



Figure 15: Alternative A Sketch Plan and Diagram



### III. IRASVILLE GROWTH CENTER MASTER DEVELOPMENT PLAN

#### INITIAL CONCEPTUAL OPTIONS FOR A NEW TOWN CENTER

The Irasville Growth Center Master Development Plan is the result of a synthesis of previous plan iterations. Several public work sessions were held by the design team.

During this process, one public work session focused on different alternatives that were roughly defined by the design team. Three breakout groups came up with ideas as to what they wanted to see.

Group #1: Continue the Status Quo A list was prepared on their plan as to the uses they wanted and didn't want. Highlights include:

- No fast food restaurants.
- Want to see lots of recreational facilities.
- Encourage housing for all ages.

Group #2: Reinvestment Future - Traditional Downtown This group developed the concept of a Main Street on Route 100. Major points for this group include:

- On street parking on Route 100 with street trees.
- Encourage more businesses in multi-story that are mixed uses with residential on second and third stories.
- Attract more residential.
- Create more of a village feeling.
- Reduce large parking areas: have more on street parking.
- Wastewater treatment plant facility to be located in the growth center.
- Have more green space in the town - more of a critical mass with connections between them - make a more formal green with trees.
- Use brook or greenway - "fenway" as a piece in the green space network.
- Improve stadium area.

Group #3: The Village of the Future

- Have Route 100 be redesigned with street trees, on street parking, bike lanes, and sidewalks.
- Leave stream/wetland area leading to pond.
- Enhance the pedestrian way from Fiddler's Green to Irasville - also along Mad River.
- Created additional roads/street network.
- Encourage housing for all types/classes of people/starving artists.
- Large building for community activities.
- Move town offices to Irasville.

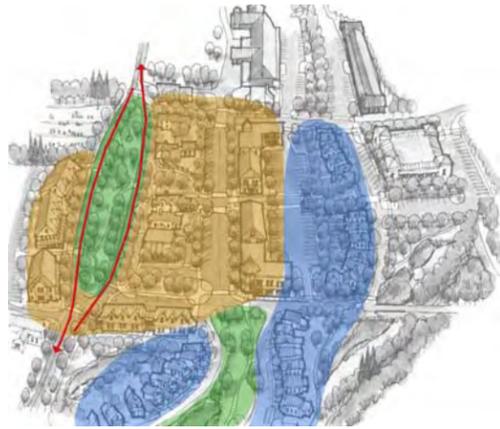


Figure 16: Alternative B Sketch Plan and Diagram

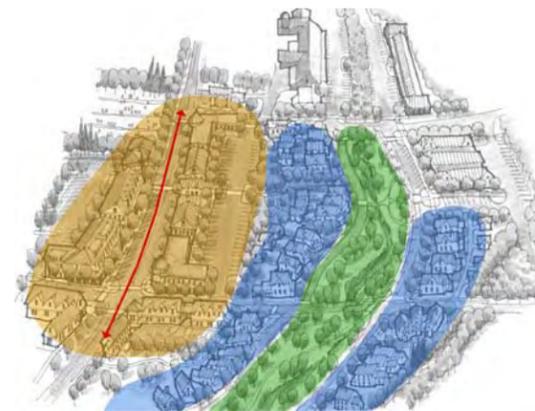


Figure 17: Alternative C Sketch Plan and Diagram





Figure 18: View of New Neighborhood on the south end of the village

As a result of this and other public input and information collected on existing conditions, three alternatives were prepared by the design team. Summary drawings of the alternatives considered town center alternatives are shown in Figures 15 through 18.

During the workshops and efforts of the project design team, other design concepts were developed. Some aspects of those plans have been retained and others have been discarded. Decisions have been made about the amount of development to use: a program of land uses and target densities and unit/sf projections, ways to treat the Route 100 corridor, optimal locations for types of land uses, and how best to integrate the current development in Irasville with future development.

### AN OVERALL PLAN FOR A NEW TOWN CENTER

The Irasville Growth Center Master Development Plan represents the most expansive thinking about the wide range of potentials for Irasville. However, the process of a final design and putting together the detailed plans for the specific development projects will cause it to change and evolve more in the future. This is a plan that demonstrates potential and intention that is responsive to the needs and interests of landowners and developers who will ultimately develop the projects that will help create this new town center and is not one that is cast in stone.

The illustrated plan presents the realization of the Town Center goals and program into a design concept for the Town Center. The plan is the result of several public planning workshops, working sessions with the Waitsfield Planning Commission, coordination with the wastewater and water infrastructure planning process, and state and federal regulating agencies with jurisdiction over a wide range of permitting.

The major elements of the Irasville Growth Center Master Development Plan are:

- Defined compact village pattern of mixed - use growth in Irasville.
- Higher density clustered housing in neighborhoods with interconnecting streets and pedestrian ways. A range of lot sizes are shown to provide housing diversity options.
- The higher density clustered housing is surrounded by open spaces, including productive farm and forestland throughout the Mad River Valley.
- Civic buildings: new town offices should be relocated to Irasville and be a central focal point of community design.
- A Town Green, recreation park for the new neighborhoods, and a series of connected open spaces.
- Independent and assisted - care elderly housing.
- Commercial and mixed use buildings in a compatible scale to other uses. Focus on commercial and office/service development that will create a sustainable living – working community instead of only a tourism based commercial economy.
- New roads that are pedestrian and bicycle oriented.
- Trails and nature walks into the wooded ravines and across the open meadows and the cemetery.
- Expands upon the cultural and natural heritage.
- Define a positive relationship between the village center and the Route 100 corridor such that the road/village relationship is enhanced.
- Define the level of growth made possible with the wastewater capacity of the Munn site, and the provision of town water, but do not let the current limitations of that infrastructure limit the potential of the future growth that could occur in Irasville since new technologies and state policies can and will change.

