



Town of
Westport, Massachusetts

DECENTRALIZED WATER AND WASTEWATER STUDY

DECEMBER 2006

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EXECUTIVE SUMMARY

Goals and Existing Conditions

This study was funded under a State Smart Growth grant for evaluation of decentralized water and wastewater alternatives for Central Village. The goals of the Town study are to create a vibrant business and cultural center, provide affordable housing, and maintain the historic character of Central Village. The focus of this study is to examine the alternatives available to provide the water and wastewater infrastructure necessary to support increased growth and mixed-use development within Westport's Central Village. The goals of this study are supported by the recommendations of the Town's 2004 Master Plan.

The Town of Westport's current zoning bylaws reflect more typical suburban zoning regulations. For example, parcels zoned for both business and residential have a minimum lot size requirement of 60,000 sf. This type of zoning does not support compact "village" development. Village zoning will entail some changes to the Town zoning standards, such as:

- Allow mixed use and greater lot coverage (consistent with stormwater management requirements)
- Allow shared parking and smaller front setbacks. Move the parking from the front to the back of the building, developing one or more central parking areas.
- Have storefronts directly on, or closer to, the street (or sidewalk). Define specific allowed (or disallowed) uses within the Village and establish what percentage of lots can be developed for certain uses to create a desired style.

Buildout Alternatives

In accordance with the goals of the Master Plan, consideration of growth alternative(s) that account for a change in zoning to allow higher density growth was also evaluated. In order to show a comparison of needs, two higher density growth alternatives were evaluated. In all, four alternatives were considered:

- Current – includes current development only.
- Current & Growth – includes current development plus growth under current zoning.
- Rezone Option 1 – includes mixed-use development and redevelopment of existing properties to a higher density than current development, but a lower density than Rezone Option 2.
- Rezone Option 2 – includes mixed-use development and redevelopment of existing properties to a higher density than Rezone Option 1.

The buildout scenarios represent specific *possible* growth scenarios – there are many more that could be considered. Also, the three “future” growth scenarios are for long-term growth planning. The most likely options of the four considered are the Current & Growth (if no new zoning is passed) and Rezone Option 1.

Wastewater and Water Alternatives

Wastewater

In order for Central Village to increase the density of commercial and mixed use development, some sort of decentralized wastewater treatment will be necessary to accommodate increased flows and decreased lot sizes, as well as to protect groundwater and natural resources. The decentralized options presented are a localized system serving all of Central Village, multiple, private I/A systems serving clusters of parcels, or reliance on Title 5 systems. Continued use of individual septic systems would be a “no action” alternative for Central Village. A localized wastewater treatment plant or use of multiple I/A systems would process the wastewater to a higher standard than septic systems, while

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still recharging groundwater. If a localized system is used, the Town or a Sewer District would be responsible for operations, maintenance, and reporting. The Town would also have more control over the expansion of properties in Central Village in that they would control the wastewater flows and they could look at the impact to the entire Village from increases in development. The users of the system would all pay a percentage of the total cost to run the system, proportional to their wastewater flow.

If I/A systems are used, individual property owners would be responsible for operation and maintenance of their wastewater treatment units. This may result in higher capital and operating costs to property owners. Individual systems would be evaluated on their regulatory compliance within each lot, with some lots being able to develop at a higher density than others due to better soil conditions. The permitting process for individual I/A systems would not look at the “big picture” for Central Village as a whole. Use of I/A systems is advantageous in that each lot can develop independently and the Town does not need to increase staffing for oversight of the treatment systems.

Average sewer rates in towns neighboring Westport are \$312 annually. The cost to pump a septic tank is an average of \$200 annually. The cost to replace a septic system is \$20,000-\$25,000.

Water

In order for Central Village to grow, some sort of public water supply will also be necessary to accommodate increased water demand. The two options presented include exploration for sand and gravel or bedrock wells. Considering the hydrogeologic conditions present within the recommended study area, a gravel well does not seem feasible unless the Town agrees to expand the search area to the east side of the East Branch of the Westport River. The other alternative is a bedrock well or series of bedrock wells to supply Central Village with the projected demand. Bedrock well yields in this area have demonstrated limited capacity, but additional investigations may prove

to locate a well with the capacity to supply the demand. Continued use of individual wells would be a “no action” alternative for Central Village. Use of individual wells would limit the potential density of growth, as well as present an increased risk that groundwater supplies would dry up and/or become contaminated from nearby Title 5 septic systems. Average municipal water service costs in neighboring towns are \$212 annually.

Wastewater and Water Estimates

Wastewater

Wastewater estimates were based on the following factors:

- The four build out scenarios (discussed earlier)
- Where applicable, Title 5 estimates for wastewater use (peak average day)
- Where Title 5 estimates were not available, estimates based on industry standards and experience were applied
- Flow from all properties was considered
- Specific potential future uses (e.g., Public Safety Complex) were not specifically identified, although the flows estimated should be adequate for most future uses

Under the four development scenarios, wastewater flows in gallons per day (gpd) were estimated as follows:

- | | |
|--------------------|-------------|
| • Current | 42,250 gpd |
| • Current & Growth | 82,372 gpd |
| • Rezoned Option 1 | 238,300 gpd |
| • Rezoned Option 2 | 481,800 gpd |

Wastewater Effluent Disposal

For the purpose of this discussion, it was assumed the design is for the Rezoned Option 1 buildout alternative. Therefore, the design must accommodate approximately 250,000

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gpd. Using a conservative application rate of 2 gallon per day per square foot, the required effective disposal area will be approximately 3 acres. Seven undeveloped properties and two developed properties were identified as potential effluent disposal sites. The two developed sites are Lee’s Market and the Town Hall property. Further investigation, soils testing, and groundwater modeling will be required to determine the suitability and potential disposal capacity of these sites. In addition, if the preferred location is privately owned, negotiations with the current owner for purchase/use of the property will be required.

Water Estimates

The water use estimates under each of the four buildout alternatives were developed from the estimated wastewater needs. Typically, Title 5 estimates represent 200 percent of average day potable water use. In addition, water systems typically experience 20% consumptive water loss and 10% “unaccounted for” water. Using these assumptions, the water needs estimates were calculated as follows:

$$\text{Wastewater flow}/(2*0.8*0.9) = \text{Water flow}$$

Resulting in the following estimates:

- Current 29,300 gpd
- Current & Growth 57,200 gpd
- Rezoned Option 1 165,486 gpd
- Rezoned Option 2 334,500 gpd

Organizational and Funding Alternatives

As Westport current does not provide water or wastewater services to any part of town, new structuring will be required to operate and manage any new infrastructure. Some options for the town include:

- Board of Selectmen (BOS) oversight
- Water and Sewer Commission

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- DPW oversight
- Water and Sewer Department
- Water and Sewer District
- Privatization

In addition to formation of a new entity to operate the water and/or sewer system, Rules and Regulations will have to be adopted and changes to the existing Town Bylaws will be required. It is also recommended the Town establish an Enterprise fund specifically for the water and sewer systems.

