the delivery of town services.
- Work to secure a Berlin Post Office located within the Town to promote commerce, public safety and greater sense of community identity.

  Explore potential cost efficiencies to be achieved by purchasing or sharing other services and/or facilities with adjacent municipalities.

3. Goal: Encourage and support the delivery of high quality educational and child care services to for all Berlin residents.

Policies:

- Support broad access to education and vocational training opportunities sufficient to ensure the full realization of the abilities of all Berlin residents.
- Support the establishment and availability of safe and affordable childcare and the integration of child care provider issues into the planning process.
- Consider ways to meet elementary school needs without new construction.

VIII. TRANSPORTATION SECTION

Overview

Berlin's transportation system is, and will continue to be, based primarily on public roads and private automobiles. The basic road system is already in place, and development patterns will continue to reflect that system to some degree. It will be necessary, however, to coordinate road improvement projects to reflect types and intensities of development, to continue providing adequate intra-Town circulation and connections to the regional network, and to supplement the highway network with support for appropriate alternatives to the private automobile. Such alternatives as pedestrian and bicycle facilities and transit can alleviate traffic congestion in certain areas or situations, can reinforce less automobile-dependent settlement patterns in the proposed town center area, and can enhance the vitality of existing commercial areas such as the Route 302 corridor.

Roads and Highways

The Town has 76.4 miles of public roadway, including the Interstate. Approximately 1/3rd of the road miles in Berlin are paved surface roads. Interstate 89 traverses the Town from north to south and there are two complete interchanges within the Town's boundaries, plus part of a third. US Route 302, a principal arterial connecting Barre and Montpelier, passes through the northeast corner of the Town. Other principal arterials include VT 62 and US 2. Minor arterials in Berlin include the Berlin State Highway, part of Paine Turnpike and Airport Road. Major Collectors include VT 12 and part of Paine Turnpike. All other roads in the Town are either collectors or local roads.

Table 1 presents recent traffic volume data obtained from the Vermont Agency of Transportation (VAOT) for major roads in Berlin.

Table 1.

TRAFFIC VOLUME ON MAJOR ROADS IN BERLIN

	1990	*2000*	*2008*	*Percent Change*
I-89 Exit 6 to Exit 7	*12,450*	*15,100*	*16,300*	*31%*
I-89 Exit 7 to Exit 8	*17,180*	*20,700*	*21,100*	*23%*
US 2 (NE Corner)	*7,510*	*8,200*	*8,300*	*11%*
Airport Road	*5,590*	*7,100*	*6,500*	*16%*
VT 62 from I-89 to Bare	*15,720*	*18,700*	*18,000*	*14%*
VT 63 from I-89 to VT 14	*3,910*	*4,500*	*4,800*	*23%*
US 302 from Montpelier to Bare	*14,280*	*15,100*	*13,300*	*- 7%*
VT 12 from Montpelier to Northfield	*2,840*	*4,300*	*5,000*	*76%*

(Note: This table reflects a statewide downturn in traffic volumes in 2008 in the wake of spike gasoline prices that reach over $4/gallon Source: VTrans 2008 AADT Route Log for State Highway)

Interstate 89 is the most highly traveled road in Town and is clearly designed for high volumes and high speeds. It is noteworthy that traffic volumes on I-89 drop significantly south of Exit 7, demonstrating that a substantial portion of the traffic is associated with the Montpelier area or the Berlin/Barre area, respectively. This latter observation is supported by the high volumes reported on Vermont Route 62 between I-89 and Barre. Since this roadway is designed with very few curb cuts, there are few serious congestion points.

The intersection of Route 62 with Paine Turnpike and Fisher Road has been identified as high accident locations due largely to the high travel speeds, increased traffic, and intersection design.

In addition, this intersection has existing and future traffic capacity limitations – which are evident based upon permit conditions placed on existing and future development adjacent to the intersection which required surrounding property owners through their Act 250 permit approvals to pay a portion of the upgrades to the intersection. As a result, the Town of Berlin, CVRPC, and VTrans commissioned a study of the Route 62/Airport/Fisher Road Intersection in Berlin to develop alternatives to address identified traffic issues at the intersection. The recommendations include several changes to the intersection, the most significant of which is: provide an additional lane on the Airport Road approach to the intersection to provide exclusive left turn, thru, and right turn lanes, and revise the traffic signal phasing and timing to provide concurrent, exclusive left turn phases for Fisher and Airport Roads. CVRPC has added these improvements to their project priority list.

US Route 302 is the second most highly traveled road in Town with an annual average daily traffic of over 17,500 vehicles per day. This reflects the road's dual function, serving many adjacent commercial establishments, and as an arterial connecting Montpelier and Barre. This road is also the most congested, in part due to conflicts between through traffic and traffic attempting to turn onto or off the roadway. US Route 2, which passes through the northeast corner of Town, is a major east-west arterial carrying modest traffic volumes. There is relatively little development along this road and consequently few conflicts between through traffic and turning traffic. There are no serious points of congestion.

The local road system in Berlin is divided by Interstate 89. With the exception of Junction Road along the Winooski River and Hill Street Extension, which runs north and south, the only road which crosses the Interstate is Crosstown Road.

Access to the Interstate is focused almost entirely on the area east of the Interstate. While Vermont Route 12 traverses the entire west side of Town, getting from Route 12 to I-89 requires going into Montpelier and taking the Montpelier State Highway or Junction Road, rather circuitous and/or congested routes. Both Exit 7 and Exit 8 provide direct access to the Town via a controlled access roadway. In both cases, these access roads lead only to the area east of the highway.

Bridges and Culverts

There are 23 bridges of more than 20 feet in length within the Town of Berlin, 14 owned by the State and 9 owned by the Town (some are jointly owned by Berlin and adjacent Towns). Of the 14 State-owned bridges, 8 are associated with the Interstate. Berlin's Bridge and Culvert Inventory, undertaken in 2008 by CVRPC, identifies a total of 504 town-owned and maintained culverts (all structures under six feet in width). Of these, 17% (or 84 culverts) fall below the condition of "fair". Nearly every road in Berlin has one or two culverts that fall below the condition of "fair". The following roads have a high percentage (50% or more) of "poor" or "worst" condition culverts. These roads include Cecile Avenue, Coos Trail, Gun Club Road, Jones Brook Road and Lord Road. The Inventory also outlines the condition of town short structures (short structures are bridges and culverts greater than six feet and under twenty feet and on a town road.) Of the 8 structures inventoried 2 (or 25%) where found to be in "poor" condition. These two structures are located on Chase Hill Rd and Richardson Road.

Rural Roads

In the rural portion of the Town, the road system is generally adequate for the present and anticipated intensity of development. In the more developed northeast quadrant, the newer main roads have been designed as controlled access arterials with suitable capacity.

Maintenance

The Town Highway Department maintains a fleet of equipment for road maintenance and other activities which is based at the Town Garage. This facility occupies part of the site where the Municipal Office Building is located. The facility and the present stock of equipment is deemed to be adequate for current and anticipated future needs. As the Town moves forward with the enhancement of the town center area, however, alternative uses for the Town Garage site should be considered that would strengthen the area's function as a pedestrian oriented village center. Such a relocation would obviously require the relocation of the facility to a suitable site, most likely within the Industrial areas of Town.

Rail Transportation

The main line of the Central Vermont Railway runs north-south through Berlin along the Dog River. The passenger station serving the Central Vermont Region is located in the Town at Montpelier Junction. Passenger service is provided on Amtrak's "Vermonter" which includes one north-bound and one south-bound train daily. The scheduled stops for this service are not conducive to commuter travel.

The Central Vermont Railway also provides freight service on its main line along the Dog River. At Montpelier Junction it links to the Washington County Line which provides freight service to industrial and commercial customers in the Montpelier-Barre area. This service is provided under an agreement with the State of Vermont which owns the tracks. A portion of the Washington County Line runs through Berlin along the Stevens Branch and US Route 302. There is renewed interest by the VAOT and the Rock of Ages to increase use on this rail line to move grout down from the Rock of Ages Granite Quarry in Websterville through Barre City, Berlin, and Montpelier down to where the line joins with the New England Central Rail line in Montpelier Junction. Increased rail activity on this line raises concerns in that the proposed use is in conflict with the current proposed alignment of the Central Vermont Regional Path (CVRP).

Air Transportation

Berlin is the home of the Edward F. Knapp Airport which is a general aviation facility serving the Central Vermont Region. At present no scheduled airlines use the Knapp Airport; however, roughly 60 private aircraft are based at the facility, and a commercial air freight carrier makes a daily stop at the airport. Annual operations (i.e.; aircraft landings and takeoffs) have ranged between 30,000 and 40,000 since 1980.

An updated master plan for the E.F. Knapp Airport was developed in the spring of 2005 by the Vermont Agency of Transportation. This master plan calls for enhanced taxiway facilities and expanded private hangar space in the near future. VAOT completed the enhancements to the

taxiway facilities, the replacement of the main runway, and the upgrades to the fueling facilities during the summer of 2010.

The Town of Berlin will take appropriate action, to the extent it is reasonable, justifiable, and considerate of individual property owners' rights, including the adoption of zoning regulations, to restrict the use of land adjacent to or in the immediate vicinity of the airport, to activities and purposes compatible with normal airport operations, including landing and take off of aircraft.

Pedestrian and Recreation Facilities

At the present time, there are virtually no pedestrian facilities in the Town. In the large rural portion of the Town, the low density of development does not justify the expense of formalized sidewalks or walkways. In the more densely developed northeast quadrant, however, noontime and afternoon walkers and joggers are becoming more and more frequent on the public roadways. The combination of high vehicular traffic volumes and pedestrians along US Route 302 where few sidewalks are available is beginning to create a dangerous situation.

The Berlin Mall does accommodate walkers by providing a sheltered place for those who wish to walk for health and/or exercise reasons, and posts a notice indicating the number of lengths of the Mall per mile

The CVMC and others have identified a need for enhanced pedestrian facilities on Fisher Road to protect pedestrians traveling between the Berlin Mall and CVMC. These improvements could consist of crosswalks and a pedestrian light and could be partially paid for through a VAOT enhancement grant.

There is a proposed pedestrian/bicycle path connecting Montpelier and Barre City using an abandoned railroad right-of-way along the Stevens Branch. Berlin and the City of Montpelier received a federal grant for this bike path project and both communities have sent funds and resources planning the project; however, as noted above, the future of this is path is in jeopardy as VAOT proposes increased rail use on the line.

Berlin has an extensive hiking trial network through the Irish Hill Conservation Area and the Town Forest area. Parking areas for these trails are located along Brookfield and Darling Roads, and the trails are maintained by the Town Recreation and Conservation Commission and volunteer groups.

Berlin also has a Vermont Snowmobiler Association (VSA) trail network through Town. The trail runs primarily on private property and consists of several miles of trials.

Transportation Services

Although use of private automobiles is clearly the dominant mode of travel in Berlin, there are other transportation options and services offered to the general public or to specific groups, including clients in Berlin.

a. There is a bus service between Montpelier, the Berlin Hill area, and Barre City.

b. Several taxi services operate in the Central Vermont Region providing on-demand service.

c. A number of human services organizations in the region provide, or arrange to have provided, transportation for their clients. These include the Central Vermont Council on Aging, McFarland House in Barre, the Central Vermont Community Action Council, and Washington County Mental Health.

d. The Town has a major park-and-ride facility at the intersection of Route 62 and Paine Turnpike which serves regional commuters using the Interstate.

Energy Efficiency

Improved access to and increased use of alternative and public transportation options such as rail, bus, vanpooling, ride-sharing and bicycling, can not only decrease energy consumption, and reduce the infrastructure expenditures.

Another strategy by which the demand for energy can be reduced is through encouraging settlement patterns which require less physical travel. The realization of Berlin's goals for the Town Center District and by concentrating future growth in existing developed areas could be a key component in this strategy.

Transportation Goals and Policies

1. Goal: Encourage a multi-modal transportation network that provides appropriate levels of access to support the land use patterns described in this Plan.

Policies:

- Support park-and-ride facilities near interstate interchanges and near Route 302 in order to encourage ride sharing. For the most part, these facilities will be constructed by others and not require local revenues.

2. Goal: Encourage a transportation network which protects neighborhoods and residential development.

Policies:

- Support and progress the proposed regional recreation path parallel to Route 302 along an abandoned railroad right-of-way and encourage additional path connections among major activity centers in the Town (e.g., the Elementary School, Berlin Mall, Route 302, Town Office, Riverton), and future recreation areas that might be developed.

3. Goal: Coordinate and actively progress local, state, and federally funded transportation improvements.

Policies:

- Aggressively pursue state and federal funding for the paving and reconstruction of town roads and bridges.

- Lobby State and Federal governments to increase funding for local roads improvements.
- Progress the Route 62/Fisher/Airport Intersection project through the regional and state planning process towards construction

4. Goal: Encourage transportation improvements that alleviate high accident locations and attempt to improve pedestrian safety in quality and severity.

   Policies:
   - Update and maintain (on a regular basis) a road and culvert inventory and manage system and schedule.
   - Replace or repair inadequate bridges with top priority given to those with structural inadequacies.

5. Goal: Encourage energy efficiency in the transportation system.

   Policies:
   - Improve the safety and efficiency of Route 62 in a manner that supports the Town's land use goals, including the development in the area of the town center, and improves pedestrian connections throughout the Four Corners/mall/hospital area, to be referred to hereafter as the Plateau area.
   - Improve the safety and efficiency of the Barre-Montpelier Road in a manner that supports the revitalization of businesses served by the highway, improves pedestrian circulation, better manages access and incorporates streetscape improvements (e.g., sidewalks, landscaping) into the roadway design.
   - Improve connections between the rural areas west of the Interstate and the commercial/industrial center in the northeast quadrant. Such connections should consider any additional negative impacts on existing and proposed abutting residential uses.
   - Coordinate with the Vermont Agency of Transportation to reclassify the Dog River Road from a Town highway to a State highway to be compatible with Montpelier's section for accessibility between Route 12, Memorial Drive (Route 2), and Interstate 89.
   - Develop integrated infrastructure systems to support non-residential development in designated portions of the northeast quadrant of the Town.
   - Increase the over-weight fees paid by users of local highways.

6. Goal: Recognize the existing scenic qualities of Town roads and encourage the maintenance of rural characteristics whenever feasible.

   Policies:
   - Protect the physical features that contribute to the scenic character of roads in the Town such as Crosstown Road and identify other scenic roads in Town that need protection. Vehicular and pedestrian safety concerns should also be taken into consideration.