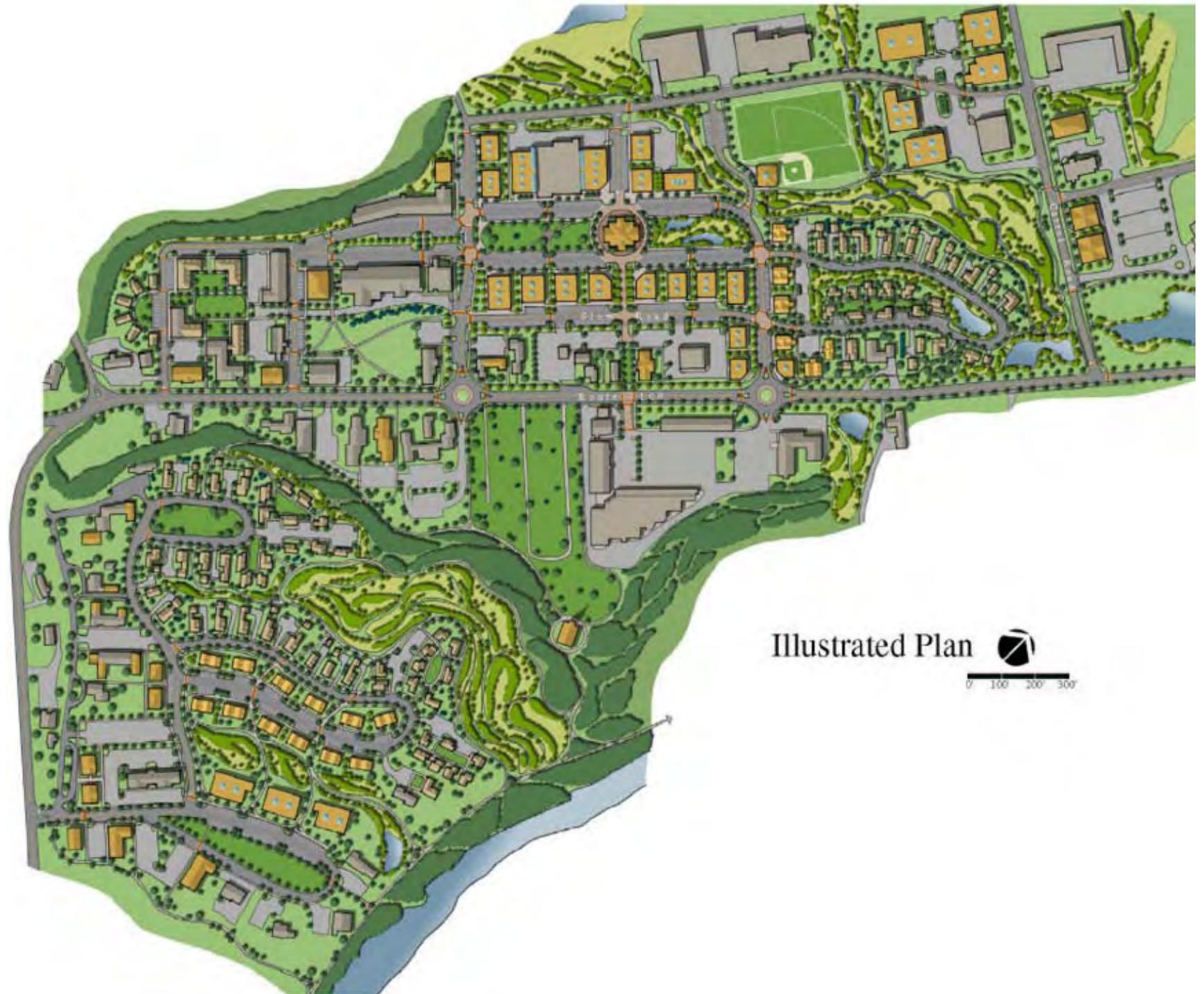


Figure 19: Overall Master Development Plan

The anticipated growth projections are based upon the market analysis and information presented in the *Integrating Economic and Demographic Analysis in the Irasville Growth Center Master Plan* (IDEA) prepared by Economic & Policy Resources, Inc. for the Town of Waitsfield. See Appendix D.

An outline of the various elements of the Irasville Growth Center Master Development Plan are described in further detail.

**Housing**

Types of housing that are shown in the master development plan:

- Single family on moderate size lots
- Single family on small lots
- Duplex family on moderate to small lots
- Multifamily 4plex in large house
- Multifamily- elderly complex in 12 unit big house
- Cottage clusters
- Upper story apartments
- Live/work units

According to the Economic and Policy Resources report, *Integrating Economic and Demographic Analysis in the Irasville Growth Center (IEDA)* Waitsfield can expect 275 new households by 2020. That means an average of 15 new dwelling units per year. Changes in zoning will be required to create a high-density, mixed use village at Irasville.

The housing program for Irasville should include a variety of housing types in all price ranges to accommodate single adults, couples, small families, retirees and others who might choose to live in a village setting. The range of housing should be a mix of the following: single family, multi -family, housing for the elderly, 2<sup>nd</sup> and 3<sup>rd</sup> floor apartments, accessory units and cottage units (homes of approximately 1,000 sf). Affordable units should be integrated into the neighborhoods. The residential areas should also include neighborhood parks/playgrounds and should be linked to the pedestrian path network. The housing density proposed for Irasville could be higher than Waitsfield Village.

The following table defines the ranges and types of residential housing units that have been targeted for the growth center. Approximately 120 to 230 units of housing could be absorbed within the growth center.

At a November 2001 public forum, there was strong agreement among participants that housing should be a priority. New residential areas are to be a key component of the growth center. Undeveloped lots may provide opportunities for the development of several small village neighborhoods. Two areas were identified as possible new neighborhoods: the area north and east of Fiddlers Green, and at the northern end of Irasville between Shaw’s Supermarket and the Mad River Flick.

**Table 2  
Types of Residential Housing for Irasville**

Type of Housing	Number of Units
Single Family house	25 to 50
Duplex house	10 to 20
Multifamily housing	15 to 20
Cottage units	15 to 20
Elderly units	15 to 20
Apartments on upper levels of buildings	40 to 100
TOTAL	120 to 230

Housing issues in the Mad River Valley were discussed again at a Housing Summit held in April 2002. An informative panel discussion was followed by participation in small groups. The questions asked of each group, along with some of their responses and suggestions are listed below.

*What would a model Mad River Housing Picture look like?*

- High Density Villages
- Fill in lots between existing buildings
- Clustered development
- Comprehensive mix of housing types
- Small Scale
- Vernacular massing

*What still needs to be addressed to realize this picture?*

- Update municipal systems
- Allow alternative systems
- Zoning reform
- Act 250 reform
- Identify lands appropriate/not appropriate for development
- Changes in attitudes
- Encourage accessory apartments
- Promote Village Living
- Adaptive Re-use of existing buildings
- Construct Rental Units
- Build Worker Housing

Housing has been integrated in five ways into the Irasville Growth Center Master Development Plan:

- Higher density detached homes on small lots or clusters, designed in a neighborhood format with quiet tree lined streets, sidewalks and small parks and open spaces with trails.

- Accessory rental units have been included with detached housing as either small “granny flats” or above garage units.
- Cottage clusters of compact houses around courtyards with shared parking.
- Apartment units primarily for employee housing on the second or third floor of mixed use blocks.
- Innovative hybrid buildings designated as “live-work” units. Each building has a workspace for office /retail or other small business use on the ground floor. On the upper floor(s) are one to three dwelling units for owner/employee/rental purposes.