There are multiple funding alternatives for both the initial capital costs and the long term O&M costs. Construction of water or wastewater infrastructure may be funded through low-interest State Revolving Fund (SRF) loans, betterment assessments to individual property owners in Central Village, a Tax Increment Financing (TIF) plan, or some combination of the above. It is assumed that O&M of the systems will be paid for by the users of the system.

Obstacles

The Town may encounter several obstacles in pursuit of new water or wastewater infrastructure to help support and encourage growth in Central Village. It is important for the Town to identify these obstacles and plan to address them in advance. Some obstacles may include:

- Regulations related to permitting of new drinking water sources or new groundwater discharges. Approval of permits can be a lengthy process.
- Politically, there may be anti-growth groups opposed to the project
- The cost of the system(s) must be affordable.

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- Physical obstacles such as the presence of poor soils, high groundwater, wetlands and protected areas, and other impediments to siting wells or wastewater treatment and disposal facilities.
- The current layout of Main Road may not accommodate significant increases to traffic density.
- Public support is a key element to the success of this project. Opposition to the project may be based on financial concerns or concerns about growth, among other things. It is essential that the Town conduct an active public outreach program if the project goes forward.

Recommendations

In order to create a true “Smart growth” area in Central Village – that is to concentrate development density, to encourage mixed use, to create a more walkable area, and to provide a vibrant business center for the Town – some type of decentralized water and wastewater infrastructure will be required. With respect to water service, the town has two options – continue the use of individual wells or develop a public water supply to serve the entire Village. With respect to wastewater service, the town has three options – continued use of septic systems, allowed use of small cluster I/A systems, or development of a wastewater system to serve the entire Village. In both cases, the Village-wide, town operated option is the alternative that will serve a higher level of density while helping the town maintain some control over growth.

Development of new well sources, either without the boundaries of the Village or close by, will require additional identification of sites, hydrogeologic work and modeling, permitting, and assessment of water quality impacts. It is recommended the town consider the testing and purchase of existing undeveloped land that may yield a well site in the future.

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Development of a wastewater treatment and disposal system will also require additional site identification, on-site testing, permitting, and additional design. Land purchase for future use (or set aside of Town lands) should also be considered for the wastewater system.

The Town of Westport is eligible for funding for additional study and testing for localized wastewater through the state SRF program. In addition, the Town may be eligible for additional smart growth monies. It is recommended that the Town secure funding for the following tasks:

- Refinement of the Town’s “vision” for the type and density of growth in Central Village
- Coordination with other town boards (e.g., sidewalk committee) to define common goals
- Refinement of the draft zoning bylaw changes by a professional planner
- Implementation of a public outreach program to build support
- Identification of potential well sites, access/ownership issues, and availability for testing
- Hydrogeologic testing and modeling of potential water supplies
- Identification of potential wastewater treatment and disposal sites, access/ownership issues, and availability for testing
- Soil and groundwater testing, including mounding analysis, of potential subsurface discharge sites
- Preparation of a Project Evaluation Report (PER) in order to qualify for future SRF funds

CHAPTER 1 – DATA COMPILATION

Introduction

The Town of Westport, Massachusetts is a small, rural community located on the southern coast of the state. It is bordered by Fall River to the north, Dartmouth to the east, Tiverton and Little Compton, Rhode Island to the west, and Rhode Island Sound to the south. **Figure 1-1** is a locus map of Westport.

The Town of Westport applied for and was granted funding through the State Smart Growth Program to conduct a feasibility study for a Village redevelopment project along Main Road in Westport. An article (Article 10) for development of a “Village” area in the portion of Westport known historically as Central Village was passed at the annual Spring (2006) Town Meeting. The goals of Article 10 were to:

- Develop a mixed-use area
- Improve physical environment and diversity of services
- Plan for infrastructure improvements
- Create a walkable area
- Coordinate development density with infrastructure
- Develop design standards
- Cultivate civic life
- Provide high quality public space
- Pursue leveraging of public/private development
- Adopt site plan review procedures

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Figure 1-1 – Locus map

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In addition to the above goals, the Town wants to create a vibrant business and cultural center, provide affordable housing, and maintain the historic character of Central Village area. **The purpose of this study is to examine the alternatives available to provide the water and wastewater infrastructure necessary to support this type of development within Westport’s Central Village.** In order to accomplish this goal, the following tasks were conducted:

- Review of property ownership, assessor’s maps, natural resource mapping, and current land uses.
- Prediction of the potential for growth and identification of design standards for growth.
- An estimate of existing and future water and wastewater needs.
- Review of alternatives to serve the future water and wastewater needs of Central Village.
- Preparation of a draft zoning bylaw for Central Village area.

Review of Town Records

Town of Westport Master Plan

The Town of Westport Master Plan was prepared in 2004 by a citizen’s group. The population projections in the plan were taken from Executive Office of Environmental Affairs (EOEA) buildout estimates prepared in 2002. The year 2000 population of Westport was 14,183. The EOEA buildout estimate is 24,924. The Master Plan estimated this buildout would result in an increase of nearly 10,000 dwelling units and 10 million square feet of commercial/office space, with an estimated increase in water needs of 2.5 million gallons per day (MGD). These estimates are for the entire town of Westport. Rezoning of Central Village to increase development density may have some impact on these estimates, however, the goal of the Committee is to concentrate development in the Village area and have a “no net growth” effect from current buildout estimates.

Key recommendations in the Master Plan for Central Village area include:

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- Add or extend sidewalks
- Allow shared parking
- Provide municipal water and sewer
- Prevent strip development
- Institute mixed use zoning to include low rise multi-family homes, apartments, and condominiums
- Emphasize pedestrian access
- Encourage off-street parking
- Add new streets to concentrate growth
- Emphasize existing theme as a business/government center
- Adopt sign restrictions
- Reduce setbacks
- Establish design review procedures

The objectives of this project are consistent with these goals.

Designing the Village Committee

The Designing the Village Committee (the Committee) was formed by the Westport Arts Committee to spearhead the redevelopment project for Central Village. The Committee consists of members of the Arts Council, members of several Town Boards, and other interested residents. The Committee combined the recommendations made in the Master Plan with Smart Growth principles and goals of the Town to develop a vision for Central Village. The conceptual plan for the Village includes “linear” and “compact” layouts. Both concepts included the addition of new streets to increase development density, to route vehicular traffic around the Village, and to improve pedestrian and bicycle traffic conditions. Businesses in town expressed a preference for the “compact” plan. However, both the linear and compact conceptual layouts are presented as **Figures 1-2** and **1-3**, respectively, for comparative purposes.