   The proposed transportation improvements are depicted on the **Transportation System and Improvements Map.**

IX. HOUSING SECTION

Overview

Housing is critical to our existence. The size, location and cost of housing shapes the communities in which we live, impacting local economic development, school enrollment, as well as land use and transportation patterns – housing is part of the very fabric of our lives. Providing for a range of housing options for a variety of incomes levels and lifestyles, in locations that make sense, contributes to the vitality and diversity of a community.

This chapter discusses existing conditions with respect to housing in Berlin, examines trends (including development patterns and affordability issues), considers Berlin's expected housing demand and outlines strategies to accommodate future residential growth. Finally, it concludes with a list of resources that can be used by town officials and residents who are interested in this important issue.

General Trends and Conditions

Unit Growth/Household size

According to the State of Vermont, the definition of a housing unit is, "a house, an apartment, a mobile home or trailer, a group of rooms or a single room occupied as separate living quarters, or if vacant, intended for occupancy as separate living quarters."

As Berlin's population grew over the second half of the 20th Century, so did the number of housing units in the community (**See Table 1**).

Table 1.
Housing Units vs. population in Berlin 1940 – 2000
(US Census)

	1940	1950	1960	1970	1980	1990	2000	2010	% change 00-10
Population	1111	1158	1306	2050	2454	2561	2864	2,887	0.80%
Housing Units	340	342	436	683	918	1022	1172	1,236	5.46%

In fact, as the Table suggests, housing unit growth has greatly outpaced population growth in Berlin (as in the rest of the Country), owing largely to steadily decreasing household sizes. Between 1970 and 2000 the Town's housing growth rate nearly doubled the rate of growth in its population (72% vs.40 %). The average household size in Berlin has decreased from 4.02 persons per household (pph) in 1950 to 2.46 pph in 2000, according to U.S. Census data. However, it remains above slightly State and Regional averages (2.44 and 2.46

respectively). Economic and demographic forecast projections prepared by CVRPC predict that the figure for Berlin will continue to decrease to about 2.36 pph in 2020.

The divergence between housing unit growth and population is especially evident over recent years when population growth has been stagnant (**see Table 2**). This suggests that the Town must continue to plan for growth and development regardless of population trends

Table 2.
Change in housing units and population in Berlin 2001- 2009
(VT. Department of Health estimates, Berlin Planning Commission data)

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Population	0 (2864)	+7 (2871)	-12 (2859)	+8 (2867)	-5 (2862)	-18 (2844)	-25 (2819)	+3 (2822)	NA
Housing Units	NA	NA	NA	+6	+15	+7	+13	+12	+5

Demand

In 2008, the Central Vermont Regional Plan adopted a Housing Distribution Plan as part of its Regional Plan. CVRPC's Housing Committee developed the Plan, in part, to encourage the adoption of more meaningful and practical local housing plans and to promote the equitable and efficient distribution of housing region-wide.

This document asks municipalities to plan for future estimated housing need through the year 2020 (The numbers for Berlin appear in **Table 3**, below). It was formulated with the aim of ensuring that all towns continue to contribute similar (or in the case of municipalities with more infrastructure, greater) percentages of the Regions total housing in the future as they did in the year 2000. By doing so, it is hoped that the burdens and benefits of providing housing can be balanced among Central Vermont communities and sprawling, inefficient patterns of growth can be curtailed.

Specifically, it asks municipalities to provide:

- A detailed map or maps of the town showing the town's preferred locations for future housing units – consistent with current or proposed zoning – for 80 % of the anticipated 10 to 15 year housing demand. ("Demand" is the difference between the number of units at the time of town plan approval and the Housing Distribution number at least 10 years thereafter.)
- Mapping updates that identify the locations and number of housing units created in the town since the previous town plan adoption.

While municipalities are under no obligation to comply with the guidelines of the *Distribution Plan*, inclusion of the above items *will* be necessary in order for any plan adopted after January 1, 2009 to receive regional "approval" (per Chapter 117, Section 4350). However, it is also important to emphasize that CVRPC views these initiatives as planning exercises. According to CVRPC: "The projected housing demand

number is *not* quotas or targets and we will not be requiring *implementation* of the 80% "growth zone." The CVRPC is most interested in knowing that municipalities are cognizant of where housing growth is currently occurring, and thinking about where it should occur in the future, in their respective communities."

Table 3.
2008 CVRPC Housing Distribution Plan
Berlin

	2000-2004	2005-2009	2010-2014	2015-2020	Total
New Units	112 projected (112 actual)	139 projected (52 actual)	125 projected	116 projected	492 projected

While CVRPC's numbers seem high given that housing unit growth slowed substantially after 2005 (as well as the fact that Berlin appears to be lagging substantially behind CVRPC's *population* estimates for 2005 and 2010 of 3,010 and 3,164 respectively), Berlin should still plan for this growth, as the housing market is subject to change and such growth is likely to come eventually. In any event, the assignation of these units to locations is a planning exercise rather than a mandate.

The housing map illustrates the location of existing units, housing construction sites (according to permit data) and the planned location of 80% of future demand (196 units) of future housing units. Half of planned housing is located within the Town Center area of Berlin.

Unit Type/Condition

According to the 2000 U.S. Census, the majority of housing units in Berlin (76%) are single family, owner occupied homes. Less than one fifth (18%) of units are renter occupied. Five percent of units are vacant and 3% are considered seasonal or recreational. Both owners and renters are relatively stable, averaging 13 and 4 years at their current addresses, respectively. Berlin enjoys a relatively new housing stock. The median year of construction for all residential units is 1972 and almost one-third of its dwellings have been built since 1980. Over two-thirds of the Town's dwellings were built since 1960.

Table 4 shows the distribution of this housing stock by type, and shows comparable percentages for Washington County.

TABLE 4

HOUSING UNITS BY TYPE, 2000

Dwelling Type	Number	Percent (Berlin)	Percent (Washington Co,)
Single unit detached	726	61.9	61.5
Single unit attached	21	1.8	2.7
2-4 unit structures	69	5.7	16.1
5-9 unit structures	18	1.5	6.8
10 + unit structures	42	3.6	2.4
Mobile homes	296	25.4	6.2

Source: 2000 US Census

It is apparent from this table that Berlin accommodates far more mobile homes than most other communities. In fact, Berlin is home to 40% of the mobile home parks in the Central Vermont Region. More than one quarter of the Town's residences is mobile homes (four times greater than the County average). In this regard, Berlin is certainly doing its part to accommodate affordable housing. However, the Town has been less successful in developing multi-unit structures, where it lags significantly behind County averages. The US Census figures for substandard housing in Berlin show 16 occupied units lacking complete kitchen facilities, 8 without adequate plumbing, and 8 without telephone services.

Density, Location and Distribution

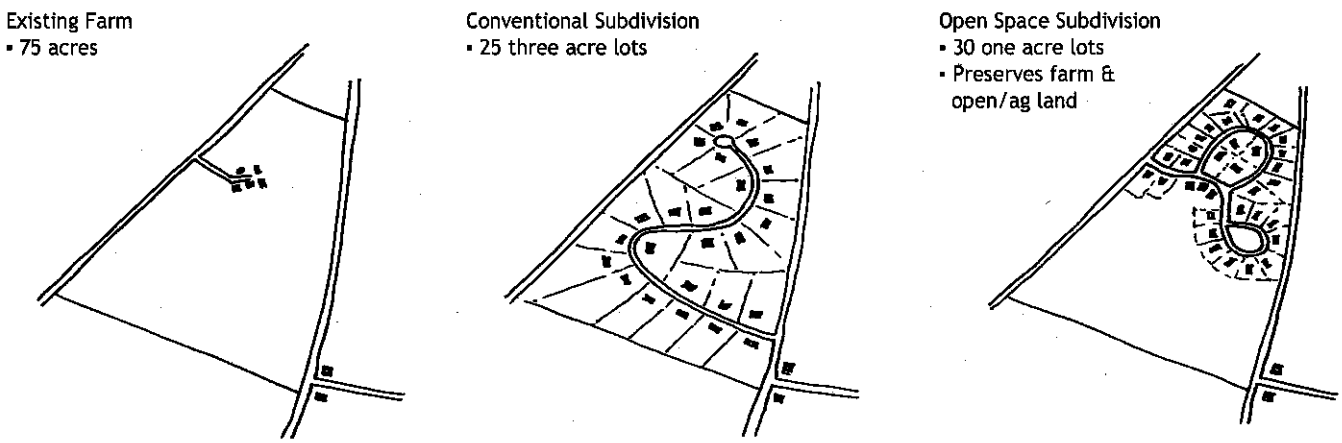
In the early twentieth century, towns and villages were characterized by compact neighborhoods surrounded by rural countryside. In recent decades, however, much of the housing growth in Vermont (and Berlin) is happening outside of village centers (**See Housing Map –for distribution of housing units between 2004 and 2009**). As we perpetuate this pattern we are in danger of losing not only our unique character, but a variety of other attributes as well. The benefits of developing dense, compact housing within or close to village and town centers at historic settlement densities are numerous and include:

- decreased land costs due to smaller lot sizes
- decreased development costs due to proximity to existing infrastructure
- increased opportunities to develop a variety of housing options for different lifestyles
- decreased automobile dependency due to proximity to amenities such as schools, shops, services and jobs
- increased vitality and economic activity in village centers
- increased viability of mass transportation
- preservation of natural resources such as agricultural land and water resources

With potential access to public water and wastewater infrastructure, and a bold new vision to create a traditional Town Center, Berlin is in a better position than most small Vermont towns to realize these "smart growth" principles. However, without effective land use regulations it is difficult to influence developers, and potential developers, to conform to this vision. The Town envisions the Town Center district as the receiving area for dense housing of varying types, including single family, multifamily, and potentially elderly and special needs. The other uses contemplated for this area would complement residential uses, providing services for residents and reducing their dependency on automobiles for the everyday needs of life.

While it is likely that Berlin will continue to see most of its future housing occur in the rural residential parts of the community it can also promote compact housing in such locations by providing density bonuses and other incentives for "clustered" or "open space" development. This type of development can help protect land resources and community character while allowing landowners to receive the full equity of their properties. Furthermore, they can reduce infrastructure costs for developers and the savings can be passed on to homebuyers.

Open Space Subdivision



The **housing map** illustrates the location of existing units, housing construction sites (according to permit data) and the planned location of 80% of future demand (196 units) of future housing units. Half of planned housing is located within the New Center area of Berlin. Berlin's preferred housing distribution pattern for the next 10 years is displayed on Map **(see housing map).**

This **map** was prepared by CVRPC, as directed by the Town, to assign half of the demand (96 units) to the Town Center District and the remainder randomly to the various residential districts (excepting the Highland Conservation District). Such a growth pattern would help to realize the purpose of the Town Center District and support the development of commercial and support services therein. The other residential zones could absorb a similar number of units without detriment to the character of the Town or unnecessary strain on infrastructure. Berlin should review the regulations in the Town Center District to assure that it can accommodate such growth.

Affordability

Affordable housing is vital to the local economy because employers cannot attract or keep good employees if housing is not available. However, thousands of Vermonters and their families have been having an increasingly difficult time finding housing they can afford over recent decades. According to the Vermont Housing Council/Vermont Housing Awareness Campaign document "Between a Rock and a Hard Place (2009 Update)":

> *"This situation is the product of many factors, but it essentially boils down to the fact that Vermont is a state with relatively high housing costs and, for a large portion of the workforce, relatively low wages. The slow pace of housing development, especially development of moderately-priced housing, has left Vermont with very tight rental and home purchase markets, whose low vacancy rates help keep prices up."*

The Vermont State standard for housing affordability defines housing as "affordable" if the household is paying no more than 30 percent of its income for rent and utilities or for mortgage, taxes and insurance. This standard may be too high when considering the rising costs of other necessities, such as health care, fuel, and child care, but it remains the basis for defining affordable housing. Affordability is determined by two factors: the cost of housing and the ability of people to pay that cost.

Berlin, like much of the rest of Vermont, has witnessed a dramatic increase in home/rent costs. And, while wages have increased as well, the have done so at a considerably slower pace. This discrepancy has resulted in an increasing "affordability gap". Consider the following statistics:

In 2000, the median household income in Berlin was $42,014. In 2006 the adjusted gross median family income was $57,691. Although these are slightly different measurements, they suggest that no dramatic increase in wages has taken place. When we look at housing costs over a similar period, the story is very different. According to the 2000 US Census the median value of housing units in Berlin was $95,000. By 2008 however, the average cost of units sold (13 in total) was $244,635, and even mobile homes averaged $110,000.

With this dramatic increase in home costs, Berlin moves above County and State averages ($213,968 and $231,995, respectively). Currently, the average family in Berlin could afford to pay approximately $186,000 (with $14,600 down) for a home. So, it appears that, for the first time, the average Berlin family could not afford the average Berlin home. Based upon the average home price and the median income the affordability gap in Berlin is over $58,000.

This situation is not much better in the rental market. In 2000, the median gross rent in Berlin was $504/month. Today, the median rent for a two bedroom apartment in Berlin is $902/month. While this remains slightly below the statewide average ($914), it would still require an income of $16.04 per hour, or $33,363 per year, to afford to pay rent. In other words, an individual would have to make almost twice the minimum wage to live in such a place.

There is some evidence that recent economic conditions are stemming the rising tide of housing costs.

Again, according to the Vermont Housing Council/Vermont Housing Awareness Campaign document "Between a Rock and a Hard Place (2009 Update):

"Home purchase prices have stabilized, but it should be noted that recently, the market has seen a decline in the prices at the upper end of the market while prices at the lower end — $200,000 and below — have tended to hold firm. That means that people who can afford a more expensive home can find bargains, but people who're looking for something the median household income can afford are probably still looking at the same prices.

Special Needs Housing

Elderly/Low Income

In the coming years, Central Vermont will experience substantial changes in distribution of population in various age groups that will likely impact housing issues. Householders between the ages of 25-44 are expected to decline while most of the growth will occur in householders between ages 45-69. There will also be a fairly significant increase in the number of householders over 80 years old.

Vermont's rental housing environment is difficult challenge for the 13,881 Vermonters who live on Supplemental Security Income, or SSI.44 Monthly SSI checks are $726 in 2009, or $188 less than the 2-bedroom Fair Market Rent. Fifty-six percent of SSI recipients have no other source of income. The average FMR for a one-bedroom apartment in Vermont, $746, would consume an entire SSI check. A Vermonter living on SSI can afford about $220 per month for housing.

Disabled Population

The 2000 US Census reported that Berlin has a number of individuals diagnosed with a disability. There were approximately 13 individuals between the ages of 16 and 20, 334 between the ages of 21 and 64, and 178 individuals age of 65 or over meeting the definition at that time. Berlin does not currently offer specialized housing opportunities for its non-elderly, disabled residents The Town of Berlin supports the development of housing opportunities for non-elderly, disabled Berlin residents.