Single Family Houses

Singe family homes have been shown on small lots of approximately 60 feet x 100 feet. These lots could be both subdivided and built upon individually or developed and sold as detached “condominium” ownership of the building or “zero lot line.” These lots generally allow for a compact two story house of 1,200 to 1,600 sf, a garage, accessory rental unit and yard/ driveway space. In some cases each house has its own driveway. For illustration purposes, others are shown with two adjacent lots sharing a common driveway.

Village style housing on small lots is an exercise in “the art of accommodation” where the placement of the house, driveway and disposition of yard/private landscape space must be carefully coordinated. New zoning/design guidelines should be devised to encode these new housing types. The current Waitsfield bylaws do not allow the lot size, setbacks, or densities presented, and parking requirements do not reflect likely changes in automobile use that would accompany a greater number of resident walking to places of work.

The merging of several lots to build single larger houses is a threat to this housing type, as it reduces neighborhood “critical mass”. However, single or combined lots should be able to be used for multifamily “house scaled” units. More parking would be needed than provided in the single family units.

Accessory Units

Small accessory rental units have been shown with some of the single-family houses, which could be available as “granny flats” or “in law” apartments. Small units of 750 to 900 sf for a single person or small family could provide modest cost rental housing close to jobs and services, and rental income to aid housing affordability. Small units also could provide detached housing for the elderly.

Eldercare

An area of detached small family and multifamily elder housing has been shown as a neighborhood extension of the house. Located convenient to many existing or planned services (banks, Post Office, hardware, grocery), this development could allow residents to remain in the Waitsfield

community instead of seeking housing elsewhere. The elder program could also be an efficient way to integrate both resident skilled nursing care in a 25 to 50 unit complex, or to optimize access to visiting nurses on a regular basis. Either staffed or a visiting nurse office could be centrally located for access by all elderly residents.

#### Multifamily Buildings

Where as most multifamily condominiums are reputed to be a repetitive and monotonous building type, a neighborhood of “large house” 4-plex units has been included in the plan. Each unit is approximately 1,000 to 2,000 sf, making each house approximately 4,000 to 5,000 sf in size. The layout shown could accommodate either single level flats or two floor townhouse units with parking and yard area for each. The neighborhood uses a parking/service alley format behind the units. On the street side, a prominent but modest scaled front yard reinforces the traditional character of the neighborhood. Design guidelines should be developed for this housing type so that the larger scale still is compatible with the neighborhood streetscape. The buildings could use a repetitive floor plan, but make the exterior elevations vary.

#### Cottage Clusters

A familiar but undersized housing type has been included in the neighborhood area. Using compact clusters of cottage style houses similar to the archetypal Oak Bluffs on Martha’s Vineyard, lakeside cottages found through Vermont, or smaller housing in city centers. However, these have been conceived with a clear local flavor for Irasville.

Cottage clusters are groups of 6 to 10 cottages 900 to 1,200 sf in size, typically 1½ stories tall. They are grouped around a shared courtyard, with a common driveway and either open or covered parking. Cottage clusters in a village center should require less parking per family. Neighborhood streets with on-street parking allow for visitors. Connecting walkways lead to each cottage and there can be both private garden space as well as a common lawn for the cluster. As many as nine cottages can comfortably fit on less than ¾ acre.

#### Live/Work Units

Since there are many valley residents who work from home, or small businesses that need flexible space and employee housing, a hybrid building type has been developed for Irasville and used in several areas on the plan. A live/work unit is a two or three story building with a ground floor business/commercial space and upper floor housing units. For the purpose of illustrating this concept in Irasville, a 4,800 sf foot print has been shown with two commercial/business spaces facing the street and the possibility of 2, 3, or 4 housing units on the upper floors between 1,200 to 2,400 sf. Parking for residential use for employees/residents are in a near lot shared parking/service alley. Parking for businesses is provided on-street and additional spaces out back.

#### **Commercial: Retail/Office/Professional/Service**

The types of commercial uses envisioned in the growth center are:

- Free standing two to three story commercial/office buildings.
- Three story buildings with commercial/office on the first floor and residential on upper stories.
- Live/work units for home occupations and small businesses.

#### Commercial Space

The IEDA Study proposes that by the year 2020, 126,752 sf of additional commercial space will be required at Irasville to accommodate job growth. The number is calculated using a square footage factor reflecting the building space used by various employment sectors. It is expected that 51,500 sf will be used by the manufacturing sector. The services sector will use 25,740 sf, followed by retail, transportation and utilities at lesser amounts.

Of the total development program for Irasville, a number of new commercial uses are to be accommodated. These commercial blocks have been organized into two formats: two and three story commercial and mixed use blocks with retail on the ground floors, office on the second floor and apartments on the third floor. Commercial scaled blocks found in Waitsfield Village, Warren, and parts of downtown Waterbury or Richmond are the precedent that have been used. Depending on the requirements of the American with Disabilities Act (ADA), these buildings may need to be serviced with elevators, which may require them to be linked together with stair/elevator towers. In this case the total building area might be increased from the 10,000 to 15,000 sf size shown on the plan.

Large house-barn complexes are also shown so that a residential streetscape can be promoted while still accommodating commercial uses. These forms could be a particularly effective where these buildings are near residential areas. An additional feature of these building types is that if the barn is recessed on the lot, the mass of the building can be placed set - back across a landscape yard or garden area.

In the past, commercial development in Irasville such as the Mad River Shopping Center have been in larger scale connected buildings with large parking lots. While they have been dressed as barns and vernacular buildings, they still appear as modern commercial buildings with their automobile scale and orientation. New commercial development will have more variety in scale more similar to the historic pattern of houses and barns that originated in the village.

One major reason for moderately scaled buildings is the relationship between building footprint and stormwater runoff and associated parking requirements. In order to sensitively integrate green space for storm water infiltration, the size of the building needs to be moderated, and a

permeable area of landscape needs to be defined between buildings instead of impervious asphalt or concrete paving.

#### **Community/Public/Civic Spaces**

The types of community oriented, public institutions, civic spaces that have been incorporated into the growth center are:

- Town offices: a free standing building facing a public green
- Church with small chapel
- Day Care Center/ Preschool co-located with eldercare
- Public green
- Recreation and Park spaces
- Trails

#### Civic

With much of the Irasville discussion focused on residential development and job creation, the importance of civic space has received but little attention. However the opportunity exists to develop a convenient, compact town center offering a variety of services. The 1998 Waitsfield Town Plan describes the mix of commercial public and residential land uses as an important component of traditional village character. The Town plan also suggests that public buildings such as municipal offices, community center and a church would provide a focal point for the district. Also recommended by the plan is the provision of outdoor recreation facilities.

As the plan for Irasville develops the square footage for civic space may be altered to reflect changes in need or priorities. At this point, 25,500 sf has been allocated for civic buildings, which should be adequate for the proposed municipal building, community center and church.