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Figure 1-2 Linear vision

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Figure 1-3 Compact vision

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The vision for Central Village did not include specific design guidelines, however goals were established and voted on at the Spring 2006 Town Meeting. The goals were consistent with the conceptual vision developed by the Master Plan Committee and will be expanded upon during this feasibility study. The goal of increased development density creates a need to examine the increased need for water and sewer infrastructure in the development area. Currently, the Town of Westport does not have municipal water or sewer. Existing development in Central Village relies primarily upon Title 5 septic systems for wastewater treatment and disposal and private wells for drinking water. There is a new condominium development that has on-site wastewater treatment units in Central Village area. This system treats the wastewater prior to groundwater discharge of the effluent. This study will examine the range of decentralized wastewater solutions available to serve Central Village – from private septic systems, to multiple privately-owned and operated individual facilities, to one larger, town-owned facility.

Town Bylaws & Zoning

The Town of Westport’s current zoning bylaws reflect more typical suburban zoning regulations. For example, parking requirements for commercial space include a requirement of 1 space per 200 square feet (sf) and shared parking is not allowed. For parcels zoned for both business and residential, the minimum lot size is 60,000 sf and front setbacks are a minimum of 25 feet. A summary of parking requirements and design standards is presented in **Table 1-1**. Although Central Village is designated as a “business district,” single family residential use is allowed.

**Table 1-1
Town of Westport's Existing Zoning Bylaws**

Current design standards:	
R/A/B min. lot size	60,000 sf min. lot size w/ 50% max. coverage
Max. Height	40 ft.
Min. Frontage	50 ft.
Min. Front Setback	25 ft.
Min. Side Setback	10 ft.
Min. Rear Setback	6 ft. or 25 ft to roadway
Parking regulations:	
Multi-family, apartments	1.5 spaces per unit
Home occupation/profession	1 space per employee
Retail, financial, consumer	1 space per 200 sf
Wholesale showrooms, warehouse	1 space per 1,000 sf
B&B	1 space per guestroom, plus two
Hotel/motel	1 space per room plus 1 space per 3 restaurant seats
Restaurant/Theater	1 space per 3 seats
Church	1 space per 50 sf and 1 space per 2 employees
Barber/salon	3 spaces per operator
Bowling alley/tennis court	4 spaces per alley or court
Independent living facilities	1 space per unit & 1 space per 3 employees
Assisted Living Facility	0.3 spaces per unit & 1 space per 3 employees
Other	1.5 spaces per 1000 sf plus 1 space per 2 employees

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Current zoning of the study area is “Business” and Article 7 of the Town of Westport Zoning Code requires a minimum lot size of 60,000 sf and minimum frontage of 150 feet for new development. A minimum of 30,000 sf of the 60,000 sf lot size must be contiguous upland. The zoning regulations allow single family and two family dwellings within business zones, but not multi-family dwellings. Dwellings cannot occupy more than 50% of the total lot size. Under the proposed Central Village zoning plan, multi-family, commercial, and residential use in the same building is recommended.

Incorporating residential use into the business district aids in revitalizing the area, reducing vehicular traffic, increasing pedestrian traffic, and establishing a customer base for business.

The existing zoning of Central Village encourages large lot sizes and all parking off-street. There are no mechanisms for sharing infrastructure (i.e., parking, water services, or wastewater disposal) between lots. This type of zoning, while typical of many towns, encourages sprawl and strip-type development. Requirements for affordable housing are difficult to meet with minimum 60,000 sf lot requirements. The same is true for smaller “Mom & Pop” type businesses. The result is a lack of diversity in the residential population as well as the selection of businesses. One of the goals of the Committee is to change this course and help produce a more traditional village center.

Village zoning will entail some changes to the Town zoning standards: allow mixed use, greater lot coverage (consistent with stormwater management requirements), shared parking, and smaller front setbacks. Moving the parking from the front to the back of the building, developing one or more central parking areas, and having storefronts directly on, or closer to, the street (or sidewalk) encourages pedestrian traffic and fosters a “Village” atmosphere. In addition, Village zoning can define specific allowed (or disallowed) uses within the Village and establish what percentage of lots can be developed for certain uses to create a desired style.

Some examples of innovative zoning enacted by other communities with similar goals include:

- The town of Marshfield limits the percentage of use as recreation/ amusement facilities to 15% in their village setting.
- The village of Hyannis limits building footprints to 20,000 sf to encourage small(er) shops and compact development and prohibits drive-thru windows.
- The city of Lowell has an Artist Overlay District that promotes use for artists' lofts, workspaces, and galleries.
- Several other towns and cities have Neighborhood Business Districts which encourage localized shopping within specific residential neighborhoods.

Specific goals for the style and character of Westport's Central Village will be discussed in more detail in **Chapter 2** and further established during the workshop and public participation portion of this project. At a minimum, the Committee hopes to create a more pedestrian friendly area, revitalize the business corridor, and provide more affordable housing in Central Village area.

Board of Health

A review of information regarding septic systems, well permits, water quality, and soil conditions within Central Village was conducted at the Board of Health. *Information from a sampling of addresses within Central Village was reviewed in order to make some overall assumptions about water levels and soil conditions.* All properties in Central Village are served by private water supply wells and private septic systems. (Note: The following tables are not complete listings of wells or septic systems in Central Village.) **Tables 1-2** and **1-3** summarize the information obtained. The corresponding locations of the properties reviewed are shown on **Figure 1-4**.

**Table 1-2
Drinking Water Well Data**

ID	Address/Name	Well#	Pumping rate (gpm)	Depth (ft)	Notes
1	Main Road, Westport Senior Village	1	11	375	Granite at 26' in both wells
		2	14	375	Wells along Main Road
2	809 Main Rd., Cumberland Farms	—	—	—	MTBE contamination
3	767 Main Road, Central Village Condo	1	2	Not given	IWPA = 511" Zone I = 170' Non-compliant UV unit installed for disinfection
4	796 Main Rd., Lee's	1	Not given	6	IWPA = 444' Zone I = 145' Located UNDER bldg
5	1 Ashley Court	1	Not given	320'	Water @ 300' Bedrock @24'
6	15 Stonewall Court	Lot #5	15	Deep	Granite @ 24' (drilled to 540')
7	237 Adamsville Rd.	1	6	Deep	Granite @ 14' (drilled to 145')
8	1100 Main Rd.	—	—	—	No well data – letter in file to DEP regarding salinity in water
9	1037 Main Rd. (Perry's Bakery)	2	Not given	Shallow	Boring logs showed groundwater @ 7' and refusal 11-20' Radon test – 8.3 pCi/L