Homeless

Homelessness in Central Vermont is growing yet it is a problem which is not easily tracked. Homeless persons are not counted in the Census and many times they do not seek assistance or shelter at local facilities. Currently there is one overnight shelter in Central Vermont, the Good Samaritan Haven in Barre. In addition to the overnight shelter there is one transitional housing site. Transitional housing provides the bridge between homelessness and permanent housing. Good Neighbors offers both short term housing and case management to assist families transitioning from homelessness into permanent housing.

According to the Washington County Needs Assessment average stays at the Good Samaritan Shelter have dramatically increased in the last 10 years. In 1998 the average stay was between eight days to two weeks, in 2004 the average stay was two months. More people who are seeking shelter are not transient but are local Vermonters who are working multiple jobs and can not afford rent.

Fair Housing Laws & Municipal Responsibility

A municipality has fair housing responsibilities regardless of whether or not the Federal Government has funded the activity that is the basis for the complaint. A fair housing violation does not require a discriminatory intent; a violation can be found simply because municipal officials carried out regular activities in a routine way and failed to recognize their special fair housing responsibilities. In addition Chapter 117 section 4412 outlines required provisions and prohibited effects by which municipalities must abide.

Municipalities carry out four broad categories of activities that affect housing. Each can trigger municipal fair housing responsibilities:

- **Regulatory activities** – When a municipality enacts and administers regulations (e.g. zoning or building codes) that affect existing or potential residential properties;
- **Provision of services** – When a municipality provides routine services in residential areas or to residents;
- **Provision of subsidies** – When a municipality offers financial incentives (e.g. grants, loans, or loan guarantees) or special services (e.g. infrastructure projects or housing rehabilitation services) to residential property owners or to residents; and
- **Proprietary activities** – When a municipality buys or sells real property, particularly if the property was used or will be used as a residence.

Federal Response

Some new initiatives and programs affecting housing have emerged in the wake of the mortgage crises and subsequent economic downturn, including:

* **The Housing and Economic Recovery Act** (HERA 2008). A comprehensive effort to address the foreclosure crisis, HERA created an Affordable Housing Trust Fund, the first new federal housing production program since the early 1990's. HERA also created the Neighborhood Stabilization Program, bringing $19.6 million to Vermont to address foreclosed, abandoned and blighted properties. Berlin had a relatively small number of foreclosures over the past several years; with three in 2008, six in 2009, and three in 2010. Though narrow federal guidelines present challenges to spending this money in Vermont, it will certainly help the state's affordable housing efforts. Among myriad other provisions, the act also boosts the state's allocation of federal Low-Income Housing Tax Credits for two years, which affects important Tax Credit Program reforms, and creates a first-time homebuyer tax credit.

(Source for Section E and F: "Between a Rock and a Hard Place (2009 Update)")

On-line Housing Resources

A few of the Vermont housing websites include:

Vermont Housing Awareness Campaign (www.housing awareness.org)
Vermont Housing & Conservation Board (www.vhcb.org)
Vermont Housing Data, comprehensive statistical information regarding housing costs, housing supply, and ability to afford housing (www.housingdata.org)
Vermont Department of Housing and Community Affairs, which includes the Vermont housing needs assessment (www.dhca.state.vt.us)
Vermont Housing Finance Agency (www.vhfa.org)
Vermont State Housing Authority (www.vsha.org)
Housing Vermont (www.hvt.org)
Vermont Association of Planning and Development Agencies (www.vapda.org)
Vermont Coalition to End Homelessness (www. helpingtohouse.org)
Vermont Affordable Housing Coalition (www. vtaffordablehousing.org)

HOUSING GOALS AND POLICES

1. Goal: Encourage a mixture of housing sizes, types, and costs in order to provide housing opportunities for all persons wishing to reside in Berlin.

Policies:

- Maintain the Town's current stock of affordable housing.
- Facilitate the development of affordable housing opportunities to meet the current and future needs of diverse social and economic groups.
- Review local land use regulations (and other Town policies and ordinances) for compliance with State housing guidelines, as well as for any unnecessary barriers to the development of new housing.
- Support the development of multi-family dwelling units in currently developed areas of Berlin that have adequate sewer and water facilities.
- Encourage the development of accessory dwelling units in accordance with Section 4412 of 24 VSA, Chapter 117.
- Encourage the development of a variety of housing types, including single family, multi-family, affordable, upper story, and elderly/assisted housing, in the Town Center District.

- Promote the conservation and preservation of existing housing by seeking state funds to inventory and preserve historical houses.

2. Goal: Consider the relationship between land use patterns, land use policy and housing development.

Policies:

- Maintain traditional compact settlement patterns to efficiently use land resources, and infrastructure investments by encouraging high density in Town Center District (and other appropriate areas?) and "cluster" housing developments in all districts to promote the preservation of resources, flexibility in design, and consolidation of infrastructure/services.
- Plan for projected housing demand per CVRPC's Housing Distribution Plan. Strive to accommodate anticipated new development through the year 2020 in consideration of the Housing Map

- Continue to track and map the location of new residential units as they are constructed to identify market trends and compare actual development to desired patterns of growth.

- Reinforce the existing residential neighborhood around Berlin Four Corners through use of community gathering facilities such as parks, meeting places, or recreation facilities.

- Consider creating a Hamlet District under the Town's zoning regulations to encompass Riverton in order to promote housing density and reinforce the area's village character.

- Encourage pedestrian connections within and between residential neighborhoods.
- Multi-family dwellings should be located in areas supported by water and sewer service, and with convenient access to commercial and employment opportunities.

5. Goal: Maintain an ongoing effort to understand, educate about, and participate in solutions to Berlin's housing needs.

Policies:

- Establish a ***Housing Committee*** whose responsibilities could include:
- Conducting a comprehensive Housing Needs Analysis/compiling data
- Raising awareness about the need for affordable housing in Berlin
- Working with and educating the community about state agencies and local non-profit housing development organizations to facilitate the construction modestly priced houses and apartments and help low/moderate income people purchase houses

X. ENERGY SECTION

Overview

While the energy picture often appears abstract and beyond the influence of individual communities, sound local planning can play a positive and effective role in guiding energy decisions. By promoting concentrated land use patterns, participating in development decisions, facilitating transportation options, and encouraging renewable energy and conservation, Berlin can move toward a position of sustainable energy use. This will not only help to maintain a healthy environment but can also build a foundation for economic health and stability.

Energy Sources

In Vermont, the primary sources of energy are fossil fuels (oil, gas, coal and liquid petroleum gas), nuclear generated electricity, local and imported hydro-electricity, and biomass (fuel wood). Renewable energy sources such as solar and wind account for only a negligible proportion of total energy use at present. Fossil fuels are used primarily for transportation and heating, while nuclear power (supplied from the Vermont Yankee Facility in Vernon, Vermont) and out of state hydro-power (supplied by facilities in New York state and Quebec) provide for the bulk of electric demand.

In the energy sector, Transportation energy use has grown substantially during the past 30 years. During that time energy consumption in the transportation sector has grown 97%, and is primarily due to increased commercial and industrial uses. The transportation sector now accounts for 45% of all energy, and approximately 60% of all fossil fuels, consumed in Vermont.

Residential use, while decreasing as a percentage of total energy demand, is projected to have increased by over 334 KW/yr (34 %) between 1980 and 2010, presumably due to the significant increase in the State's total number of housing units and the trend towards larger homes with more appliances. While fossil fuel use in the commercial and industrial sectors has been less pronounced, the total projected increase between 1980 and 2010 is expected to add up to over 334 KW/yr.

Fossil Fuels

Fossil fuels account for over 75% of all energy consumed in Vermont. In Berlin fossil fuels are used primarily to power vehicles and heat homes and businesses. Oil imports account for approximately 50% of the total U.S. trade deficit and the cost of U.S oil imports has increased over 300% in this decade to a level of about $340 billion in 2007.

The economic and social consequences of intensive fossil fuel use are only part of the story. The combustion of fossil fuels is by far the largest contributor of atmospheric "greenhouse gases" (primarily carbon dioxide). In Vermont, significant warming could cause irreparable harm to the State's largest industry, tourism. Reduced snowfall and a die-off of sugar maples could spell disaster for ski areas, syrup producers, and our fall foliage season. Further, fossil fuel combustion is directly linked to the acidification of rivers, lakes and soil, and human health hazards resulting from declining air quality.

Because fossil fuels are an exhaustible natural resource, Berlin should strive to reduce fossil fuel consumption.

Nuclear Power

The Vermont Yankee Nuclear Power Plant in Vernon provides about one third of current electric power in Vermont. However, it is only licensed to operate until 2012. In 2010 the Vermont Legislature voted against relicensing in the wak of a series of maintenance issues.

Hydropower

Currently, Berlin gets about half of its energy from hydro-power, primarily from Hydro-Quebec and New York Power Authority. The Hydro Quebec contract is scheduled to expire in 2015.

It is estimated that Vermont has at least 174,000 KW of undeveloped hydroelectric potential. This represents about 22% of current use. Most of the sites constituting this additional capacity are classified a "mini-hydro" (under 1000KW) developable at existing, but unused, dam sites. Any new hydroelectric development in Berlin will require a balancing of priorities. While the benefits of generating electricity from local, renewable resources are evident, they are not without associate costs. The power output captured from a given stream must be moderated by environmental considerations. A minimum stream flow, adequate to support aquatic life forms, must be maintained and impoundments must be designed with water quality and land use/recreation considerations in mind.

In keeping with current state and national trends, Berlin does not encourage construction of new dams on major waterways. However, the Town does support the responsible development of small scale hydro projects that do not negatively impact fish and wildlife habitat.

Biomass (including wood)

Forest land covers approximately three-quarters of Berlin's total land area. The generation of heat (and even electricity) from biomass is a strategy that may hold the potential to benefit the Town. Under proper management and replacing fossil fuel combustion, the use of biomass could reduce greenhouse emissions. Importantly, this could also stimulate the local economy, as estimates show that approximately 80% of each dollar spent on wood remains in the state while only 20% of each dollar spent on nonrenewable energy sources remains in the state.

As of the 2000 Census, only about 9% of Berlin households use fuel wood as a primary heat source. Increased use of fuel wood for heating would stimulate local economies and, if harvest and burning is executed in an environmentally sound manner, would decrease the environmental impacts of existing patterns of energy consumption. New technology is expanding the potential for implementing high-efficiency wood burning in buildings as a primary heat source. While wood burning does contribute a large proportion of atmospheric particulate pollution - pollution directly associated with respiratory damage - new wood burning technology and stricter EPA emissions standards are resulting in increased efficiency and reduced particulate emissions.

In 1993 the Berlin School District installed a wood fired heating system in the elementary school at a cost of $410,000. This system is fueled by wood chips supplied by from regional suppliers and is the school's main heating source.

Vegetable Biofuels

Biofuels are renewable, agriculturally derived liquid fuels that can be used to run vehicles and heat buildings. They include biodiesel, ethanol, and even straight vegetable oils. A variety of plants with high oil or cellulose content can be employed to produce these products. Some, including corn, sunflower, canola, soy and hemp, could be grown and processed in Vermont. Doing so could help keep money circulating in the community, creating jobs and sustaining local agriculture, while helping to avoid the external costs associated with fossil fuels. However, it may also take farmland out of food production and some question the energy *inputs* processing requires.

Biodiesel, in particular, appears to be catching on in Vermont (and elsewhere), as it can be used in many existing vehicles and furnaces with minimal equipment modification. Furthermore, it is often blended with petroleum fuels. As of January 2007, biodiesel fuel was available at about two dozen location throughout Vermont. Currently, there are no suppliers or gas stations that in Berlin offer biodiesel.

Wind Power

Wind Power has experienced resurgence in its application to where it is now the fastest growing energy source in the world. Wind turbines are among the most economical of contemporary renewable energy technologies, and have become cost competitive with most conventional electricity sources (especially when indirect, avoided costs are factored in).

Although Vermont has potential for wind power, it is estimated that only 10 to 15% of Vermont's electrical power could be generated by wind because of its intermittent nature. Berlin probably does not have viable sites for industrial scale wind generation (generally at elevations between 2,500 and 3,500 feet). However, it should be noted that advances in small scale wind turbine technology figure to make them an increasingly viable option for private individuals or groups of individuals. State law restricts the regulation through zoning of turbines with blades less than 20 feet in diameter. Furthermore, any small scale turbine that returns energy to the power grid is exempt from local bylaws and is instead reviewed by the Public Service Board under Act 248.

The Town of Berlin supports the development of small scale wind projects at lower elevations (below 2500 feet in elevation).

Solar Power

Solar energy has tremendous potential for providing clean, reliable and safe energy, even in Berlin's climate. The application of both active (systems which collect, store and distribute solar energy within a building) and passive (systems which utilize a building's structure to trap sunlight and store it as heat) solar technologies have demonstrated their cost effectiveness in Vermont.

Solar-tempered buildings have their long axis oriented within 30 degrees of true south and have an unobstructed net south facing window area equal to at least 7% of the total floor area. Solar-tempering coupled with proper insulation can offset heat costs in a building by 40%. Although solar-tempering at initial construction generally requires no additional investment, a majority of new buildings in Vermont do not incorporate such design principles.

Contemporary solar technologies have proven their value in Vermont. As the technologies improve and costs decrease, solar thermal collectors and photovoltaics (technologies which can convert sunlight to electricity) will become more competitive in the marketplace even in less remote areas. As the power source of solar technologies is inexhaustible, and solar energy neither contributes pollutants to the atmosphere nor to our reliance on foreign energy suppliers, strategies should be developed to encourage its use in Berlin.

Berlin currently has one industrial scale solar site. The project is located on Green Mountain Power's energy generation site off the Dog River Road, and consists of a 200 KW array with over 1000 panels. This facility has the capacity to power 100 homes, and is one of the largest solar installations in Northern New England.

In addition, there are two recently constructed residential solar projects in Berlin, and plans for several additional facilities in town. State law also exempts solar projects that return power to the grid from local zoning review; however, town's can still comment on these projects at the Public Service Board level.

Conservation

Demand Side Management

In 1990 the Public Service Board required the state's regulated utilities to carry out Least Cost Integrated Planning and implement Demand Side Management programs. In Central Vermont those utilities are investor owned municipal and cooperative electric utilities. Least Cost Integrated Planning requires that each utility "...meet the needs of its customers at the lowest total long term cost and... do so by giving equal consideration to all generation, transmission and energy efficiency options..." Demand Side Management programs promote the conservation of energy as an energy source available for future demand. Through their Demand Side Management programs, the region's utilities will likely provide various incentives including financing and partial payment of certain efficiency improvements, energy audits and design services.

As the creation of excess generating capacity can be used to meet future electrical needs for Vermont, conservation must continue to be viewed as a source of electricity. Conservation is our least expensive and most environmentally benign source of electricity.