#### Open Spaces

In the Irasville Survey 2001, bike lanes and pedestrian pathways were strongly supported by over 95% of respondents. An important component of the district will be the village green, an idea supported by 100% of individuals responding to the survey. The green spaces and pathways could be used to link all areas of the growth center, and also provide opportunities for recreation.

With an increase in population of both residents and employees in Irasville, there will need to be larger areas of accessible open space and parkland for the village center. The plan has defined a number of open spaces that should be wonderful neighborhood amenities and also fit well with the other land uses, protected and enhanced wetlands, and recreational trails.

A central village green has been located at the center of Irasville for relaxation, as a forecourt for the new town offices, and doubling as a large area for stormwater management.

A trail and greenway system has integrated the Mad River Pathway with neighborhood connections with trails to the Mad River corridor. Each neighborhood has the possibility of walking on paths to access places of work or services. These trails should be integral with the residential development and funded by the developed of those projects.

An active recreation center with athletic fields, teen/community center, and other sports and cultural facilities has also been centrally located for soccer, softball, community arts and crafts, and other local activities. Neighborhood pocket parks have been integrated with paths and the wetlands/stormwater/ greenway system. An overall feeling of “green” has been a priority in the design of all aspects of the village center ranging from emphasis on parks, greenways, streetscapes, and neighborhoods.

### Stormwater Management

Management of stormwater runoff is necessary to maintain the natural resources and environmental assets of the Growth Center. The tributaries and associated wetlands, as well as the Mad River itself are aesthetic and recreational resources of the Irasville area. The development of the Growth Center will require construction of new streets, paths, and buildings. The creation these impervious surfaces increases runoff, alters drainage patterns and existing vegetative cover, and reduces infiltration. Runoff from developed areas also carries sediment, road salt, petroleum deposits, and other residue from suburban activities. Stormwater management includes providing treatment and detention of runoff. Treatment is provided by allowing for sedimentation and filtering of runoff. Detention is provided by holding back a portion of the runoff and releasing it slowly, mitigating the increase in flow resulting from development. Treatment and detention must be provided before runoff is released to existing streams or wetlands.

#### Permitting Requirements

Stormwater management is regulated by the State Water Quality Division as new development or redevelopment takes place. In general, creation of one acre or more of impervious area will require a State Discharge Permit under the pending Stormwater Management Rule. A Permit will be required whether development of the Growth Center proceeds on a parcel by parcel basis or through implementation of a Master Plan. However, planned growth and installation of stormwater infrastructure will make more efficient use of available land and more efficient operation and maintenance. Implementation of a stormwater utility could provide stormwater management for several parcels in a central location, allowing higher density development and taking advantage of the economy of scale.

Effective stormwater management includes both water quality and water quantity controls. The Vermont Stormwater Management Manual is the

guide for designing and sizing stormwater treatment practices (STP’s) to meet the specified standards for water quality, channel protection, groundwater recharge, overbank flood protection and extreme flood control. These five elements comprise the unified sizing criteria that form the basis of design for the STP’s. Sizing requirements are a function of the site area, impervious area, soil, and vegetation types. However, the impervious cover is the main component in each of the unified sizing criteria.

Estimating the increase in the rate of stormwater runoff based upon the Master Plan is very difficult given the lack of detail available at this stage. Proposed grading and the methods of collection and conveyance of runoff all have yet to be determined. Implementation of some treatment and detention practices on individual parcels, rather than depending on only a stormwater utility will affect flow patterns. Even providing treatment on individual parcels could reduce the size requirements for a centrally

located facility providing only detention. Calculation of peak discharge rates based on conceptual layouts and information will only yield abstract results.

Definition of the stormwater management systems on individual parcels, and the collection and conveyance to a central location must be established to estimate the capacity needed for a stormwater utility. Extensive use of open channels, providing treatment and lengthening flow times, versus a closed pipe system, can reduce peak rates as well as the capacity requirements for a treatment and detention basin.

Conceptual estimates have been performed of peak stormwater discharge rate increases for a 10 year design storm. The following presents conceptual estimated increases based upon existing conditions, building under current zoning, and the proposed Master Plan. These calculations must be re-examined with site design and layout of the stormwater management system. The estimated peak rates are prior to providing



Figure 20: Stormwater Collection Model

**Table 3**  
**Conceptual Stormwater Estimate Increases**

Estimated increase in peak discharge rate (10 year design storm)		
Area	Zoning-build out	Master Plan
Area 1	3-5 CFS	5-7 CFS
Area 2	3-5 CFS	25-30 CFS
Area 3	10-15 CFS	20-25 CFS
Area 4	3-5 CFS	5-10 CFS
Area 5	1-3 CFS	0 CFS

**Table 4**  
**Recharge Requirements for**  
**Soil Map Units in the Irasville Growth Center**  
**Washington County Field Mapping Legend (August 1995, USDA-**

Map unit symbol	Map unit name	Hydrologic Soil Group	Recharge Factor (inches)
3A	Rumney fine sandy loam, 0 to 3 percent slopes	C	0.10
33A	Machais fine sandy loam, 0 to 3 percent slopes	B	0.25
33B	Machais fine sandy loam, 3 to 8 percent slopes	B	0.25
39A	Colton gravelly loamy sand, 0 to 3 percent slopes	A	0.40
39B	Colton gravelly loamy sand, 3 to 8 percent slopes	A	0.40
39C	Colton gravelly loamy sand, 8 to 15 percent slopes	A	0.40
39E	Colton gravelly loamy sand, 25 to 60 percent slopes	A	0.40
43B	Salmon very fine sandy loam, 3 to 8 percent slopes	B	0.25
43E	Salmon very fine sandy loam, 25 to 60 percent slopes	B	0.25
44B	Lamoine silt loam, 3 to 8 percent slopes	C <sup>1</sup>	0.10
44C	Lamoine silt loam, 8 to 15 percent slopes	C <sup>1</sup>	0.10
45A	Scantic silt loam, 0 to 3 percent slopes	D	waived
58A	Grange silt loam, 0 to 3 percent slopes	C	0.10
59A	Waitsfield silt loam, 0 to 3 percent slopes	C <sup>1</sup>	0.10
72C	Tunbridge-Lyman complex, 8 to 15 percent slopes	C <sup>1</sup>	0.10
72D	Tunbridge-Lyman complex, 15 to 35 percent slopes	C <sup>1</sup>	0.10
78D	Peru gravelly fine sandy loam, 15 to 35 percent slopes	C	0.10

<sup>1</sup> SCS hydrologic soil group not available for this soil type. Hydrologic soil group assumed based upon similar soil types and limited field soil surveys.