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**Table 1-3
Septic Data**

ID	Address/Name	Tank gal./ Design gpd	Perc Rate (mpi)	Soil type(s)	Notes
3	767 Main Road, Central Village Condo	Not listed	12	Loam to 30" Clay to 71" Silt/sand to 148"	Groundwater @ 76"
4	796 Main Rd., Lee's	Not listed	20	Sandy loam/Loamy sand to 144"	New field built in 1996
5	1 Ashley Court	Tank 1500	6-25	Tight sandy loam	Mottles at 76" 2 test pits
6	15 Stonewall Court	Tank 1500	7-11	Loam and sand to 116"	Groundwater @ 75"
7	237 Adamsville Rd.	Tank 1500	13-14	Fine sandy loam	Groundwater @ 72"
10	218 Adamsville Rd.	Design 330	8	Sandy loam to 120"	Groundwater @ 84"
11	83 Adamsville Rd.	Design 330	22	Sandy loam to 114"	Groundwater @ 33"
12	6 Adamsville Rd. (Post Office)	Design 330	7	Sandy loam to 120"	Groundwater @ 55"
8	1100 Main Rd.	Tank 1000	10	Med. sand, loam	No groundwater observed
9	1037 Main Rd.	Tank 1500	1	Sandy loam to 120"	Mottles @34"
13	930 and 938 Main Rd.	Design 537	14	Fine sandy loam to 120"	Groundwater @ 84"

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Figure 1-4 Septic and well data locations

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From the soil and groundwater data reviewed, it appears that groundwater is fairly shallow in Central Village area. Geologically, there is a thin (11-26 feet) layer of loamy sand underlain by granite bedrock. The bedrock layer is most shallow (11 feet) in the vicinity of Hix Bridge Road, and gets deeper going north on Main Road.

Groundwater depths along Main Road vary from approximately 5-7 feet, although mottles (indicative of seasonal high groundwater) were observed at 34-inches near Hix Bridge Road. West of Main Road, the low point is at Angeline Brook, with groundwater reported at depths of less than 3 feet. Bedrock at the intersection of Sodom and Adamsville Roads was reported at 14 feet.

Given the shallow depth to both groundwater and bedrock, it is unlikely that medium or high density development could occur in Central Village, particularly west of Main Road, using conventional, individual septic systems. Good percolation rates were observed, however depth to groundwater and bedrock will influence the mound resulting from the reintroduction of water to the subsurface.

An existing well in Central Village was tested for radon and showed concentrations of 8 picocuries per liter (pCi/L). The EPA limit for radon concentration in indoor air is 4 pCi/L and the proposed rule (November 1999) for water is 300 pCi/L (or 4,000 with a multimedia management plan). The Board of Health reported iron and manganese problems in drinking water wells, along with MTBE contamination from a petroleum spill. If a public water supply is installed in Central Village, standard testing for a wide range of chemicals and contaminants will be conducted as part of the permitting process.

In addition to the desktop data analysis, a review of a 1965 Camp, Dresser & McKee "Report on a Public Water System" was performed. The report describes a comprehensive engineering investigation conducted for the construction and financing of a public water system for the Town of Westport. A large portion of the study involved a

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fairly intensive well exploration program targeted at locating a well source capable of providing the initial maximum daily consumption estimated in 1965 to be approximately 0.9 MGD. The test well drilling program targeted nineteen sites, predominantly located in the northern part of town. The closest site to Central Village selected for exploration was located between Drift Road and Rt. 88 approximately one mile southeast of Central Village. No exploratory wells were driven at this site due to geologic conditions found at other sites in the vicinity. One location on the East Branch Westport River was identified as favorable for additional testing, but was only found to yield approximately 0.45 MGD with less than adequate water quality results. The report did not recommend that the site be developed into a new groundwater withdrawal source due to its limited yield and water quality problems. The report ultimately concluded that, “a municipal well supply with adequate capacity is not available and that alternate means will have to be utilized.”

Assessor’s Information

The project area is shown on Town of Westport Assessor’s maps #54, #55, #78, and #80. There are a total of 83 parcels and 380 acres within the study area. Based on Assessor’s information, there are 12 privately-owned, undeveloped parcels in the study area totaling 35 acres. There are 4 town-owned, undeveloped parcels in the study area totaling approximately 10 acres. The average parcel size is 4.5 acres, although parcel sizes range from ½ acre to 80 acres. Generally, parcels abutting Main Road have less than 200 feet of frontage. Many of the undeveloped parcels do not have frontage on Main Road. **Table 1-4** summarizes the Assessor’s information along with observations regarding existing use from the windshield survey (discussed below).

Windshield Survey of Study Area

The northern portion of the study area consists primarily of commercial properties, with the exception of an 80+ acre condominium development. The major commercial properties include Lee’s Supermarket, Sovereign Bank, Westport Federal Credit Union, Westport Apothecary, and several shops and offices within the Village Commons and

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Central Village Condo strip malls. Just south of this commercial area on Main Road are Town-owned properties, including the Town Hall, Highway Department, and Police Station. Across from these facilities are a doctor's office, Gulf gas station, and A.G. Bettencourt mulch products.

Moving south along Main Road, towards Adamsville Road, development is less dense and property use becomes more residential in nature. There are several single-family homes along this portion of Main Road, as well as farm land. The Fire Station and a fish market are located at the corner of Main Road and Adamsville Road. Between this intersection and the intersection of Hix Bridge Road and Main Road is a 10+ acre cemetery, bounded on the southern side by Hix Bridge Road and on the western side by Main Road. Opposite the cemetery are several single-family residential properties and a church, as well as an abandoned commercial property (currently for sale).

It is assumed in the following analysis of site uses that the uses noted during this part of the study remain the same. As the land use and water and wastewater estimates are preliminary, minor changes in property ownership or use should not significantly change the results.