Transportation

According to the Vermont Comprehensive Energy Plan, the transportation sector accounts for over 45% of total energy demand and approximately two-thirds of all fossil fuels used in Vermont, which imposes a

tremendous economic and ecological detriment. Environmental degradation resulting from heavy petroleum use is well documented, as is the fact that the largest share of money spent on fuel and automobiles leaves the state, thus undermining the local economy.

The rural character and decentralized settlement patterns of Central Vermont, creates difficult circumstances in which to minimize the consumption of traditional fuels in the transportation sector. Almost 80% of Berlin's workforce commutes to work alone. About 11% carpool while 6% work at home. Less than one half of one percent travel to jobs via public transportation. Nevertheless, there are strategies which can be employed at the local, regional and state levels which will bear influence within this context.

Improved access to and increased use of alternative and public transportation options such as rail, bus, vanpooling, ride-sharing and bicycling, can not only decrease energy consumption, and reduce the infrastructure expenditures that are associated with cars.

Another strategy by which the demand for transportation can be reduced is through encouraging settlement patterns which require less physical travel. The realization of Berlin's goals for the Town Center District could be a component in this strategy.

Buildings and Structures

America's buildings consume 40% of our total energy and about 10% of all the energy Used in the world. According to the Vermont Comprehensive Energy Plan, approximately 30% of the total amount of energy consumed in Vermont is used for residential purposes. Growth in energy demand in the residential sector is being driven by increases in population and housing, and a corresponding increase in demand for space and water heating. This demand, when considered with the energy demand associated with the space and water heating requirements of commercial and industrial buildings, represents tremendous potential energy savings.

Table --
Primary Heating Fuel Source in Berlin Residential Units

Type	Percent of Units
Fuel Oil	74%
Bottled/LP Gas	10%
Wood	9%
Electricity	2%
Other	5%

Investments in energy efficiency improvements in new and existing buildings and appropriate site design in new development will result in the realization of this savings, and will have a significant impact on total energy demand. Ultimately, such investments will reduce the percent of income residents spend on energy, per capita energy consumption and environmental degradation.

The Central Vermont Regional Planning Commission has received federal stimulus funding to assist municipalities with implementing energy efficiency measures. Consequently, CVRPC has funds available to perform energy and lighting audits on municipally owned building and to assist with weatherization measures identified by the audits. Since Berlin has already performed such audits on its own, the Town is requesting that its per capita allotment under the program be applied to weatherization only. The Program period runs through 2012.

CVRPC is receiving additional funding from the VT Department of Public Service to provide technical assistance to new and existing town energy committees with primary focus on committee development (i.e. capacity building) and project implementation.

Programs and Resources

A variety of organizations and programs exist to provide assistance to citizens and local government in the realm of energy conservation and development. A partial list of Vermont based resources follows:

• The Alliance for Climate Action/10% Challenge – Community energy organizing and programs. www.10percentchallenge.org
• Apollo Alliance Vermont – Coalition of labor, business and community groups dedication to energy independence. www.apolloalliance.org/state
• Biomass Energy Resource Center – Consults on biomass and cogeneration projects. 802-223-7779
• Efficiency Vermont – Financial and technical assistance for energy savings. Energy Smart home energy analysis. www.efficiencyvermont.org
• Renewable Energy Vermont – Trade association for renewable energy dealers. www.REVermont.org
• School Energy Management Program – Provides free energy assessments for schools. www.vtvsa.org
• Sustainable Energy Resource Group - Consults with communities on energy planning/programs. www.SERG-info.org
• Vermont Biodeisel Project – Collaboration designed to help accelerate emergence of industry in Vermont. www.vtbiodeiselproject.org
• Vermont Green Building Network – Promotes green building in Vermont. www.vgbn.org
• Vermont Energy Education Program. – Provides in school energy curriculum. www.veep.org
• Vermont Energy Investment Corp – Promotes energy efficiency and renewable technologies. www.veic.org
• Vermont Energy Star Homes – Technical assistance to build energy efficient homes. www. Vtenergystarhomes.com
• Vermont Peak Oil Network – Network of groups and individuals working on energy sustainability. www.vtpeakoil.net
• Vermont Rideshare - Promotes commuter carpooling.

www.VermontRideShare.org
• Vermont Energy and Climate Action Network- Collaborative of organizations involved in energy and climate issues.
• Vermont Fuel Dealers Association – Trade association of fuel marketers. www.vermontfuel.com
• Vermont Biofuel Partnership – Resource for producers, wholesalers, retailers and users of bioheat and biodiesel fuel. www.vtbio.org
* Vermont Renewable Energy Atlas - Interactive mapping project displaying current and prospective renewable energy sites statewide. www.vsjf.org/resource/renewable-energy-atlas

Energy Goals and Policies

1. Goal: Promote energy efficiency and conservation

Policies:

- Support demand side management conservation programs which are designed to reduce demand for electricity through enhanced energy efficiency and conservation.
- Encourage attention to energy efficiency in the design and construction of new buildings. Consider the use of density bonuses or other zoning based incentives for this purpose.
- Consider forming a Town Energy Committee. The Committee or Town Energy Coordinator should review the Town Energy and Climate Guide (Vermont Energy and Climate Action Network, 2010 – to be released soon!) for ideas on energy conservation and development.
- Encourage land use planning that: locates employment and housing opportunities within or adjacent to Berlin's villages and near currently developed areas; supports the expansion of telecommuting, teleconferencing and public transit; provides for pedestrian transportation options; and promotes the development of commuter parking lots.

2. Goal: Encourage renewable energy development

Policies:

- Support the use of biofuels and/or electric power in municipal and public transit vehicles.
- Encourage the development of renewable energy resources at the public utility level, consistent with the other goals and policies of this Plan.
- Encourage the development of small scale wind, solar, or hydro power by individuals, or groups of individuals, to offset fossil fuel consumption and promote self-sufficiency.
- Consider the use of density bonuses or other zoning based incentives for this purpose.

3. Goal: Support energy cost efficiency

Policies:

- Implement the measures prescribed in Town building energy audits.
- Utilize funds available through CVRPC's Central Vermont Energy Program

- Reduce Town expenditures by considering the cost of energy over the life of equipment to be purchased by the Town.
- Support home weatherization programs. Support efforts to create a fund to provide low interest capital to home owners, landlords, institutions, and businesses to assist in making cost effective investments in energy efficiency and renewable energy
- Consider the establishment of local, publicly owned and operated bulk storage fuel facilities, as authorized under 24 VSA, Chapter 107, Section 3701, as a means of containing fuel costs for Berlin residents.

XI. NATURAL AND HISTORIC RESOURCES SECTION

Overview

Berlin's natural features and resources require the responsible stewardship and sustainable use that protects and enhances the Town's environmental health for the benefit of future generations. Accordingly, the preservation of natural features that contribute to Berlin's ecological well-being and biological diversity is a priority.

Physical Geography/Land Use

The Town of Berlin is located in Central Vermont in the physiographic region known as the Vermont Piedmont. The Winooski River forms the Town's northern boundary. The River, which drains to the west, has cut a substantial valley through the mountains and the north-south mountain ridges in the Town tend to end as they approach the valley.

The landscape of the Town is dominated by three mountain ridges running north and south. The western-most ridge runs along the western edge of the Town, west of the Dog River valley, and generally east of Jones Brook. This ridge is quite steep and irregular, penetrated by many brooks. The northern end of this ridge slopes down to the Winooski River Valley.

The central ridge is steeper and higher than the western ridge, but is not marked by the sharp valleys around brooks. As a result, it tends to appear more rounded and less severe. The eastern side of the central ridge slopes down to Berlin Pond.

The third ridge is in the southeastern corner of the Town. It is not as high as the others and gives way to an upland plateau well before reaching the Stevens Branch. These ridges are accentuated by the rivers which flow between them.

The central mountain ridge essentially divides the Town into two halves. This division is reinforced by Interstate 89 which cuts across the northern end of the central ridge and passes east of the Berlin Pond. Only three roads cross the Interstate and these are all north of the Pond.

Land, form, soil characteristics, and natural features have always influenced the pattern of development and land use in Berlin. High density land uses have located where access to employment and commerce is

readily available and where the land is inherently able to accommodate the demands of development - whether in terms of soil stability, flooding, or the ability to accommodate wastes.

Much of Berlin is of a character that is inherently rural - steep slopes, irregular terrain, rocky soils and with limited access both within the Town and to areas outside of the Town. The exception is the northeast quadrant where soils and terrain are more suited to intensive, non-rural activities. In addition, the northeast portion of the Town is provided with considerably greater accessibility to the surrounding urbanized area and, via the Interstate, railroad, and Airport, to the much larger region beyond.

Land use categories in Berlin break down as follows:

Land Use	Percent of Town
Forest Land	73%
Agricultural/Open Land	13%
Developed	10%
Water	3%
Other	1.0%

Productive Resources

As the above chart would suggest, Berlin still possesses "working landscapes" where people manage, nurture, and harvest the resources of nature. Farmlands, forest lands, and lands containing mineral resources are vitally important to the economy and character of the Town.

This Plan encourages the protection of resource production lands and the livelihoods of the people who use them by recognizing their benefits, and promoting their products.

Forest Land

Berlin's forests are a mix of hardwoods and softwoods. This mix is valuable to wildlife and helps reduce the impact of species-specific diseases or insects. Currently Berlin's forests are healthy and sustainable; however, the fragmentation and conversion to other uses are a threat to their integrity and productivity. Currently 73% of Berlin is forested. About 2100 acres are conserved as public lands. In addition, 6,127 acres of private forest lands are enrolled in Vermont's Use Value Appraisal Program.

Forests lands provide wildlife habitat. They capture carbon dioxide, thereby maintaining air quality. They help protect the integrity and function of our flood plains and wetlands, and can help maintain water supplies through groundwater recharge. Forests, as they exist in Berlin, are part of, and contribute to, the natural systems that sustain life.

Since private landowners own a majority of the Town's productive forest land, it's important that these lands are conserved through sound, long-term forest management programs and compatible patterns of growth and development. Productive forest lands are defined as all large tracts which in themselves, or when combined, form a major economic

unit for long-term timber production.

Agricultural Land

Farming helps to define Berlin's cultural identity and provides its residents with economic opportunity, open space, aesthetic pleasure, and a sense of place. Farmlands also provide a variety of environmental functions from which we all benefit.

The limited supply of primary agricultural soils, their general suitability for septic systems, combined with agriculture's increasing dependence on higher quality land make it crucial that land use decisions display foresight and recognize the importance of these soils to future generations. As such, it is a goal of this Plan to preserve and promote a viable agricultural economy, culture, and land base.

Berlin contains 4,957 acres classified as having "prime agricultural soils." These soil types occur primarily in and along the valleys of the Dog, Winooski and Steven's Branch rivers in alluvial soils and in glacial tills in the "Plateau" section of Town in the vicinity of the airport. It should be noted that much of the land area within the proposed Town Center District also falls into this category. It is Berlin's position that promoting concentrated development in areas that are already essentially surrounded by development can take development pressure off of other, more viable farmland.

Earth Resources

Berlin's mineral deposits are recognized as an important resource. In particular, sand and gravel deposits play an important part in local and personal economies and are relied upon for road building and maintenance materials. Berlin's major sand and gravel deposits and extraction operations occur in the Route 12 corridor in the valley of the Dog River.

Berlin must continue to accommodate earth resource operations while guarding against their more harmful aspects. This is an example where the planning process can be used to encourage locations and operating procedures that could minimize the conflicts and uncertainties of the regulatory process.

Protective Resources

Surface Waters

Surface waters in Berlin provide a variety of important functions. They are used for drinking water, flood control, and recreation. Furthermore, they enhance the aesthetic environment. Berlin's most significant surface waters include Berlin Pond, the Dog River, the Winooski River, and the Steven's Branch. In addition, several smaller streams wind through the community as well. These include Jones Brook, Chase Brook, Cox Brook, and Pond Brook.

The Dog River, which flows north between the western and central ridges, has formed a narrow valley with a relatively flat floor. The land rises significantly to both the east and west. The Dog River is classified as a Class B stream; and native populations of brown and rainbow trout are found. The land along the Dog River is designated for industrial, commercial, and primarily rural residential development

at low to moderate densities, but some areas are limited by flood plain constraints.

Maintaining adequate building setbacks and buffer areas to protect a riparian corridor along the length of the River, as well as other streams, is critical to the long term protection of water quality and wildlife habitat. Protecting stream banks and riparian corridors, through proper management of stormwater from nearby land uses, including developed sites that create large areas of impervious surface and agriculture, is critical to the maintenance of water quality in local streams.

The Berlin Pond and Brook lie east of the central ridge, partially between the central ridge and the eastern ridge. The Pond is Montpelier's municipal water supply, and the Pond and its tributaries are classified as Class A.

The Stevens Branch of the Winooski River cuts across the northeast corner of the Town through a relatively narrow valley. This stream is classified as a Class B stream and contains native and stocked populations of brown and rainbow trout. Between the Pond and the Stevens Branch, north of the end of the eastern ridge, the land forms a broad plateau which contains most of the flatter land in the Town and which could serve as a visual and recreational focal point along a revitalized Barre-Montpelier Road. With greater attention focused on the Stevens Branch due to redevelopment activities and the construction of the bicycle path along the existing rail lines, efforts should be pursued to allow riparian vegetation to restore itself.

The Winooski River proper forms much of the Town's northern border. Adjacent land uses are mostly industrial and agricultural in nature. Water quality and flood retention functions should be protected through the establishment of riparian buffers.

The protection of smaller upland streams, through the maintenance of forested buffers, is also critical to the protection and enhancement of water quality throughout town.

Ground Water

Many of Berlin's residents and many of its businesses and industries receive their water from subterranean sources. In general, groundwater sources in Berlin are plentiful and of good quality. While groundwater is usually less susceptible to seasonal fluctuations and contamination than surface water, and thereby making it an ideal source for public urban supplies, incidents of groundwater contamination are on the rise, primarily due to improper activities within those areas which serve to replenish supplies. Sources of groundwater contamination in Central Vermont have included domestic sewage, landfills, improperly disposed of hazardous wastes, leaky underground storage tanks, pesticides and fertilizers. Supply quantity is threatened in some locations, as well, because of an increase in impermeable surfaces in aquifer recharge areas.

There are a number of community systems in Town which draw from wells. **Map - Natural Resources Map** also shows the designated wellhead protection areas (WHPA's) for these systems. There is one cluster near the north end of Route 12, and a larger, area in the Route 62/US 302 area which surrounds the three wells supplying the hospital system.