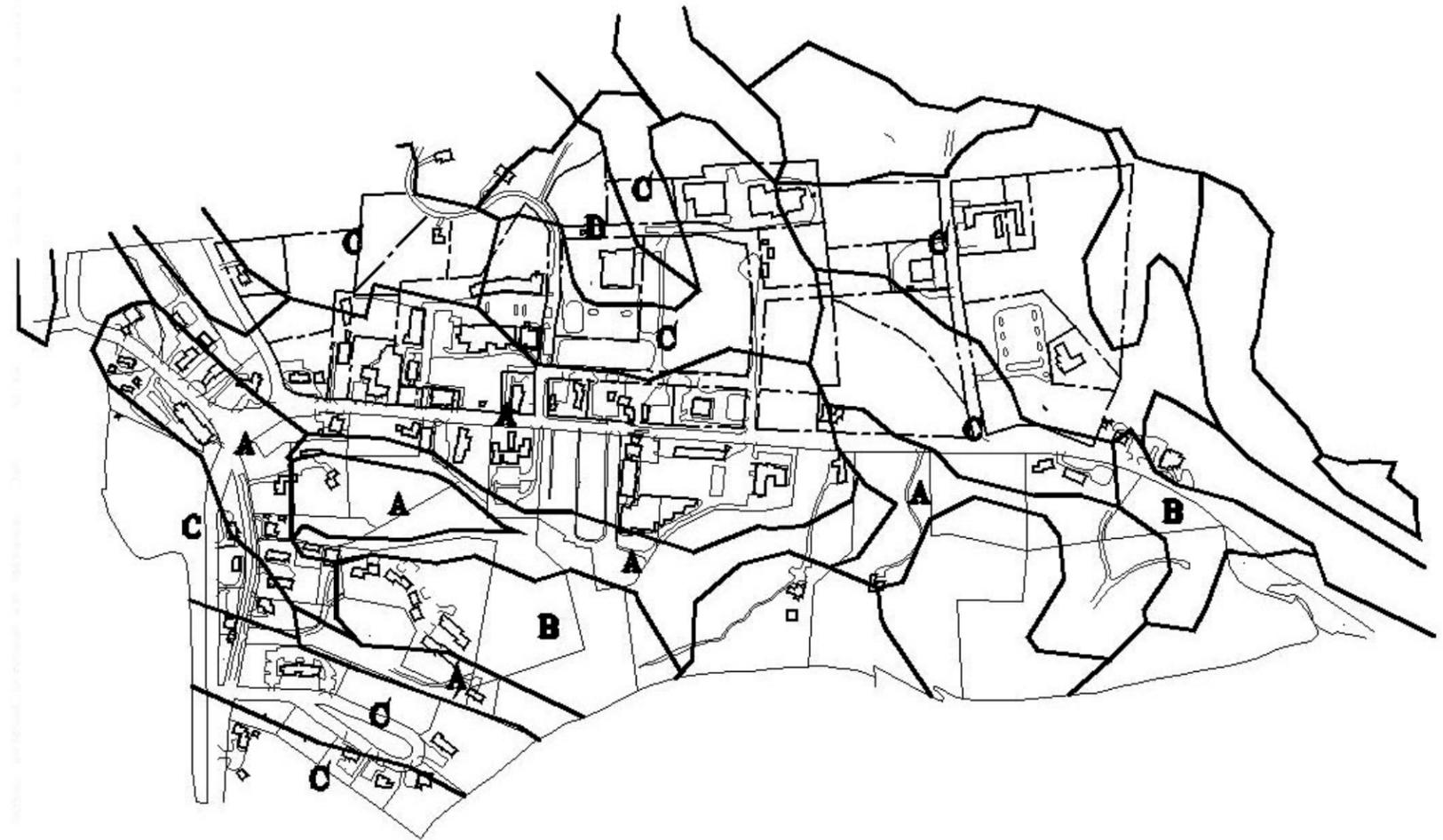


Figure 21: Hydrologic Soils Plan

Acceptable stormwater treatment practices include both structural (ponds, stormwater wetlands, infiltration, filtering systems, and open channels) and non-structural practices (rooftop disconnection, sheetflow, stream buffers and vegetated swales). Certain practices provide only treatment or detention functions, while some practices can provide both. While conventional methods, such as the typical treatment and detention basins, may be needed, the use of non-structural practices can provide stormwater credits. A stormwater credit can reduce the required water quality and recharge storage volumes, thereby reducing the size and cost of structural STP's. Use of stormwater credits is voluntary, but must be considered in the early stages of site design and layout to be effective.

Stormwater management within the Growth Center will need to be managed on both a parcel level and watershed level. Most parcels may be able to implement one or more STP's onsite, achieving the requirements for each of the sizing criteria to varying degrees. However, the density and layout of development desired within the Growth Center may not accommodate the implementation of STP's required for compliance with each standard on each parcel. A stormwater utility, a centralized means of providing stormwater management for several parcels, might be more efficient and more effective in meeting the goals of the Growth Center. Although the stormwater utility could be operated privately by a group of landowners, the municipality would be most effective in assuring the proper maintenance and operation of the stormwater management system.

Structural and non-structural practices, or a combination of both can be used to meet treatment standards. Water quality STP's include stormwater ponds, stormwater wetlands, infiltration basins and trenches, filtering systems, and open channels. Stormwater ponds and wetlands can also provide channel protection as well as overbank and extreme flood attenuation through detention of runoff. Infiltration practices capture and allow the initial runoff to infiltrate, meeting water quality and recharge requirements. Open channels, infiltration and filtering practices cannot typically provide detention to meet the channel protection, overbank, or extreme flood requirements.

Construction of a stormwater pond or wetland could effectively meet the water quality and detention requirements for several parcels. However, a pond or wetland will not meet the groundwater recharge requirement. The groundwater recharge volume required is based upon the average annual rate for the prevailing hydrologic soil groups necessary to preserve existing groundwater table elevations. Portions of the Growth Center with more permeable soils, including the area off lower Route 100, as well as area along the upper portion of the Growth Center along Route 100. Meeting the recharge requirement on the individual parcels should be encouraged, since this is not as easily provided by a stormwater utility.

Stormwater credits can be obtained with the implementation of the following non-structural STP's. These practices should be encouraged at the parcel level of stormwater management.