**Table 1-4
Assessor's Information and Existing Use for Central Village**

Map	Parcel	Map Acres	Street	Undeveloped Private (UP) Westport (UW)	Use
54	8B	0.83	MAIN ROAD		Village Commons: 1 takeout restaurant, 1 ice cream store, 1 hair salon, 1 eyeglasses store, 1 jewelry store, 1 video store, 1 real estate office, 1 art gallery, 1 restaurant, and apothecary
54	8H	0.46	CUFFEE ROAD		
54	8I		CUFFEE ROAD		
54	11A	0.51	MAIN ROAD		Part of Lees supermarket property
54	13	7.61	MAIN ROAD		3 buildings: Town Hall, DPW, and Police station
54	14	6.30	RT. 88	UW	Westport - undeveloped
54	18		RT. 88	UW	Westport - undeveloped
54	22	2.04	MAIN ROAD		Town Hall annex
54	23A	1.96	MAIN ROAD	UW	Westport - undeveloped
54	23	3.11	MAIN ROAD		1 building: real estate office and massage office
54	37	0.50	MAIN ROAD		"Religious education center"
54	38	1.70	MAIN ROAD		2 buildings: meeting house and community center
54	39	10.90	MAIN ROAD		Cemetery
54	40	28.65	RT. 88		Undeveloped
54	23B	1.54	ASHLEY COURT	UW	Westport - undeveloped
54	16	1.03	MAIN ROAD		1 SFR
	7	0.16	MAIN ROAD	UP	Undeveloped
54	15	6.47	MAIN ROAD		1+ buildings: 1 SFR and a long driveway ("N.A.C. security & stereo systems" sign)
	21	0.70	MAIN ROAD		
54	17	2.06	MAIN ROAD		
	26	6.00	MAIN ROAD		
	27	6.57	MAIN ROAD		
	28	0.92	MAIN ROAD		
54	20	0.52	MAIN ROAD		Clothing store
54	35	0.55	MAIN ROAD		2 buildings: hair dresser and "social club"
54	8D	0.54	MAIN ROAD		Village Commons (see above)
54	8E	0.54	CENTRAL VILLAGE DRIVE		
54	8	3.60	RT. 88		
	8F	0.66	CUFFEE ROAD		
	8J	0.50	CUFFEE ROAD		
	8K	0.78	CENTRAL VILLAGE DRIVE		
	8L	0.46	CUFFEE ROAD		
54	24	1.47	MAIN ROAD		
	25	2.20	MAIN ROAD	UP	Undeveloped
54	10B	0.40	MAIN ROAD		1 bank (Westport federal credit union)
	8C	0.46	MAIN ROAD		1 bank (Sovereign bank)

**Table 1-4
Assessor's Information and Existing Use for Central Village**

Map	Parcel	Map Acres	Street	Undeveloped Private (UP) Westport (UW)	Use
	8G	0.07	CENTRAL VILLAGE DRIVE		Village Commons (see above)
54	33	0.83	RT. 88	UP	Undeveloped
54	10	18.01	MAIN ROAD		Lees supermarket
	8M	5.53	CENTRAL VILLAGE DRIVE		
54	11	1.00	MAIN ROAD		
	12	0.25	MAIN ROAD		
54	32	4.40	MAIN ROAD		1 SFR
54	32B	16.30	MAIN ROAD	UP	Undeveloped
54	32A	0.64	MAIN ROAD		1 SFR
54	31	1.50	MAIN ROAD		1 SFR
54	12A	0.13	MAIN ROAD		Fire station
77	15	0.16	ADAMSVILLE ROAD		
77	12	30.14	ADAMSVILLE ROAD		1 SFR and farm land
77	13	0.21	ADAMSVILLE ROAD		1 SFR
77	14	0.25	ADAMSVILLE ROAD		Seafood market
77	31	0.46	MAIN ROAD		1 building: insurance agency and massage center
77	12A	0.14	MAIN ROAD	UP	Undeveloped
77	31A	0.47	MAIN ROAD		Gulf gas station
77	16	6.82	MAIN ROAD	UP	Undeveloped
77	23	4.44	MAIN ROAD		2 SFR's
77	24	2.75	MAIN ROAD		Westport family medical
77	25	0.42	MAIN ROAD		Mulch company
77	26	0.96	MAIN ROAD		
77	27	1.32	MAIN ROAD		2 buildings: 1 SFR and law office
77	28	80.30	MAIN ROAD		Condominium complex
77	17	3.66	MAIN ROAD		1 SFR
77	18	2.28	MAIN ROAD		2 buildings: 1 pet kennel (grooming & boarding) and 1 SFR
77	19	5.81	MAIN ROAD		1 SFR
77	21	0.49	MAIN ROAD		1 SFR
77	20	3.58	MAIN ROAD	UP	Undeveloped
	22	4.76	MAIN ROAD		1 SFR
77	28A	1.38	MAIN ROAD		2 buildings: 1 dentist office, 1 clothing store, 1 psychologist office, 1 insurance office, 2 other office units
80	22	14.07	MAIN ROAD		1 SFR
	23	0.75	MAIN ROAD	UP	Undeveloped

**Table 1-4
Assessor's Information and Existing Use for Central Village**

Map	Parcel	Map Acres	Street	Undeveloped Private (UP) Westport (UW)	Use
80	26A	2.66	MAIN ROAD		2 buildings: law office and food store, bakery, and "nutritional consults"
80	26	3.00	MAIN ROAD		2 buildings: "olde westport beer & wine" and restaurant parking for restaurant/lawn area
80	24	3.27	MAIN ROAD		
80	21	13.30	MAIN ROAD		3 SFR's and 1 church
80	25	2.50	MAIN ROAD		2 buildings: "wind blown glass" and dentist office
80	21A	2.00	MAIN ROAD		Former restaurant being sold as a "commercial property"
80	24A	1.38	MAIN ROAD		"Crosby & Baker Winemaker, LTD." and "Partners Village Store & Kitchen"
	24B	3.30	MAIN ROAD		
55	2	27.00	MAIN ROAD		Seasonal ice cream shop @ corner Rt.88; rest undeveloped
55	3	0.73	MAIN ROAD	UP	Undeveloped
55	5	0.86	MAIN ROAD	UP	Undeveloped
55	6	2.50	MAIN ROAD	UP	Undeveloped
55	7	0.36	MAIN ROAD	UP	Undeveloped

Between Main Road and Route 88, Hix Bridge Road is undeveloped, with the exception of the cemetery to the north and Handy Hill Creamery (a seasonal ice cream shop) on the southern corner of Route 88 and Hix Bridge Road.

The southern portion of the study area on Main Road, south of Hix Bridge Road, is a mix of commercial, residential and undeveloped land properties. The largest commercial properties include Partners Village Store and Kitchen, Crosby and Baker Winemaker, Ltd., The Westporter restaurant, and a dentist's office.

Mapping

NRCS Soil Information

The Soil Survey from the US Natural Resource Conservation Service (NRCS), formerly the US Soil Conservation Service, was reviewed in order to characterize soils in Central Village. Soils in Central Village are predominantly characterized by the Paxton soil series, found in upland hills and ridges. This series is known for being well-drained and for having a very firm substratum at 22 inches below the surface, restricting water movement and root development.

The primary Paxton soil series phase in Central Village is the **Paxton fine sandy loam, 3 to 8 percent slopes (PFB)**. It is most prevalent north of Adamsville Road and south of Kirby Corner on Main Road. This soil is located on the tops and sides of ridges and hills and is considered well-drained, deep, and gently sloping. A very dark, grayish brown, fine, sandy loam surface layer, 8 inches thick, is followed by a 14-inch thick subsoil layer. The subsoil layer is yellowish brown, fine sandy loam in the upper 8 inches, while the lower 6 inches is olive yellow, sandy loam. With a depth of 60 inches or more, the substratum is pale olive, very firm and brittle gravelly sandy loam.