Floodplain and Fluvial Erosion Zones

Floodplains are low lying areas of land adjacent to streams and rivers that are frequently inundated by water. While these places serve important ecological functions, including floodwater storage, sediment trapping, nutrient filtering and aquifer recharge, they can be hazardous locations for people and property. Flooding (and flood related events), arising from a variety of causes, including heavy rain, melting snow, ice jams, poor drainage and dam breaks, is the most frequent, damaging and costly type of natural disaster experienced in the State and Region. Over the last 50 years flood recovery costs have averaged $14 million per year (not adjusted for inflation) statewide. Unfortunately, it appears that Vermont can anticipate more frequent flooding occurrences in the years ahead as climate change models predict wetter summers with more intense rainfall events.

High water causes damage in two distinct, but related, ways. Inundation can fill structures with water and cause property damage and drowning. It is a great concern for those living in or near Flood Hazard Zones (the area inundated by water during a flood with a statistical probability of occurring once every 100 years – i.e., the "One Hundred Year Flood"). Surprisingly however, erosion from flash flooding (i.e. *fluvial erosion)* actually causes greater damage. Within the area of a stream or river's active channel movement, known as the Fluvial Erosion Hazard Zone (or FEH), bank failures and changes in river channel courses during floods can undermine buildings, roads, farm fields, and utility infrastructure.

Berlin is not immune to either of these hazards. Over the years the Town has experienced several damaging floods and high water events. Like the rest of Vermont, Berlin witnessed severe flooding in November of 1927. More recently, in 2008, Berlin experienced nearly $250,000 in flood damage to several of its roads.

Perhaps the best known mitigation program is the National Flood Insurance Program (NFIP). This program, administered through the Federal Emergency Management Agency (FEMA), identifies areas within the Flood Hazard Zone and prescribes development review standards and procedures for lands within regulated areas. Municipalities that comply with Federal standards can qualify their residents for flood insurance through the program at rates far below what would be available on the private market. It is essential, therefore, that Berlin maintain its eligibility for this program. It is important to note that under this program, reduced insurance rates are available town-wide – not just to those located within the Flood Hazard Zones.

Washington County is currently undergoing a FEMA directed "map modernization process" which has provided the Town with updated digital maps of Berlin's Flood Hazard Zones. Because the new maps use ortho-photographs as a base, they are more accurate and easier to interpret. Once the updates are officially adopted, Berlin will have six months to review them and request any modifications. At the end of this period the maps will become official and the Town's Flood Hazard Regulations will have to comply with revised federal standards if Berlin is to remain in the NFIP program. The "current" FEMA maps, provided to the Town some 20 years ago, depict 100 year flood levels along the Winooski River, along the Dog River, along the Stevens Branch, and some areas around the Berlin Pond and Brook. The designated flood plain areas are shown on the official FEMA maps.

While the FEMA Flood Hazard Zones are important maps for Town Planning and for mortgage lenders in deciding which properties need flood insurance protection, they do not address fluvial erosion hazards. Accordingly, the Department of Environmental Conservation, and many Regional Planning Commissions, have been busy conducting fluvial erosion hazard assessments for many river and stream segments statewide. Berlin has been a beneficiary of this effort. Using field surveys and GIS technology, CVRPC has completed erosion hazard maps for the main stem of the Dog River and Phase I assessments for section of the Stevens Branch and Winooski Rivers. Berlin can use this information to help avoid future life and property damage by allowing rivers and streams the area they need to maintain or re-establish their natural "equilibrium" (or stability) thereby avoiding the need for costly, and potentially environmentally damaging stream channelization and bank stabilization measures. While Flood Hazard and Fluvial Erosion Hazard Zones typically have large areas of coincidence, they are seldom, if ever, identical.

Private driveway culverts are often undersized, causing washouts and road damage during intense storms. Driveways which are improperly graded and ditched can direct water onto the main road, increasing highway maintenance costs. Improper maintenance of Town roads and roadway culverts can lead to washouts. Soil and vegetation allowed to build up on the edges of roads prevent water from running into ditches. Clogged culverts restrict water flow. Inadequate investments in municipal infrastructure result in problems such as undersized (or too few) culverts, inadequate ditches, or the lack of headwalls on culverts.

Finally, it is important to consider how land use within a watershed impacts flooding. Impervious surfaces, such as roads, driveways, parking areas and buildings prevent water from soaking into the ground, increasing runoff and erosion potential. Any disturbance of the soil or any change in topography may increase erosion potential. Building development, soil tillage and logging are the primary causes of soil disturbance in Berlin.

Wetlands

Wetlands are areas of land that are "inundated or saturated with water for varying periods of time during the growing season." Wetlands help make the environment more livable, and are among our most productive and diverse biological communities. They purify surface and underground water supplies. They are natural flood storage areas during wet periods and replenish reservoirs during dry spells.

Although wetlands can sometimes present significant and costly obstacles to development, over the past century or so more than one half of the original wetland acreage in New England has been destroyed. Now that we are beginning to understand the important ecological functions that wetlands perform, these special areas are receiving greater protection.

The National Wetland Inventory has identified a number of potential wetland areas in Berlin. The largest of these is around the Berlin Pond. Some other areas have been identified along the Dog River and along Jones Brook. In addition, some clusters of potential wetlands have been identified away from major water courses, including some in the central ridge highlands, some in the southeastern ridge (near the Interstate interchange) and a cluster north of Vermont Route 62. These features are shown on **Natural Resources Map.** Approximately 543 acres Town wide have been mapped as wetlands.

In addition to these major features, there are several wetlands which have been identified. In many cases these are incorporated into flood plain areas. The large wetland area around Berlin Pond is identified as a flood plain area.

Steep Slopes/High Elevations

Much of Berlin is characterized by steep slopes. Slopes between 15 and 25% present challenges for development related to access, waste disposal and erosion. Slopes greater than 25% are generally considered prohibitive for development. Only about one-third of the land in the Town has a slope of less than 15%. Land development in high elevation poses some of the same problems as development on steep slopes – even those areas that are relatively flat. In keeping with Berlin's traditional settlement patterns, development on ridgelines should be avoided.

The largest concentration of relatively level land is the plateau around the airport. Other than that plateau, relatively level lands tend to be located either along the ridges or in the bottoms of river valleys.

Wildlife Habitat

Berlin contains almost 6,000 acres of land classified as "Deer Wintering Areas". These locations are generally in coniferous stands on south or west facing slopes. They are considered critical to the survival of the deer population, as they provide cover from deep snows and winter winds.

The areas identified as deer wintering areas by the Vermont Department of Fish and Wildlife are, for the most part, located in rugged mountain ridge areas which are not expected to see substantial development pressures, or in areas already protected as municipal forests. The exceptions are in the northeast quadrant of the Town which has been identified as the location of most future development. The deer areas in the northeast quadrant are mostly in locations featuring steep and rugged terrain, and are unlikely to be directly threatened by substantial development. They may, however, become bordered or surrounded by residential and/or commercial development, and this may result in some infringement on the deer areas. That infringement is balanced by the substantial deer areas left in the remaining rural portions of the Town where development pressures are expected to be less intense.

Ecologically Sensitive Areas

According to Vermont Statute, ecologically sensitive areas are "areas of land or water which have unusual or significant flora, fauna, geological or similar features of scientific, ecological or educational interest." Berlin contains twelve such locations. While the State does not disclose specific information on these sites (for protective reasons), it is known that four contain rare plants, seven contain rare animals and one is representative of an unusual natural community. Most of these sites occur in the Central Highlands and in or around Berlin Pond and its associated wetlands.

Conserved Land

Berlin contains over 3,000 acres of land that is protected from future development. Over two thirds of this

is public land. The remaining acres consist mostly of conservation easements secured by the Vermont Land Trust. Some of this acreage is farmland and some is forested.

There is a large watershed area surrounding Berlin Pond, most of which is either in municipal forest areas or in areas designated as Highland Conservation District where development pressure is expected to increase. Berlin Pond serves as the City of Montpelier's municipal water source, and as a result, the City has developed a resource protection plan and ordinances to protect the water quality of the Berlin Pond. The Irish Hill Conservation project has resulted in the permanent conservation of 660 acres of forested upland adjacent to the Pond. A small rural residential area is located just north of and slightly downstream of the Pond. This area should pose no threat to the Pond's water quality. The other exception is a small area east of Interstate 89 which drains towards the Pond via culverts under the Interstate. If this area should experience development, it is appropriate that suitable controls be established to prevent contaminated runoff and septic discharges from reaching the Pond.

In addition, nearly 180 areas of the Dodge Farm property were permanently conserved through the establishment of a conservation easement.

The most significant natural features of the Town of Berlin are the forested mountain ridges, the Dog River Valley, and Berlin Pond. There is strong support for the protection of these resources.

Scenic Resources

Scenic landscapes not only enrich lives and spirits and attract new businesses and residents; they also provide the basic ingredient for one of the Region's most important industries - tourism. Each year thousands of visitors travel here to see the mountain vistas, pastoral scenes, fertile valleys, historic villages, Interstate 89 (which has received awards for its scenery), remote back roads, and woodlands ablaze with autumn color. Thus, it is in our best interest, to preserve the best of Berlin's visual splendor.

Much of the character of the Town is generated by its scenic natural features such as Berlin Pond, the mountain ridges and the river valleys. The aesthetic quality of these features should be protected for the benefit of future generations anc to safeguard the Town's rural qualities.

Historic/Human Made Resources

With over 200 years of recorded history since the first permanent settlements, it is not surprising that Berlin contains a number of visible resources depicting its history. A review of the *Historic Sites and Structures Survey* maintained by the Vermont Division for Historic Preservation revealed a total of 59 entries, at least one of which had been destroyed since the *Survey* was completed in the 1980's. Another of the entries was the Berlin Corners Historic District which contains 14 separate buildings. Altogether, a total of 71 structures are noted in the *Survey*. In addition, the Town recognizes a total of 10 historic cemeteries. Appendix A presents a tabular summation of these entries.

Dwellings	60
Bridges	4
Schools	2
Churches	2
Power Station	1
Train Depot	1
Parish House	1
Cemeteries	10
	81

The dwellings included in the *Survey* represent, with few exceptions, development in the Town during the 19th century with most dating between 1830 and 1870. This is a period that corresponds to the transition from sheep farming to dairy farming in Vermont. The existing historic structures tend to be located along the river valleys that separate the rugged mountain ridges in the Town. There are historic structures at Riverton and Berlin Corners. As would be expected of development during that portion of the 19th century, the dominant architectural style of the historic dwellings in Berlin is Greek Revival. In fact, however, almost half of the surveyed dwellings were classified as "vernacular" with some stylistic decoration rather than pure examples of any specific style. This is typical of rural architecture where the dominant concern is function rather than rigid attention to stylistic detail. There are also a few examples of other specific styles such as French Second Empire, Italianate, and Queen Anne. Virtually all of these are residential structures and currently in private ownership. Due to the amount of development anticipated in the Town during the coming decades, it is felt that many of these structures will be threatened by new development. Another threat is neglect due to lack of awareness of the importance that the structures have to the Town's knowledge of itself and its links to its past.

The Town has an active Historical Society which serves as a source of information to owners of important historic properties regarding the history of the properties as well as means of ensuring their continued existence. The Town should encourage and assist the Historical Society in its work, and help to publicize the existence and importance of the Town's historic resources. Both the Town and the Historical Society should continue to work with the Vermont Division for Historic Preservation to locate outside resources which might be available for restoring or preserving the historic structures.

The **Historic Resources Map** shows the locations of the historic features identified in the *Survey,* keyed to the numbers in Appendix A. A copy of the *Historic Sites and Structures Survey for Berlin* is available at the Town Offices.

It is important that the recognition and preservation of Berlin's historic resources be an ongoing part of the Town's planning process. While most of the identified historic resources are privately owned, they make up an important asset for the community as a whole, and do much to define the overall character of the Town.

NATURAL AND HISTORIC RESOURCES GOALS AND POLICIES

1.Goal: Protect resource production lands and the livelihoods of the people who use them.

Policies:

- Recognize the benefits of protecting resource lands
- Promote resource-based products
- Encourage private land conservation activities
- Encourage sound, long-term forest management programs
- Plan for compatible patterns of growth and development.

2.Goal: Preserve and promote a viable agricultural economy, culture, and land base.

Policies:

- Promote concentrated development in the proposed Town Center District that is already essentially surrounded by development to take development pressure off of other, more viable farmland.

3.Goal: Accommodate earth resource operations while guarding against their more harmful aspects.

Policies:

- Utilize the planning process to encourage locations and operating procedures that minimize the conflicts and uncertainties of the regulatory process.

4.Goal: Protect and enhance water quality.

Policies:

- Pursue opportunities to encourage riparian vegetation to restore itself, especially along the Stevens Branch where redevelopment activities and the construction of the bicycle path along the existing rail lines are planned.
- Encourage the protection of smaller upland streams, through the maintenance of forested buffers.

5.Goal: Protect against flood-related hazards.

Policies:

- Maintain municipal eligibility in the National Flood Insurance Program (NFIP). It is important to note that under this program, reduced insurance rates are available town-wide – not just to those located within the Flood Hazard Zones.
- Consider establishing stream buffers as protective setbacks in the zoning bylaws, to prevent people from building structures too close to rivers, such that the structures could be flooded or swept away by strong currents in a storm.

- Complete the mapping of Berlin's fluvial erosion high risk areas for Steven's Branch and Winooski Rivers. Consider revising local bylaws to reflect the dangers of developing in fluvial erosion areas.

6.Goal: Protect steep slopes and high elevations from development.

Policies:

- Discourage land development on steep slopes
- Discourage development on Berlin's higher ridgelines – even if those areas happen to be relatively flat.
- Encourage protection of forested mountain ridges.

7. Goal: Protect significant natural and scenic features.

Policies:

- Encourage protection of forested mountain ridges
- Encourage protection of the Dog River Valley
- Encourage protection of Berlin Pond.
- Encourage protection of Benjamin Falls.

8. Goal: Recognize and preserve historic resources.

Policies:

- Ensure the continued existence of the Historical Society to publicize the existence and importance of the Town's historic resources.
- Encourage and assist the Historical Society in its work.
- Work collaboratively with the Historical Society and the Vermont Division for Historic Preservation to locate outside resources which might be available for restoring or preserving the historic structures.
- Integrate preservation into the Town's planning process.

9. Goal: Protect environmentally sensitive or unique areas

Policies:

- Identified natural and fragile areas should receive protection from harmful uses
- Where natural and fragile areas occur on developable land and where their adequate protection would preclude any other reasonable use of those properties, acquisition in fee simple is recommended when practical.
- It is the policy of Berlin to encourage the preservation of existing wildlife habitats.
- Any activity that would degrade important groundwater supplies is discouraged.