- Natural area conservation - conservation of natural areas (such as forests, wetlands and buffers, floodplains and undisturbed open spaces) at development sites, thereby retaining their pre-development hydrologic and water quality characteristics. Given the density goals of the Growth Center utilizing this credit may not be feasible in many areas. However, it may be applicable in areas where stream buffers and large wetland areas are being preserved.
- Disconnection of rooftop runoff - Rooftop runoff is disconnected from the closed system, and directed over a pervious area where it can either infiltrate into the soil or flow over it with sufficient time and velocity to allow for filtering. This credit is typically obtained by grading the site to promote overland flow through vegetated channels or by providing bio-retention areas. This practice can be used to meet a portion of the water quality and recharge requirement and should be encouraged for implementation on individual parcels where feasible.
- Disconnection of non-rooftop runoff - Surface runoff from impervious surfaces is directed to pervious areas (rather than a closed collection system) where it is either infiltrated into the soil or filtered by overland flow. Grading on individual parcels to promote overland vegetative filtering should be encouraged where feasible. This practice can be used to meet a portion of the water quality and recharge requirement.
- Stream buffers - This credit is given when a stream buffer effectively treats stormwater runoff. Effective treatment constitutes capturing runoff from pervious and impervious areas adjacent to a stream buffer and treating runoff through overland flow in a natural buffer. Non-concentrated flow through a minimum buffer width of 50 feet is required.
- Grass channels - Credit may be given where open grass channels are used to reduce the volume of runoff and pollutants during smaller storms. Use of a grass channel will automatically meet the minimum recharge requirement, and if designed to certain criteria, can meet the water quality volume for certain types of residential development.

#### Recommendations

- Provide stormwater quality and quantity controls consistent with the standards established in the Vermont Stormwater Manual.
- Minimize creation of new impervious surfaces as possible by utilizing shared parking facilities, or alternative permeable surfaces for paths or sidewalks.
- Utilize overland flow across natural terrain or grass filter strips as well as open channels for conveyance of stormwater, rather than

the typical curbed roadway or parking lot with a closed pipe system.

- Disconnect runoff from roofs and parking areas from piped collection systems, directing runoff overland across natural terrain, grass filter strips or grass swales.
- Implement stormwater management practices on individual parcels where consistent with the density and layout requirements of the Master Plan.
- Develop a stormwater utility for the centralized management of stormwater runoff in conjunction with the goals of the wetland mitigation plan. Goals of the stormwater utility should be not only the construction of the management system but also the continued operation and maintenance of the system.
- Runoff from undeveloped areas adjacent to the Growth Center should be diverted to existing drainageways, not intercepted by the new stormwater collection system, to minimize capacity requirements.

### Wetland Compensatory Mitigation

Although the conceptual Irasville Growth Center Master Plan seeks to minimize wetland impacts, it would still result in the loss of approximately 8 acres out of a total of approximately 25 acres of wetland. This represents both a loss of acreage and a loss of wetland functions and values. Compensatory mitigation is used to replace these losses.

#### Permitting Requirements

Impacts to wetlands must be permitted under State and Federal wetlands programs. In order to obtain permits for these impacts, it must be shown that:

1. Impacts to wetlands could not be entirely avoided. In providing for the future growth of Waitsfield, the location of the selected Growth Center must be the Least Environmentally Damaging Practicable Alternative (LEDPA).
2. Impacts to wetland functions have been minimized. In achieving the project purpose, impacts to wetlands must be minimized and, after considering wetland functions, lower value wetlands should be impacted in preference to higher value wetlands.
3. Any loss of wetland acreage and functions has been fully compensated. Compensation can include restoring degraded or lost wetlands, creating new wetlands, or enhancing existing wetlands. When compensation is required, the Vermont Wetland Rules specify that impacted wetlands be replaced by newly-created wetlands at a 1:1 ratio so that there is no net loss of acreage or functions. The Corps of Engineers is more flexible and may require more or less than 1:1 compensation.

Because of the degree of wetland impact (8 acres out of a total of 25 acres), wetlands replacement will almost certainly be required, and will probably mean that at least 8 acres of wetland must be created.

#### Compensation Strategy

The wetland functional evaluation prepared in 2001 identified five distinct wetland types in the Irasville Growth Center area. These are 1) Wetland Meadow, 2) Forested Wetland, 3) Riparian Wetland, 4) Intermittent Stream, 5) Marsh/Shrub Swamp, and 6) Detention Pond. The wetland types providing the most functions are the Riparian Wetland/Intermittent Stream and the Detention Pond. The wetland type providing the fewest functions is the Wetland Meadow.

Except for two road crossings of the Riparian Wetland/Intermittent Stream, the wetland impacts proposed by the Master Plan impact only the Wetland Meadows northwest of Route 100. In a wetland functional evaluation prepared last year, these wetlands were felt to provide water quality improvement where they receive runoff from roads or parking lots. However, this function is limited because of sloping topography and the inability of this wetland type to detain water on its way to the river. It