PfB has moderate permeability in the surface and subsoil layers and slow or very slow permeability in the substratum, with moderate available water capacity. In fact, a

temporary or “perched” water table may be present between 16 and 22 inches below the surface during high rain periods, which creates a limitation for building development and sanitary landfills. The slow permeability of the substratum restricts the use of the land as a septic tank absorption field. Typically, the soil is used for crops, but it can also be used for trees or types of community development.

Two other **Paxton fine sandy loam** phases are present in Central Village: **0 to 3 percent (PfA)** and **8 to 15 percent (PfC)**. The stratification of these phases is identical to that of the PfB phase. Like the PfB phase, the slow permeability of the substratum is a restriction for septic tank absorption fields.

The second most predominant Paxton soil series phase in Central Village is the **Paxton very stony fine sandy loam, 0 to 8 percent slopes (PgB)**. This soil is primarily found south of the Hixbridge Road/Main Road intersection and just south of the Kirby Road intersection on Main Road. This soil is considered well-drained, deep, and gently sloping. The stratification is identical to the Paxton fine sandy loam phases, however, 1 to 3% of the surface is covered with stones and boulders. This soil has moderate permeability in the surface layer and subsoil, but the substratum has slow or very slow permeability, with moderate available water capacity. A perched water table is also found in this soil following high rain periods between 16 and 22 inches below the surface. The perched water table and firm substratum restrict land use for building sites, sanitary landfills, or septic tank absorption fields.

The Woodbridge soils series is secondary to the Paxton soils series between the Adamsville Road/Main Road intersection and the Kirby Road/Main Road intersection. Most common is the **Woodbridge extremely stony fine sandy loam, 0 to 8 percent slopes (WtB)**, known for being moderately well-drained, deep, and gently sloping. Dark brown, fine, sandy loam, 4 inches thick, makes up the surface layer, which is followed by a 23-inch thick subsoil, characterized by brown, fine, sandy loam and mottled fine

gravelly sandy loam. The substratum is 60 inches in depth and is a light brownish gray, very firm, mottled gravelly sandy loam. The permeability and water capacity is similar to that of the Paxton soils. A perched water table can be found at depths of between 20 and 27 inches during prolonged rain periods, which limits land availability for building development and sanitary landfills. In addition, the very firm substratum and slow permeability is a problem for septic tanks.

The **Woodbridge very stony fine sandy loam, 0 to 8 percent slopes (WsB)**, is also prevalent in the same location as the WtB phase. The surface layer is 9 inches thick and is made up of dark brown, sandy loam. The 18-inch thick brown, fine sandy loam and mottled gravelly fine sandy loam subsoil, is followed by the 60-inch deep light brownish gray, very firm, mottled sandy loam substratum. The permeability is also moderate in the surface layer and slow or very slow in the substratum, with moderate water capacity. Between 20 and 27 inches, during prolonged rains, there is a perched water table that creates limitations for land development, including septic tank absorption field and sanitary landfills. Septic tanks are limited due to the slow permeability of the substratum.

MassGIS

MassGIS information from 2003 and 2005 was consulted to identify natural resources within Central Village Area. The resources reviewed included:

- Topography
- Wetlands and water bodies
- Natural Heritage and Endangered Species (NHESP)
- Vernal pools
- Areas of Critical Environmental Concern (ACEC)
- Public Drinking Water supply

These resources are discussed in more detail below.

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The study area is shown in **Figure 1-5** and extends north to south along Main Road from just south of Kirby Corner to approximately 1,000 feet south of Hix Bridge Road. The east-west limits of the project area roughly are Route 88 on the eastern side and Angeline Brook on the western side. **Figure 1-3** is the “Designing the Village” Master Plan Compact concept plan showing the project limits.

Topographically, the project area is 30- 45 feet above mean sea level. The area along Main Road is roughly the high point of the study area, running north-south. Angeline Brook runs north to south on the western edge of the study area. The area between Angeline Brook and Main Road consists of several wetland areas and small ponds. Existing development is concentrated along Main Road. There are currently no side roads through the western portion of the study area. The portion of the study area east of Main Road is shown topographically as upland, with elevations decreasing from west to east. There are no side roads through this portion of the study area, except for Hix Bridge Road in the southern end.

NHESP areas lie just west of Main Road, along the entire alignment of Central Village area. Wetlands are also present in this area. No vernal pools or ACEC were mapped in Central Village. **Figure 1-6** depicts the results of the natural resource mapping.

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Figure 1-5 topographic map

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Figure 1-6

NHESP mapping

No municipal water supply exists in Central Village, however private supplies for businesses serving the public (e.g., Lee’s Market) are considered “Public” supply. Under this definition, many of the wells situated along Main Road are “public” supply.

Summary

Goals of Central Village vision

The goals of Central Village vision are to create a vital downtown area with mixed-use development, pedestrian friendly areas, and a center for the community. In order to achieve these goals, the Town has proposed to adopt Smart Growth principles to concentrate growth within the Village area and preserve open space outside of the Village in order to maintain the rural character of Westport. Planning for infrastructure to support the proposed denser development is a key element of the Town’s plan.

Existing zoning and bylaws

Existing zoning in Central Village does not allow for the density and type of development the Town wishes to see. Existing zoning is more typical of rural/suburban growth with large lot sizes and off-street parking. Therefore, changes to existing zoning and bylaws will be required to encourage the type of growth the Town wishes to see. A draft zoning bylaw will be included as part of this report.

Soil and Groundwater

Several sources were consulted to develop an overview of soil and groundwater conditions within the village. Based on NRCS mapping and existing data at the Board of Health, it appears that soil conditions are fairly consistent throughout the village, with a shallow layer of medium permeability soil, underlain by a deeper layer of low permeability material, underlain by granite bedrock at a typical depth of 14-24 feet. With respect to individual Title 5 systems, taking existing zoning and lot sizes into account, soils are acceptable but not ideal for the use of conventional septic systems. For the proposed application, with smaller lot sizes, denser development, and more residential

use, it is likely that soil conditions will not support the size of Title 5 system required without additional treatment, variances, and/or shared septic systems. In addition, a very shallow groundwater table will prohibit the use of larger septic or community wastewater systems in many parts of Central Village. Localized treatment of I/A system are expected to be necessary to support the development plan.

Groundwater conditions in Central Village have also been adequate to support existing development, however, under the proposed growth scenario, it is unlikely that a viable gravel groundwater supply will be found. Groundwater is shallow; reported at depths of 3-14 feet. However, due to the soil conditions and the lack of depth of the saturated zone, pumping rates are low (typically 2-15 gallons per minute). Even the bedrock wells reported low yields. At these rates, a single water source able to support the proposed development is unlikely. This conclusion is supported by the 1965 water supply investigation report prepared for the entire Town of Westport. No viable community wide water supply sources were found in the vicinity of Central Village during that Town-wide study.