XIII. IMPLEMENTATION

Adoption of a Town Plan will not ensure its eventual implementation. The Plan is a guide to future decisions, both public and private, that over time will result in a community anticipated by the Plan. This section outlines steps which the Town should take to move steadily in the directions recommended by the Plan. These steps are presented in four groups: by-law revisions, capital projects and financing, work with other public bodies, and citizen input.

A. REGULATION REVISIONS.

Many of the recommendations contained in this Plan relate to land use patterns and development patterns. Most significant are the proposals to develop a strong commercial/industrial center in the northeast quadrant of the Town, maintain the commercial and industrial areas near the mouth of the Dog River, recognize the Historic District near the "four corners," enhance and expand the town center area, revitalize the Barre-Montpelier Road, consider the designation of a Riverton Hamlet District, and essentially maintain the rural qualities of the remainder of the Town as presently zoned. Another major feature of the Plan is the continued protection of Berlin Pond, a major natural attribute that contributes much to the overall character of the Town and which is also a major public water supply. The Plan shows the Pond surrounded by a Highland Conservation zone.

The principal mechanisms for implementing these recommendations are the Town's Zoning Regulations and Subdivision Regulations adopted under the provisions of 24 VSA, Chapter 117. Once this Plan is adopted, the next step is to carefully review the Zoning Regulations and Subdivision Regulations to identify specific items which should be revised to be consistent with the goals and purposes of the Plan. Appropriate amendments should be prepared and adopted in accordance with Section 4385 of 24 VSA, Chapter 117.

Zoning and Development Regulations. To achieve a desired mix of uses and pattern of development described above, the town enacted zoning regulations and subdivision regulations. These regulations, specifically the zoning regulations, have designated 10 land use districts which regulate land uses, development densities and related standards within distinct areas of town. These districts were developed in the previous Plan and where incorporated into the 2005 zoning regulations. The Planning Commission, after review of existing conditions in Berlin, still consider these districts as being appropriate zoning district to guide and direct future growth in the Town of Berlin. These districts, and their respective purposes, are as follows:

The Highland Conservation District generally encompasses the least accessible and more sparsely developed areas of town. The purposes of the district are to protect fragile natural resources, including wetlands and surface waters, steep slopes, wildlife habitat and upland areas; encourage the productive use of forest resources; promote traditional outdoor recreation uses, and allow low density residential development in a manner that is compatible with the other purposes of the district. (Found in Section 2.04, Table 2.01)

The Residential District encompasses a small area adjacent to Crosstown Road from its intersection with Brookfield Road to Rowell Hill Road.

The Rural Residential District generally encompasses rural areas of Town characterized by few significant development constraints and reasonably good access to roads and services. The purposes of the district are to protect fragile natural resources, including wetlands, surface waters and wildlife habitat; promote continued agricultural activities; prevent strip development along major road corridors; and encourage moderate density residential development, including clustered housing, and limited commercial uses in appropriate locations. (Found in Section 2.04, Table 2.03)

The Modified Residential District includes lands at the eastern end of the Route 302 corridor, adjacent to the City of Barre. The purposes of the district are to maintain the residential character of the area while allowing for commercial uses in a well designed manner that avoids the pattern of strip development that has occurred elsewhere along this highway corridor, and to permit development densities that are moderate relative to other commercial districts. (Found in Section 2.04, Table 2.04)

The Medium Density Residential District includes lands in close proximity to neighboring urban centers that are served by municipal water and sewer facilities. The purpose of the district is to encourage moderate to high density residential neighborhoods in appropriate settings, and to allow for limited non-residential uses compatible with the residential setting. (Found in Section 2.04, Table 2.05)

The Commercial District encompasses much of the Plateau area served by Route 62 and other town collector roads. The purposes of the district are to allow a variety of commercial uses consistent with the area's function as a regional commercial and service center; strengthen the integration of land uses through a system of interconnected roads, driveways and sidewalks/pathways; maintain consistently high standards of site design; and protect and strengthen adjacent residential neighborhoods from adverse impacts associated with incompatible uses. (Found in Section 2.04, Table 2.06)

The Highway Commercial District encompasses lands parallel and adjacent to Routes 302 and 2. The historic purpose of the district was to allow for the development of an automobile-oriented highway commercial strip along the heavily traveled state highways. The district's purpose has evolved, however, to promote the continued economic viability of this important regional commercial center in a manner that improves the function and appearance of the district, improves traffic flow, enhances pedestrian circulation, protects water quality in the Stevens Branch and provides access to open space and important natural features. (Found in Section 2.04, Table 2.07)

The Light Industrial District encompasses much of the land adjacent to the Airport. The purposes of the district are to promote a regional industrial and employment center by allowing a variety of industrial, manufacturing, service and office uses are permitted

at moderate densities; maintain consistently high standards of site design; and protect and strengthen adjacent residential neighborhoods from adverse impacts associated with incompatible uses. (Found in Section 2.04, Table 2.08)

The Industrial District, which includes land within the Riverton hamlet, and near the confluence of the Dog and Winooski Rivers, is intended to encourage a wide range of industrial and commercial enterprises at low densities while maintaining the rural character of the surrounding area and protecting adjacent residential neighborhoods from adverse impacts associated with incompatible uses. (Found in Section 2.04, Table 2.09)

The Town Center District, which includes the land surrounding the Berlin Mall, creates a traditional multiple use area that is scaled to the pedestrian and can serve as a gathering place and community center. Additionally, the Town Center District will result in an economically viable area with a mixture of retail, office, residential, and service uses, built on a small-scale that is conducive to pedestrian activity.

B. CAPITAL PROJECTS AND FINANCING.

A number of the recommendations in the Plan involve specific capital improvements in the Town such as, enhancing the Town's sewer and water systems and upgrading of roads. In particular, it is recommended that the Town prepare an integrated infrastructure plan for the northeast quadrant of the Town (the area north of Scott Hill Road and east of Interstate 89) which will coordinate the provision of road, water, and sewer service to the entire area and allow it to develop most effectively as a regional center.

In addition, the Town should undertake a comparable plan for the commercial/industrial areas along the Dog River and the Junction Road in order to ensure that these areas are effectively integrated into the Town's growth potential.

To effectively plan for these capital projects, the Town should develop a comprehensive Capital Budget and Program that addresses all capital projects identified in the Plan (and others as they might be identified by the Town). The Capital Budget and Program should be consistent with the provisions of Section 4426 of 24 VSA, Chapter 117, and should be adopted by the Select Board in accordance with Section 4404a of that Chapter. The Capital Budget should be updated annually. Once adopted, the Town should use the Capital Budget and Program as a guide in its annual budgeting decisions.

Once the Capital Budget and Program process is well along, the Town can explore various means of financing the needed capital investments. In both cases, the intent is to develop a mechanism for fairly allocating the costs of the new capital investment projects among new developments which the projects are intended to serve. Use of impact fees should be considered.

For non-taxable developments such as hospitals, non-profit facilities, government facilities, etc., the Town should actively work to establish equitable payments in lieu of taxes to offset the costs of providing such services as fire and police protection and road maintenance.

C. WORK WITH OTHER PUBLIC ENTITIES.

Berlin is located in the middle of the developing area around the cities of Barre and Montpelier. As such, many activities in Berlin affect and are affected by activities in surrounding Towns. Other public bodies are working with many of the same issues that face Berlin. It is suggested that cooperative efforts with other public bodies will lead to more effective and less costly solutions to these common problems. In particular, the following suggestions are offered as means of achieving some of the goals and objectives of this Plan.

1. Actively work with other municipalities in searching for solutions to common problems such as public safety and emergency service, water, and sewer service, and/or traffic congestion. It may also be possible to obtain cost savings through joint purchasing and shared equipment agreements.

2. Work with school officials in both the local district and the Union School District to plan for adequate facilities for anticipated changes in student enrollment. As the Town develops a capital program, it may also be useful to consider scheduling Town and School projects so that they don't combine to create substantial fluctuations in the combined tax rates.

3. Work with State Highway officials on planning and scheduling road and bridge improvements in the Town. It is imperative that the Town participate in the planning and design of these projects to ensure that the designs adequately reflect Town needs.

4. Support mutual aid agreements and regional emergency service agreements to ensure the cost effective provision of adequate levels of service.

D. CITIZEN INPUT

Adoption of a Plan is not the end of a Town's planning process. The Plan will be continuously reviewed, evaluated, and periodically amended. This planning process is intended to ensure that the Plan reflects the needs and aspirations of the Town's residents. The Planning Commission should work to maintain a continuous discussion with Town residents about various planning issues in order to constantly be aware of problems and opportunities that may emerge.

The Commission has undertaken several planning efforts which have benefited from the active participation of local residents and landowners including the Town Center concept and improvements to the Barre-Montpelier Road.

In conclusion, the preparation and implementation of this Plan represents an ongoing process by which the Town and its residents can actively strive to be the kind of community envisioned by all.

D. CONSISTENCY WITH DEVELOPMENT PATTERNS IN ADJACENT MUNICIPALITIES.

Berlin shares boundaries with a total of 8 other municipalities: the cities of Montpelier and Barre, and the Towns of Middlesex, Moretown, Northfield, Williamstown, Barre, and East Montpelier. Development patterns and plans in the adjacent portion of each of these municipalities will be discussed below.

To ensure that Berlin's new Town Plan is consistent with development patterns in adjoining communities, each community was provided with a copy of the proposed Berlin Town Plan for its review. Discussion of each adjoining Town's land uses including a summary of the existing and planned land uses follows.

1. Montpelier City:

Montpelier is situated just north of Berlin between the Towns of East Montpelier and Middlesex, and comprises the majority of Berlin's northern boundary. The Town is linked to Montpelier by a number of corridors including Routes 302 and 12, Hill Street Extension, and I-89. Natural features shared by the two communities include the Dog River, Stevens Branch, and the Winooski River.

The City of Montpelier is clustered around the Winooski River with steep slopes ascending into Berlin. Montpelier is clearly an urban community. Current land uses outlined in the 2000 Montpelier Master Plan illustrates a variety of uses on the Berlin border which are described in the following two general areas:

a. Route 302 and Hill Street Extension

On both sides of Route 302, land is zoned general business which is consistent with Berlin's existing zoning districts. As you move northwest away from Route 302 in Montpelier, the current zoning becomes medium density single family residential (1/3 and 1 acre with and without public services respectively) and then lower density (1 and 2 acre lots with and without public services, respectively). This is generally consistent with Berlin's R-20 and R-40 Districts.

b. Route 12 and I-89

Lands bordering Berlin in the vicinity of Route 12 and I-89 are zoned for medium and low density residential, industrial, and recreational uses. These land uses are, in general, consistent with the land uses across the Berlin Town line.

The Berlin Plan proposes a transition area between the more urbanized pattern of development in the City of Montpelier and the more rural patterns in the Town. Land uses along the borders of each municipality are fairly consistent and present no land use conflicts.

2. Middlesex.

Middlesex Town adjoins Berlin's northwest corner along the Winooski River. There is considerable non-residential development in the area between the River and the Interstate, and this blends into the commercial/industrial area in Berlin along Vermont Route 12 and the northern portion of the Dog River. The small bridges across the Winooski River somewhat limit the direct expansion of the Middlesex commercial/industrial activity into Berlin. There is no potential conflict between land uses in the two municipalities in this area.

3. Moretown.

Moretown borders Berlin along its western boundary. Moretown is very rural and shares the rugged forested western mountain ridge with Berlin. The proposed rural residential development patterns in this area will be consistent with anticipated development in Moretown.

4. Northfield.

The Town of Northfield occupies most of Berlin's southern boundary from just west of the Interstate westward. For the most part the land along this common boundary is hilly and forested with very few structures or roads. The exception is along Vermont Route 12 and the Dog River. The small cluster of development known as Northfield Falls is located just south of the Town boundary. This is a relatively small settlement but the extremes of its residential development reaches virtually to the Town line. While Northfield Falls is not expected to grow rapidly in the future, it is possible that some residential development associated with this village will spill over into Berlin. Such development would generally be consistent with the rural residential pattern proposed for this river valley area in the Berlin Plan.

5. Williamstown.

The Town of Williamstown shares a small portion of boundary with Berlin along both sides of Berlin's southeast corner. This part of Williamstown is hilly, mostly forested, and very sparsely developed. Williamstown's new Town Plan considers this area as predominantly resource industrial.

There are no direct road connections into Berlin from this area (except via unimproved dirt roads). The Berlin Plan proposes some commercial and some highland conservation development in this area.

6. Barre Town.

Barre Town spans the entire eastern boundary of Berlin with the exception of a small portion occupied by the City of Barre. A major portion of the adjoining lands in Barre Town (particularly south of Barre City) is currently in active farming. Other portions (including areas within the active farm lands) are lands in forest cover. This productive forest area transcends both Towns (southeastern corner of Berlin and southwestern corner of Barre Town). Existing and planned land uses adjoining Berlin are low density residential 1.8 acres minimum lot size). The Richardson Road area located slightly east of the Berlin Town line and north of Barre City is zoned for a higher density (1/3 acre) residential development.

Barre Town has upgraded the "Booth Morrison Road" which connects to Airport Road in Berlin. This establishes a strong link between South Barre and the Berlin Hill commercial area, and has increased traffic levels on Airport Road.

Barre Town has zoned the lands immediately adjacent to Berlin low density residential (Residential C). The minimum lot size in this District is 1.8 acres and is typically not served by municipal water and sewer. Residential C is semi-developed, semi-rural, and has significant natural resources.

Abutting the northern and southern portions of this common border, the Berlin Plan proposes "Highland Conservation Area" with very limited development. Along the central portion of the shared border the Plan proposes industrial development separated from Barre Town by a narrow buffer of rural residential area.

7. Barre City.

The City of Barre is situated just east of the Town of Berlin. Vermont Routes 302 and 62 connect the two municipalities. Natural features include the Stevens Branch and its tributaries and forest cover in the southwestern corner adjoining the Town of Berlin. Along Route 302, the land uses in Barre City adjoining the

Town of Berlin are mixed including residential, commercial, and industrial. The City has recently rezoned a large industrial parcel to include commercial uses in addition to industrial. The development potential of lands in Barre City is limited due to natural features including steep slopes, water courses, and flood plains.

The portion of the land area in the City south of Route 302 (outside the industrial and commercially zoned lands) is zoned Conservation (5 acre). The city permits agricultural and forestry uses, non-commercial outdoor recreation, and planned residential developments. The Conservation area is not currently served by municipal sewer or water but can be.

Land uses in the two municipalities along Route 302 are quite consistent. South of the Barre Beltline the Berlin Plan proposes industrial development separated from the Barre City border by a narrow buffer of rural residential area.

The area in Berlin that adjoins this Conservation District is proposed for rural residential development with a minimum lot size of 40,000 sq. ft. There are no apparent use conflicts between Barre City and Berlin.