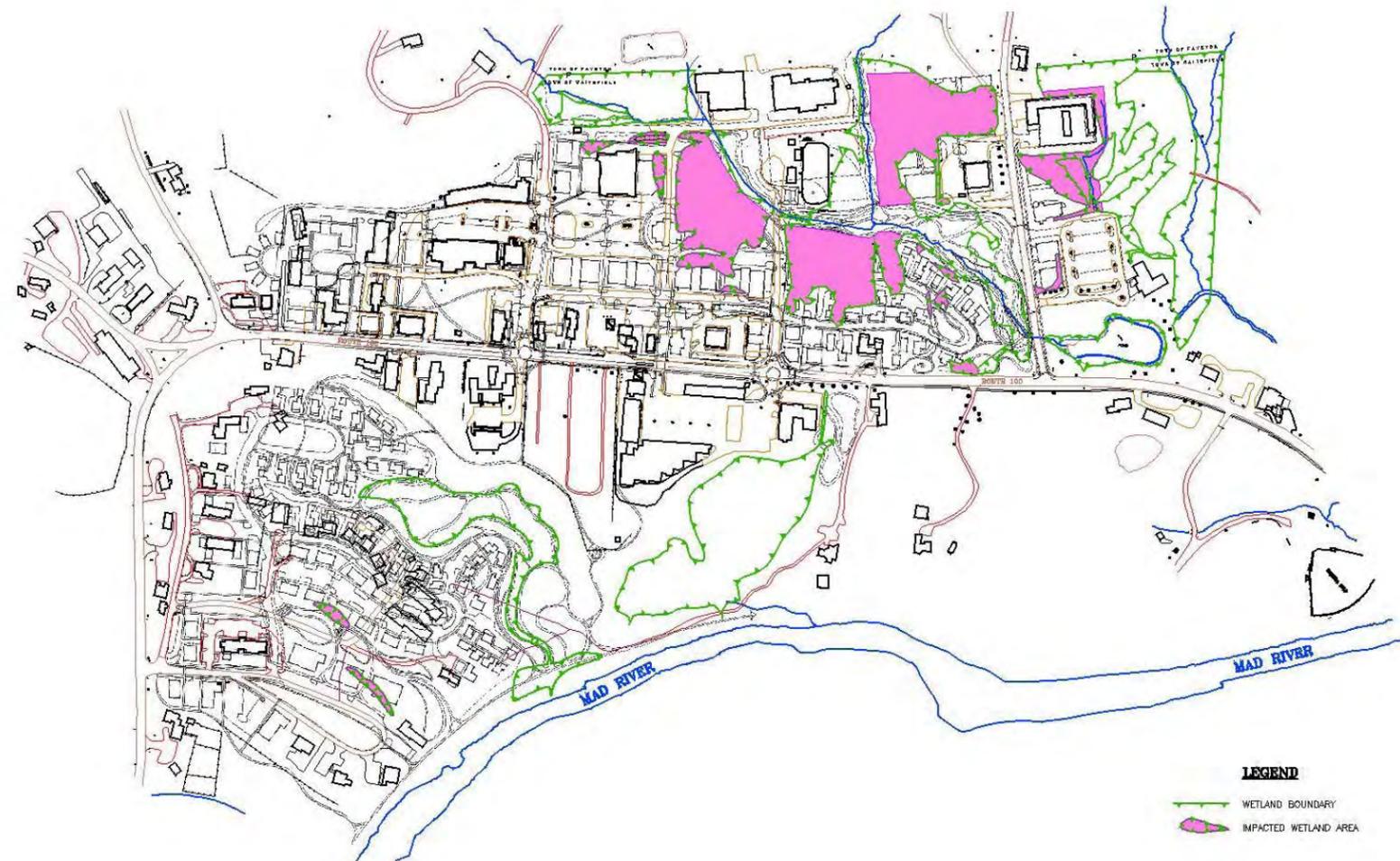


Figure 22: Irasville Growth Center Impacted Wetlands Plan

was felt that these wetlands could also provide wildlife habitat to a small degree if located near other wetland types more conducive to wildlife, but this is restricted to the area adjacent to the river and the forested wetland and marsh/shrub swamp on the southeast side of Route 100.

To mitigate for the impacts to the Wetland Meadows in the Growth Center area, areas for stormwater structures to treat and detain runoff, as well as provide for groundwater recharge, have been indicated on the plan. These areas may accommodate open water features, marshes, and vegetated drainage swales that will slow the flow of water across the Growth Center area, removing sediments, pollutants, and dissolved

nutrients, and allowing water to infiltrate into the soil. To meet both wetland and stormwater permitting requirements, detention and treatment of runoff must occur between the Growth Center and the river. This may require that much of the green space within the Growth Center be wetlands or ponds.

Although stormwater detention and treatment may be provided for in less than the area of proposed wetland impact, compensation will at least need to equal the area of impact. Any shortfalls will require that wetlands be created off-site. It appears that approximately 2 to 3 acres of wetland may be able to be created within the Growth Center area itself.

Recommendations

The stormwater detention and treatment structures for the Growth Center should be designed to maximize the amount and value of wetlands created. While stormwater structures are often designed to be simply functional, there is no reason that they cannot be attractive landscape features as well. This can be accomplished by using natural instead of geometric shapes, providing a variety of water depths that create frequent expanses of permanent open water, keeping concrete control structures out of sight, planting a mix of species that will produce a diversity of foliage and flowers, and accommodating human use by integrating footpaths and park structures.

For additional required wetland compensation that cannot be provided in the Growth Center area, wetlands may be created in hydrologically suitable areas in land along the river. While these can potentially be designed to receive and treat agricultural or urban runoff, they may also be used to create other values such as wildlife habitat.

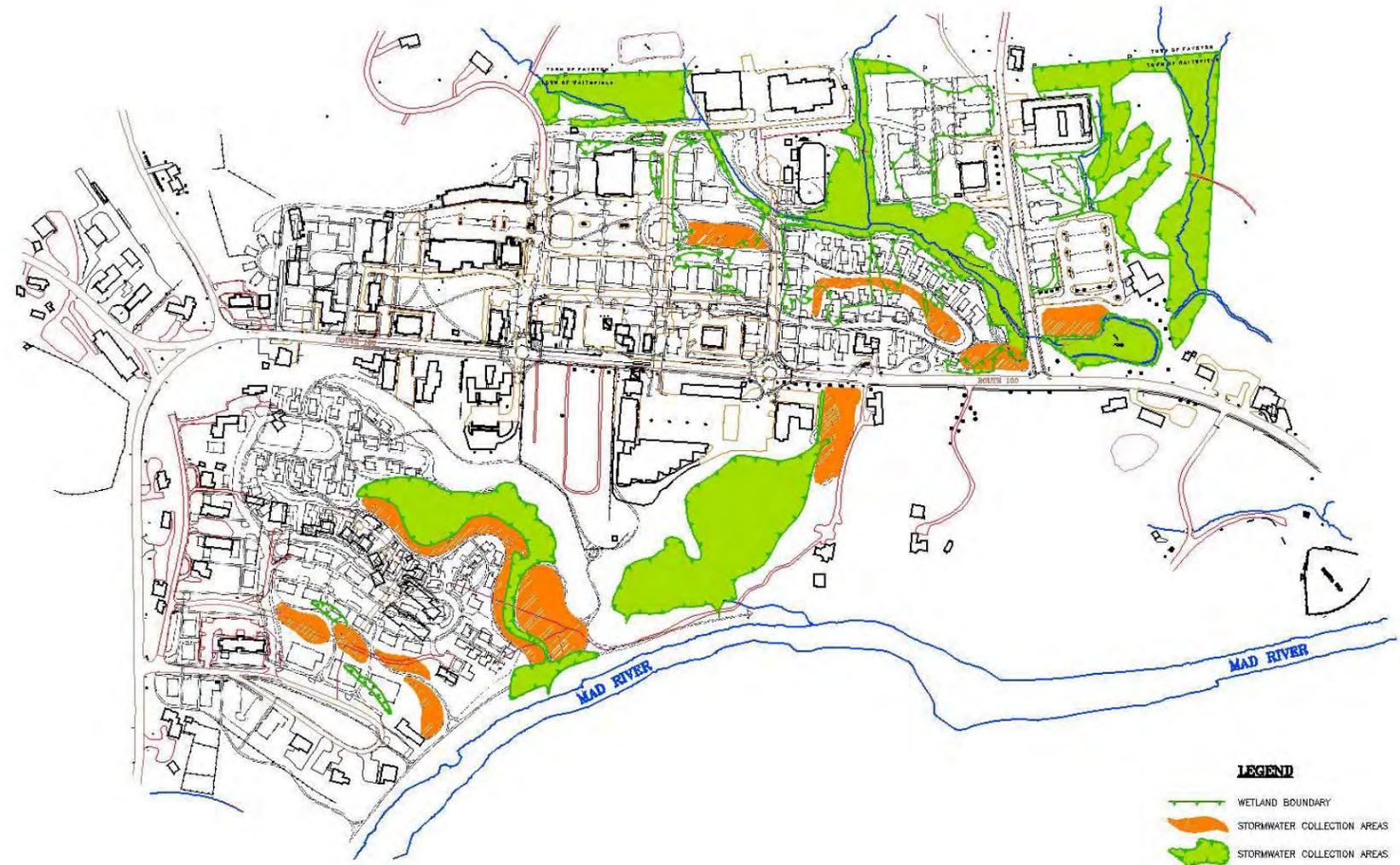


Figure 23: Irasville Growth Center – Preserved/Enhanced Wetlands Plan

### Streets/Streetscape Design

The streetscape design promotes a balance of use between vehicles, pedestrians and bicycles. The village center relies on new street design standards for “neo-traditional” town centers as developed through recent research and development by the new VTrans Design Standards that have relaxed the width guidelines for local streets, as well as recent publications of the Institute of Transportation Engineers (ITE).