Natural resources

MassGIS and other natural resource mapping were consulted to determine whether any critical resources exist in Central Village. Wetland and Natural Heritage and Endangered Species (NHESP) program areas lie to the west of Main Road. There are no mapped vernal pools or Areas of Critical Environmental Concern. With respect to siting wastewater treatment facilities and/or effluent disposal areas, properties east of Main Road are a better alternative. The presence of multiple drinking water supply wells used to serve business, restaurants, and bakeries presents an additional concern. A thorough analysis of potential impacts to existing water supply must be conducted for any proposed discharges to the subsurface.

CHAPTER 2 – BUILDOUT ALTERNATIVES

Introduction

Determination of future infrastructure needs in Central Village requires making some assumptions regarding the potential for development within this area. First, the current condition and needs were evaluated, both to demonstrate a minimum level of service required and to establish a baseline from which to compare other alternatives. Next, anticipated growth under existing zoning conditions was evaluated. In the event that a new zoning bylaw is not passed for Central Village, this alternative will reflect the potential for growth. In accordance with the goals of the Master Plan, consideration of growth alternative(s) that account for a change in zoning to allow higher density growth was also evaluated. In order to show a comparison of needs, two higher density growth alternatives were evaluated. In all, four alternatives were considered:

- Current – includes current development only.
- Current & Growth – includes current development plus growth under current zoning.
- Rezone Option 1 – includes mixed-use development and redevelopment of existing properties to a higher density than current development, but a lower density than Rezone Option 2.
- Rezone Option 2 – includes mixed-use development and redevelopment of existing properties to a higher density than Rezone Option 1.

Specific assumptions and limitations with each alternative are discussed below. A summary of the Assessor's parcels, current uses, and a map showing the project limits are included in **Appendix A**.

A review of wetlands mapping was conducted, and although some wetland areas do exist west of Main Road, an estimation of wetland areas to be excluded from this discussion

was not conducted. Once an alternative is chosen and the Town is ready to move forward with development, field wetland delineations by a certified wetland scientist should be conducted to determine the actual area(s) in question.

Current Alternative

As discussed in Chapter 1, a windshield survey was conducted in the summer of 2006 to document the existing uses of properties in the study area. The first assumption for the Current Alternative is that the property uses have not changed since that time. It is not likely that minor changes to property use (e.g., change in ownership) will significantly effect the overall conclusions for this alternative. Lot sizes were taken from the Assessor's maps and lot use was documented during the windshield survey.

Current & Growth Alternative

Using the information from the windshield survey, an evaluation was conducted for the presently undeveloped lots in the study area. According to the Assessor's records and the observations of the windshield survey, fourteen lots within the study area are undeveloped and one is vacant. The following assumptions were made to evaluate the growth potential of these lots, in the context of assessing water and wastewater needs:

- Undeveloped Town-owned land would remain undeveloped (e.g., development of town owned land into a ball field, recreation area, park, etc. would not impact water or wastewater flows)
- Privately held undeveloped land would be built out as commercial, not residential, property.
- All other developed properties will maintain their same use, with the exception of the 27 acres owned by Handy Hill – most of this land is undeveloped and has street frontage and was therefore evaluated for buildout potential.
- No 40B developments or other high use developments were considered.

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- Existing minimum “buildable” lot size is 60,000 sf with 50% maximum coverage, regardless of use.

Rezoned Option 1 Alternative

The Rezoned Option 1 alternative evaluates growth potential should a mixed use zoning bylaw be passed for Central Village. This alternative assumes that developed properties will be redeveloped to meet the new zoning requirements. The development density assumed is higher than that allowed currently by right, due to the addition of mixed use, but lower than the last alternative presented below. Of the four alternatives presented, this is the **most likely** option over a 20-year planning period. The following assumption were made:

- Undeveloped Town-owned land would remain undeveloped.
- All developed properties other than churches, cemeteries, schools, and municipal facilities will be redeveloped to allow mixed use.
- All privately-owned undeveloped property would be developed to allow mixed use.
- Maximum commercial development density would equal 6,000 sf/acre.
- Maximum number of multi-family units allowed would equal 4 units/acre.
- Maximum number of single-family units allowed would equal 2 units/acre.
- No additional development would occur at the Senior Village Condos and Apartments (due to existing conservation restrictions).
- No 40B developments were considered.

These growth estimates may seem high when compared to existing conditions - it is important to note that this growth is for a 20-year planning period and will not likely happen all at once.

Rezoned Option 2 Alternative

The Rezoned Option 2 alternative evaluates growth potential should a mixed use zoning bylaw be passed for Central Village. This alternative assumes that developed properties will be redeveloped to meet the new zoning requirements. The development density assumed is higher than the Rezoned Option 1. Of the four alternatives presented, this is the **least likely** option over a 20-year planning period. The following assumptions were made:

- Undeveloped Town-owned land would remain undeveloped.
- All developed properties other than churches, cemeteries, schools, and municipal facilities will be redeveloped to allow mixed use.
- Maximum commercial development density would equal 12,000 sf/acre.
- Maximum number of multi-family units allowed would equal 8 units/acre.
- Maximum number of single-family units allowed would equal 4 units/acre.
- All privately-owned undeveloped property would be developed to allow mixed use.
- No additional development would occur at the Senior Village Condos and Apartments (due to existing conservation restrictions).
- No 40B developments were considered.

These four alternatives will be discussed further in **Chapter 4** with respect to the assessment of water and wastewater needs to support existing and future development in Central Village. A lot-by-lot breakdown is attached in **Appendix B**.

CHAPTER 3 – WASTEWATER AND WATER SYSTEMS

Introduction

The focus of this project is to identify potential decentralized water and wastewater alternatives to serve existing and future growth in Central Village. The following discussion includes a review of existing treatment technology, distribution, regulatory requirements, and related issues to assisting the Town in determining the best alternative(s) to serve Central Village. Specific water and wastewater needs/estimates are included in **Chapter 4**.

Wastewater Treatment and Disposal

There are four primary categories of wastewater treatment systems, as described below:

- **Centralized Wastewater Treatment** – Centralized wastewater treatment includes a large wastewater treatment plant and a widespread service area. A centralized system generally includes an entire town or several towns. The Massachusetts Water Resources Authority (MWRA) system that serves the greater Boston area is an example of a centralized system. Effluent from a centralized wastewater treatment plant is generally discharged to a surface water body, often a great distance from the original source of water. Centralized treatment is NOT an alternative in this study.
- **Decentralized “Localized” Treatment** – Decentralized treatment includes a small scale wastewater treatment system with a very localized service area. Localized systems use the same technology, but on a smaller scale, as centralized plants and generally handle flows over 10,000 gallons per day. Localized treatment may serve a housing development, an office or industrial park, or a specific neighborhood. For the purpose of this discussion, it is

assumed that municipal operation of such a system and groundwater discharge would be required.