8. East Montpelier.

The Town of East Montpelier is situated on the northeast corner of the Town of Berlin. The two Towns are connected by Vermont Route 2. Natural features shared by the two communities include the Winooski River and steep slopes on both sides of Route 2.

Both Towns share a common land use district - commercial. Along Route 2 in East Montpelier, lands are also zoned industrial. There are no apparent land use conflicts between East Montpelier and Berlin.

Regional General Land Use:

Review of the General Land Use Plan with the Central Vermont Regional Plan and the Berlin Future Land Use Plan reveals that the two are generally consistent. The General Land Use Plan illustrates several land use districts in Berlin including (1) **conservation** located in the Berlin Pond and south/southeast area to the Northfield, Williamstown, and Barre Town lines, and accounts for approximately 1/3 of the Town's total land area; (2) **rural residential/agricultural** which flanks the conservation district and extends west to the Moretown and Middlesex town lines, and which accounts for about 1/3 of the total Town land area; (3) **industrial** in approximately the same location as Berlin's current industrial area; (4) **commercial** in the same locations as shown in the Future Land Use Plan; (5) **commercial/industrial** on the Junction Road/Dog River Road area (south of the

Winooski River); and (6) **high density residential** located south of Route 302 outside the commercial land use district.

The proposed Berlin Town Plan is generally consistent with the regional land use patterns presented in the proposed Central Vermont Regional Plan.

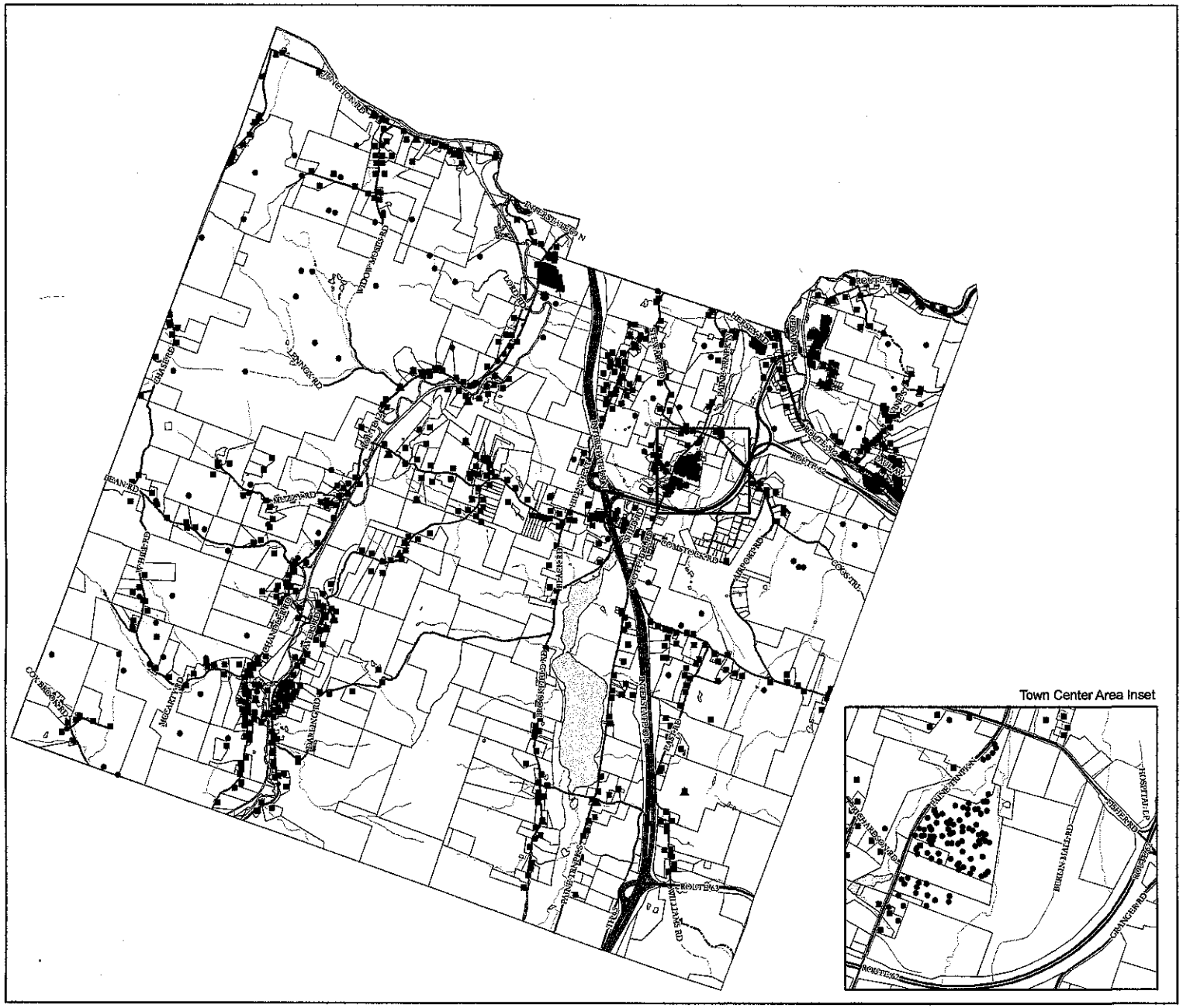
VII. MAPS

The maps included here are photo-reduced versions of full-size originals which are on file at the Town Offices.

A. Berlin, VT Zoning Map
B. Future Land Use
C. Transportation System and Improvements
D. Public Facilities and Services
E. Natural Resources
F. Flood Plain
G. Historic Resources

Approved by the Town of Berlin Residents at a Special Town Meeting, 2011

Berlin Housing Needs Map



Legend

E911 Existing Housing Locations

- 1067 Units

2005-09 Housing Construction

- Total of 51 Units

Locations of Future Housing Units 2010-2020

- Total of 196 Units
- Parcels
- Rivers, Lakes,and Ponds
- Streams

Roads

- Class 1-3
- Class 4
- Legal Trail
- Private Roads
- State Highway
- US Highway
- Interstate
- Discontinued Road

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Map created 6/29/10 by CVRPC.
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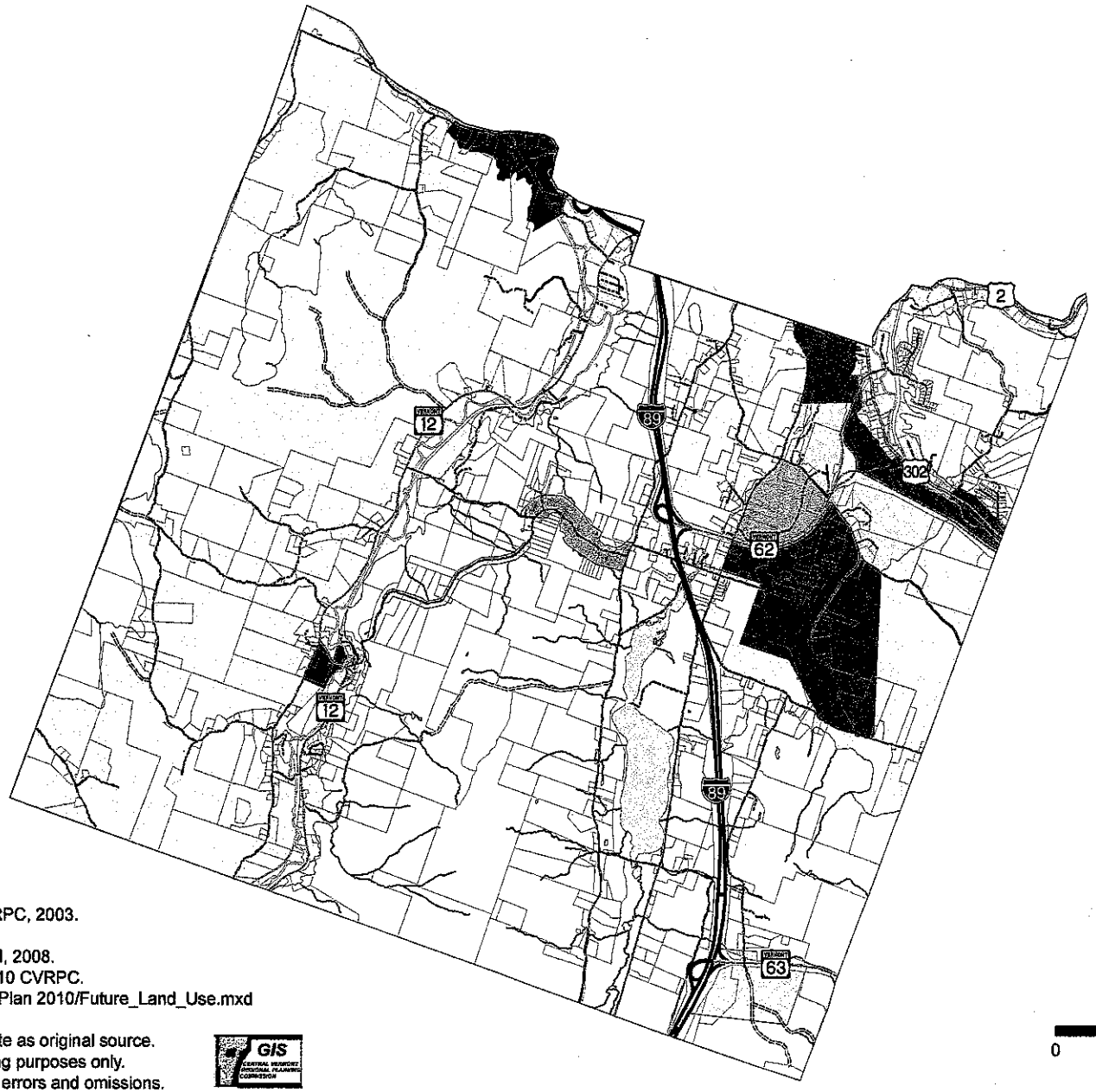
Data is only as accurate as the original source.
This map is for planning purposes only.
This map may contain errors and omissions.

GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

Berlin
Future Land Use



Legend

Roads
- Class 1-4 Rds
- Legel Trail
- Private Rds
- Interstate
- State Highway
- US Highway

Future Land Use
- Commercial/Highway Commercial
- Industrial
- Light Industrial
- Med Density Residential
- Modified Residential
- Residential R.80
- Rural Residential
- Highland Conservation
- Town Center
- Berlin Parcels

Surface Water
- Rivers, Lakes, and Ponds
- Streams

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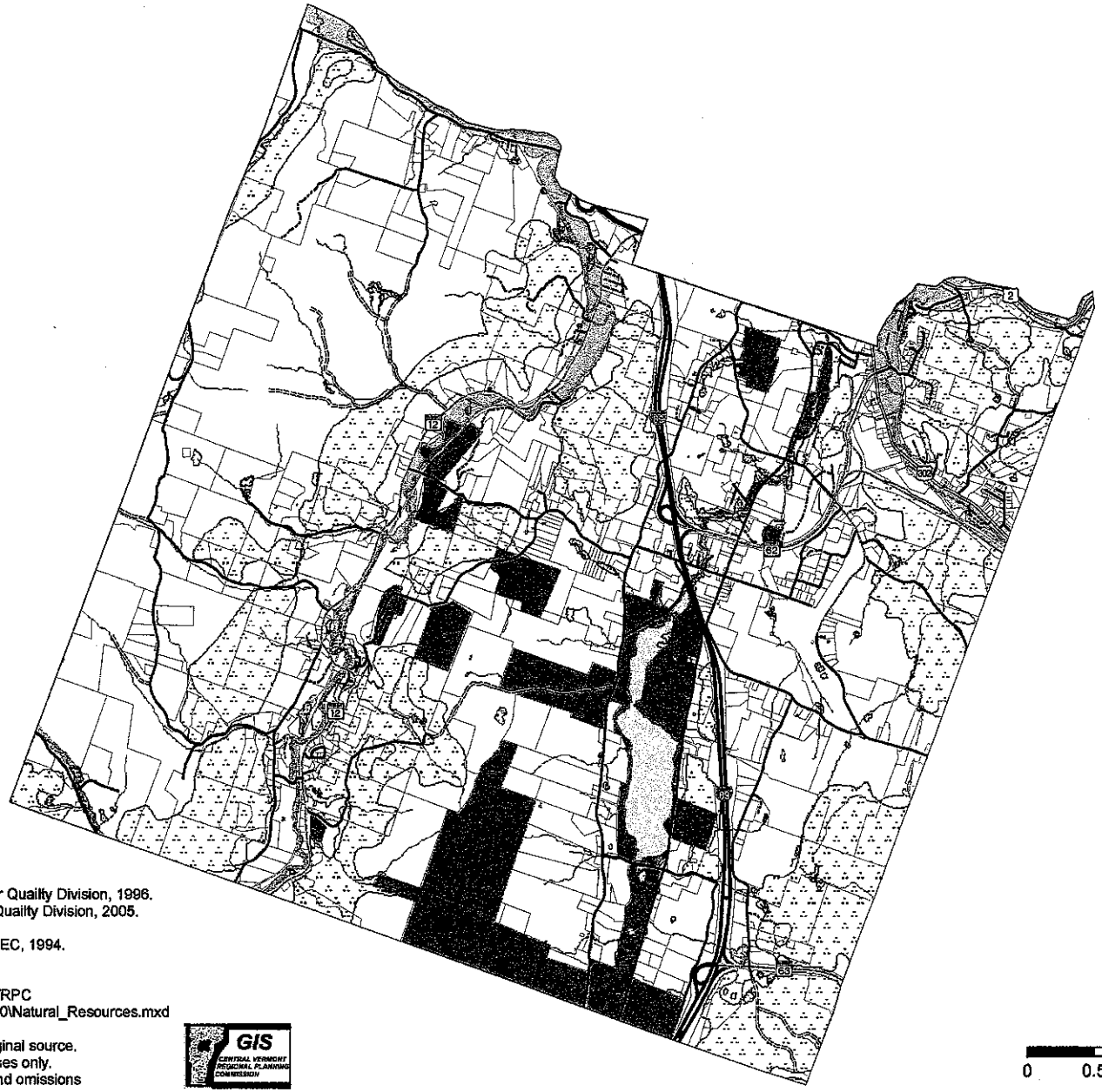
SOURCE:
Parcels: Berlin 2005.
Future Land Use: CVRPC, 2003.
Roads: VTrans, 2009
Surface Waters: VCGI, 2008.
Map created 10/28/2010 CVRPC.
N:/Towns/Berlin/Town Plan 2010/Future_Land_Use.mxd

Data is only as accurate as original source.
This map is for planning purposes only.
This map may contain errors and omissions.