#### Route 100 Corridor

The Irasville plan can integrate the long planned Irasville to Waitsfield village sidewalk project as well as other changes to Route 20 that have been contemplated. These include: the improvements to the Route 100/Rt intersection as currently scoped by VTrans, sidewalks extensions along both sides of the road for pedestrian access, improvements to crosswalks on Route 100. Two prominent improvements to Route 100 are the location of modern roundabouts at the intersections of the Slow Road into Irasville. Public participation defined a wide range of conflicts between speeding traffic on Route 100, and a desire to promote a safer pedestrian environment along the road.

Future development of the village center and the amount of development on the west side of Route 100 will likely trigger the warrants for signalization for either or both of these intersections. Whereas a signal could accommodate the traffic volumes, research has indicated that signals do little to slow speeds when they are green, and the necessary turning lanes for signalized intersections would cause a wider and faster Route 100 and multiple lane pedestrian crossings at the intersections. Alternatively, the roundabouts shown would virtually guarantee consistent speeds of 20 to 25 miles per hour through Irasville and the efficiency of the roundabout would allow for a single lane road to be preserved. Slower speeds, a narrower road, and extremely high safety track records are all aspects of roundabouts that make them ideal for Irasville.

#### New Commercial Streets

New streets for mixed use/commercial buildings have been designed with either parallel or angled on-street parking to promote efficient parking accessibility for customers of stores and service businesses. These streets are designed for slow travel in a village setting and are correspondingly narrow, yet adequate for the use of emergency vehicles and snowplows.

#### Interior Local Streets

The Slow Road has been integrated into the Irasville village plan as a parking and service drive because its location falls more on a mid-block location in the village plan. In general, parking and service alleys provide locations for truck deliveries off street, safe back lot emergency access, a pool of off-street parking for residences and employees of businesses. They don’t take up prime storefront on-street spaces, and allow for a location for the entire “back of house” infrastructure such as overhead

utility lines, wastewater and water easements, and recycling/dumpster locations.

The modified grid layout of the streets and continuous loops also offer many options for all vehicular uses including optimal access for emergency needs.

All streets have sidewalks or pathways for pedestrian access alongside without forcing pedestrians to walk in the road.

Residential neighborhood streets wide enough for two vehicles to safety pass at slow speed, and most residential parking is located in the side or rear of the lots. In some cases alternating on-street visitor parking would allow further slowing of neighborhood vehicular speeds.

All streets, sidewalks, and pathways could be designed to readily conform to the guidelines of the American with Disabilities Act (ADA).

In most cases, the slow speed likely to be found on neighborhood streets do not warrant the establishment of bike lanes or formal bike paths. The widening of streets to accommodate bike lanes would also be counterproductive, as wider streets tend to promote higher speeds. Alternatively, the closer distances within the village itself makes biking along neighborhood streets safe for both children and adults alike. Since Route 100 has bike shoulders, that is the only location where a formal bike facility is really needed, and that effort will be completed with the Irasville sidewalk project.

### Integrating “Green Design”

National development of Smart Growth, Sustainable Design and Green Design Practices has identified a series of techniques that are regarded as the building blocks of Green Design. The following are a series of techniques that have been included in the Irasville plan already or could be added in future phases of the projects planning and development. Many of these techniques have been borrowed from the Leadership in Environmental Design (LEEDS).

- Innovative storm water management design including bio swales and porous parking lots
- innovative water efficient plumbing and recycling.
- District heating
- Green Parking
- Shared parking
- Integrate transit with compact development.
- Pedestrian walkability

Green parking refers to several techniques applied together to reduce the contribution of parking lots to the total impervious cover in a lot.

From a stormwater perspective, application of green parking techniques in the right combination can dramatically reduce impervious cover and consequently, the amount of stormwater runoff. Green parking lot techniques include setting maximums for the number of parking lots created, minimizing the dimensions of parking lot spaces, utilizing alternative pavers in overflow parking areas, using bioretention areas to treat stormwater, encouraging shared parking and providing economic incentives for structured parking.

All of the techniques can be applied in new developments and some can be applied in redevelopment projects, depending on the extent and parameters of the project. In urban areas, application of some of techniques like encouraging shared parking and providing economic incentives for structured parking can be very practical and necessary. Commercial areas can have excessively high parking ratios and application of green parking techniques in various combinations can dramatically reduce impervious cover of a site.

**Wastewater Capacity**

Initial wastewater capacity numbers for the Irasville Growth Center Master Development Plan were put together working with the above information on anticipated types of uses.

**Table 5  
Wastewater Calculations for Irasville Growth Center Master Development Plan**

<b>Capacity</b>	<b>Residential units</b>	<b>Commercial</b>	<b>Office</b>	<b>Total GPD</b>
15,000 <i>defining limit for initial phase of growth center development</i>	<i>at 2BR average at @ 300 gpd</i>	<i>at @5gpd/100 SF assume 200 sf/employee</i>	<i>at @15gpd/employee</i>	
upper area <b>Subtotal</b>	30 <b>9,000</b>	50,000 <b>2,500</b>	50,000 <b>3,750</b>	<b>15,250</b>
upper area add apartments to upper area <b>Subtotal</b>	40 40 <b>18,000</b>	100,000 <b>5,000</b>	50,000 <b>3,750</b>	<b>26,750</b>
upper area Add apartments to upper area Add SF housing to lower area <b>subtotal</b>	40 40 50 <b>40,500</b>	100,000 <b>5,000</b>	100,000 <b>7,500</b>	<b>53,000</b>
upper area add more apartments to upper area add SF housing to lower area add MF housing to lower area add mixed uses to lower area <b>subtotal</b>	40 80 50 100 25,000 <b>54,000</b>	100,000 <b>6,250</b>	100,000 <b>9,375</b>	<b>69,625</b>