GIS

Berlin, VT
Natural Resources



Legend

Roads

AOTCLASS

- Class 1-4 Rds
- Legel Trail
- Private Rds
- Interstate
- State Highway
- US Highway
- Berlin Parcels
- Deer Wintering Areas
- Wetlands

Surface Water

- Rivers, Lakes, and Ponds
- Streams
- 100 Year Flood Plain
- Conserved Lands

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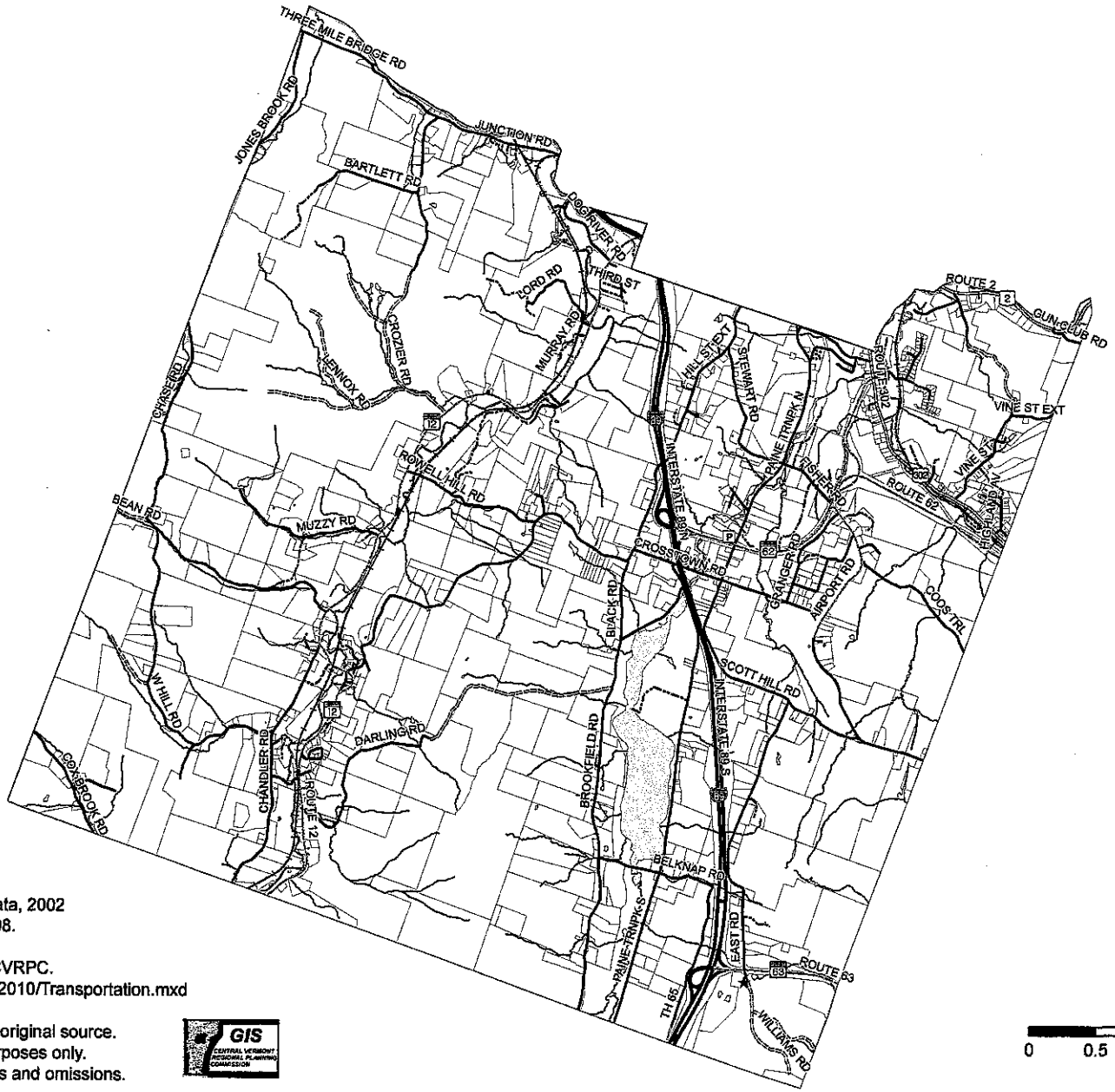
Sources
Roads:VTrans, 2009.
Floodplains: VANR-DEC, Water Quailty Division, 1996.
Wetlands: VANR-DEC, Water Quailty Division, 2005.
Surface Waters: VCGI 2008
Deer Wintering Areas: VANR-DEC, 1994.
Conserved Lands: UVM, 2009.

Map created 10/28/2010 by CVRPC
N:\Towns\Berlin\Town Plan 2010\Natural_Resources.mxd

Data is only as accurate as original source.
This map is for planning purposes only.
This map may contain errors and omissions

GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

Berlin, VT Transportation Systems



Legend

Park and Ride

- Existing
- Proposed

Roads

- Class 1-4 Rds
- Legel Trail
- Private Rds
- Interstate
- State Highway
- US Highway
- Railroads
- Berlin Parcels

Surface Water

- Rivers, Lakes, and Ponds
- Streams

N W E S

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SOURCE:
Parcels: Berlin, 2005.
Roads: VTrans, 2009.
Railroads: VTrans 2009.
Park and Rides: CVRPC Data, 2002
Surface Waters: VCGI, 2008.

Map created 10/28/10 by CVRPC.
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Data is only as accurate as original source.
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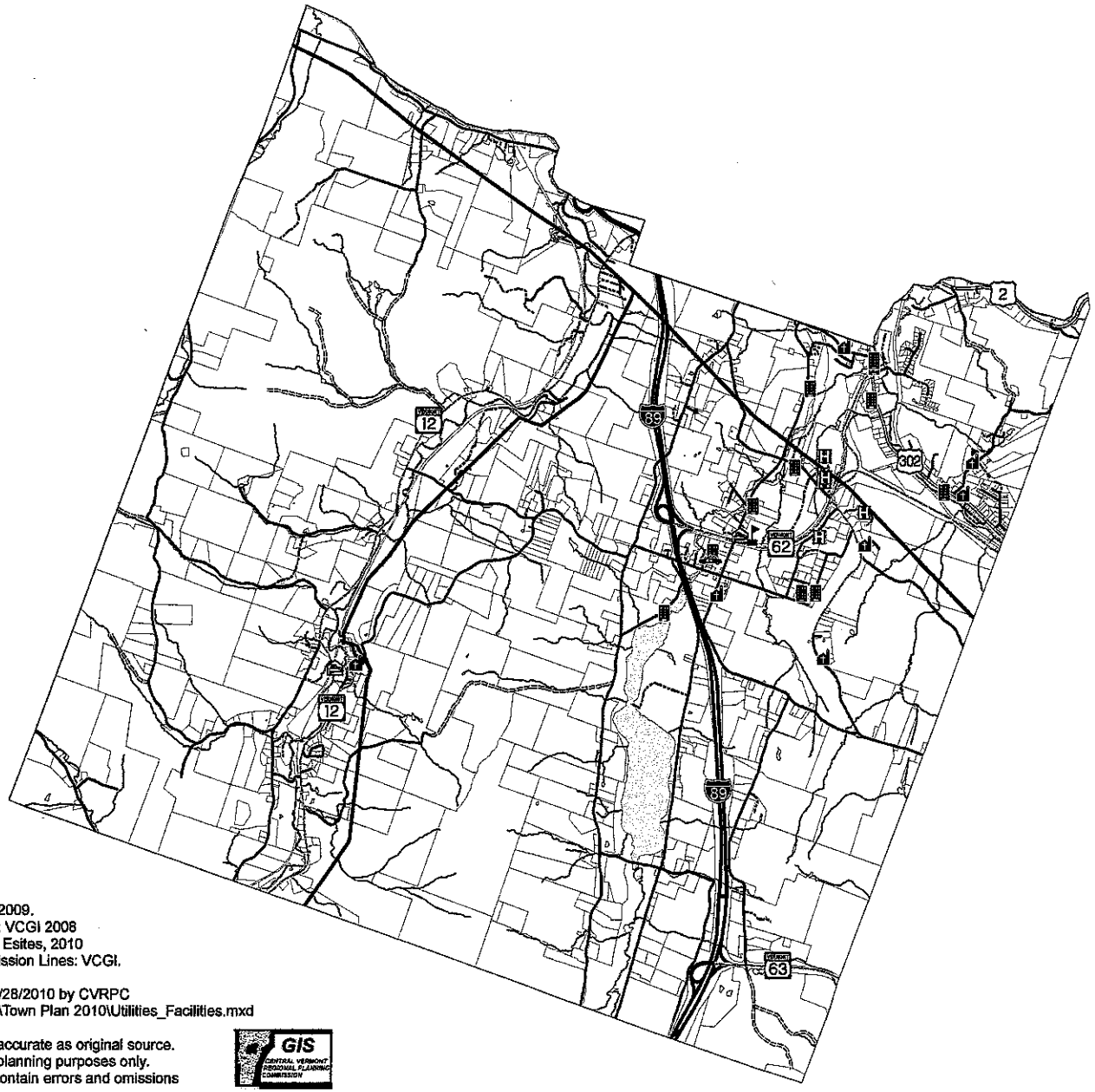
This map may contain errors and omissions.

GIS CENTRAL VERMONT REGIONAL PLANNING COMMISSION

Berlin,VT
Utilities and Facilities



Legend

Facilities
- Government/ Town
- Health Care
- Churh
- Schools
- Fire Station
- Police Station
- Electric Transmission Lines
- Berlin Parcels

Roads
- Class 1-4 Rds
- Legel Trail
- Private Rds
- Interstate
- State Highway
- US Highway

Surface Water
- Rivers, Lakes, and Ponds
- Streams

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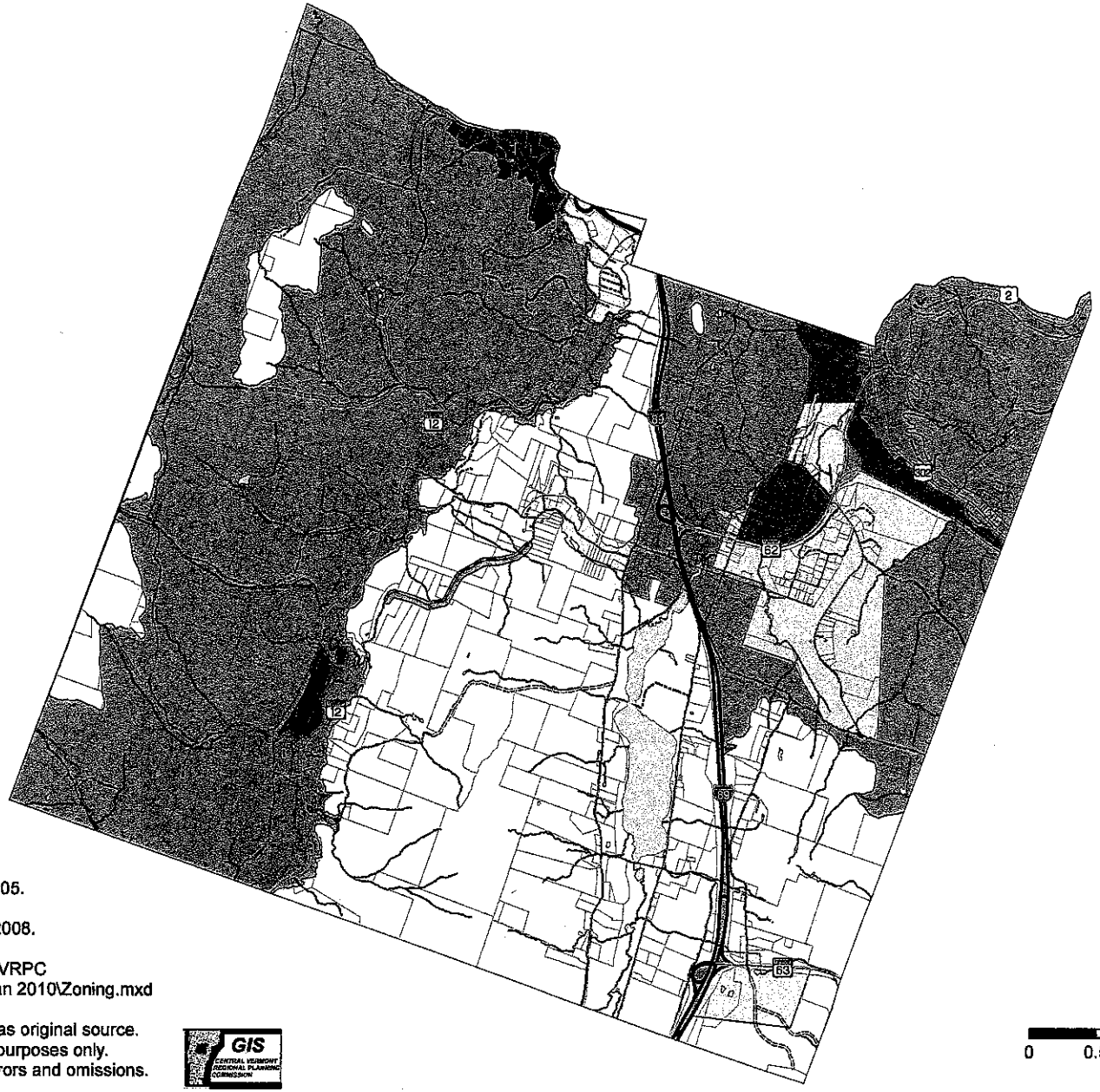
Sources
Parcels: 2005.
Roads:VTrans, 2009.
Surface Waters: VCGI 2008
Facilities: E911, Esites, 2010
Electric Transmission Lines: VCGI.

Map created 10/28/2010 by CVRPC
N:\Towns\Berlin\Town Plan 2010\Utilities_Facilities.mxd

Data is only as accurate as original source.
This map is for planning purposes only.
This map may contain errors and omissions

GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

Berlin, Vermont
Town Zoning



Legend

Berlin Parcels

Berlin Zoning

- Commercial
- Highwyay Commercial
- Industrial
- Light Industrial
- Med Density Residential
- Modified Residential
- Rural Residential 80
- Rural Residential
- Town Center
- Highland Conservation

Roads

- Class 1-4 Rds
- Legel Trail
- Private Rds
- Interstate
- State Highway
- US Highway

Surface Water

- Rivers, Lakes, and Ponds
- Streams

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SOURCE:
Parcels: Berlin 2005.
Zoning: CVRPC Data, 2005.
Roads: VTrans, 2009.
Surface Waters: VCGI, 2008.

Map created 10/28/10, CVRPC
N:\Towns\Berlin\Town Plan 2010\Zoning.mxd

Data is only as accurate as original source.
This map is for planning purposes only.
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GIS
CENTRAL VERMONT REGIONAL PLANNING COMMISSION