- **Decentralized Innovative/Alternative (I/A) Treatment** – I/A treatment systems are very small scale package units that serve a single property or a small cluster of properties. I/A systems are generally used for flows less than 10,000 gallons per day and the effluent is discharged to the subsurface. In the context of planning for Central Village, choosing I/A systems would mean each strip mall or housing development would install and operate their own private wastewater treatment system. The Bioclere system at the Central Village Condominiums is an example of an I/A system. Use of an I/A system may result in a reduction of Title 5 requirements (e.g., separation to groundwater).
- **Onsite (Septic) Systems** – Onsite systems are what serves Central Village today. The growth potential of many of the properties in Central Village is limited by the requirements of Title 5, the State Sanitary code, which requires specific setbacks from property lines and drinking water supplies, percolation rates for subsurface disposal systems, and other factors which influence the allowable size of a septic system. Septic systems are not considered an optional decentralized treatment because no significant level of treatment is achieved in a septic system.

Wastewater Treatment

Decentralized wastewater treatment for Westport's Central Village can be accomplished through three very different solutions; 1) a single decentralized treatment plant with subsurface disposal (for the purpose of this discussion, we will refer to this option as a localized system), 2) multiple innovative/alternative (I/A) on-site systems with subsurface disposal, and 3) continued reliance on conventional septic systems. For current development levels, use of septic systems is adequate. However, the purpose of

this study is to examine the impacts of increased development in Central Village and to develop recommendations to mitigate the impacts of denser development.

In addition, as the density increases, the demand on well water in Central Village will increase, as will the number of privately owned wells. Dense development with septic systems next to drinking water wells increases the potential for drinking water contamination. Privately owned wells are not tested as frequently as municipal wells, therefore contamination of groundwater supplies may go undetected. In addition, state law requires separation of 100 feet between septic leaching fields and drinking water wells. As development density increases, leach field size will increase and available lot size (to accommodate the leach field and to provide separation) will decrease. It is not anticipated that Central Village will be able to grow to meet the goals of the Master Plan without implementing an alternative to septic systems. For example, the Central Village Condos and Apartments were already required to install an I/A system, both to reduce leach field size and to protect water supplies. As similar development occurs, this situation may become more common.

One of the arguments against “sewer” is that water is removed from the source area and often results in gradual depletion of groundwater supplies. **All** of the alternatives presented herein provide some level of treatment and reintroduction of treated effluent in the vicinity of source supplies, thus providing continual groundwater recharge.

Localized Wastewater Treatment Plant

Due to soil and groundwater conditions, lot size or shape, or other physical or environmental constraints, on-site treatment is not always the best option, even with the use of alternative technologies. In this event, off-site treatment options are investigated to determine the best solution for the specific situation. Localized solutions generally consist of a smaller system, serving a finite community similar to Central Village.

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The most common type of localized system is a small package treatment plant and related collection system. This is a viable alternative for areas where conventional (individual) Title 5 systems and individual I/A systems are not feasible or are cost prohibitive. Typically, this approach would be used for flows over 10,000 gallons per day (gpd) and would entail the formation of a management entity – either a Town sewer department or a privately operated sewer district. Advantages to this approach are providing adequate “supply” (i.e., wastewater service) to all users, having one entity to conduct reporting, operations, and management, losing minimal land area to accommodate only one treatment plant and disposal area, and aesthetically having only one treatment plant in the downtown. Generally, the capital and operating costs for one larger plant versus many smaller plants are also less. Disadvantages would include creation of a management entity and potentially, addition of Town personnel to operate the system.

Package plants are typically pre-assembled equipment in buried tanks or small buildings that utilize the same treatment technologies found in larger wastewater treatment plants. Any type of localized facility would include the construction and maintenance of a small collection system. Approximately 1-2 acres would typically be required to house a treatment plant of the size expected for Central Village and to provide screening from neighboring properties.

The primary limitation with a localized system is the requirement to find an area (or areas) to discharge the septic effluent back into the ground. Areas used for discharge cannot be built on, but can be used as ball fields, parks, etc. The effluent quality from a localized system is of a much higher quality than effluent from a septic system, reducing the potential impact to groundwater.

Operation and maintenance of a localized system is generally the responsibility of municipal staff or contracted out to a private company. In either case, the proper functioning and reporting requirements for the system are controlled by DEP, assuming

the discharge capacity is more than 10,000 gallons per day. Otherwise, the local Board of Health has jurisdiction.

Innovative and Alternative (I/A) On-Site Systems

High groundwater conditions, poor soil drainage, and lot size restrictions may all prevent a conventional on-site system from meeting Title 5 requirements. I/A systems are on-site wastewater treatment systems designed to provide enhanced treatment through utilization of components and treatment technologies not usually included in conventional septic systems. These alternative treatment technologies may be used in conjunction with, or instead of, conventional on-site systems. I/A systems typically provide a higher degree of treatment, reduce the bacterial and/or nutrient discharge to the environment, and allow for a decrease in size of the soil absorption system (SAS). In some cases, the systems qualify for a nitrogen reduction credit, meaning that discharge is allowed in nitrogen sensitive areas without further treatment. The following discussion presents some options available for I/A systems approved in Massachusetts. The DEP classifies technologies as being approved for “Piloting” (still under review by DEP), “General” (for use in most cases), “Provisional” (for use, with site specific conditions), and “Remedial” (emergency use only) use. For individual or shared I/A systems to serve Central Village, approval for “General” use would be most applicable.

It should be noted that I/A systems are not allowed for new construction unless the property/development is capable of operating a Title 5 compliant system. In other words, if a property is not “developable” due to Title 5 constraints, an I/A system cannot be proposed to make it “developable.”

Advantages to this approach are that individual lots can develop at their own rate and have control over their own systems. Alternately, some properties may have difficulty finding adequate discharge area, while others will have more than they require. In this respect, this alternative is inequitable. The Town may consider it an advantage that each

property owner is responsible for the operating, reporting, etc. of the system, eliminating the need for municipal oversight. Overall, more developable land area will be lost house multiple treatment units and disposal fields, and costs may potentially be higher with the need for multiple permits, groundwater testing, etc. The primary benefit to the Town is that the responsibility of design, permitting, operation, and management lies with the developer/property owner.

Under current conditions, it does not appear that reduced nitrogen concentrations would be required of treated wastewater effluent. However, siting of the wastewater discharge in relation to public water supply may necessitate the use of nitrogen reduction technology. This would be determined during the design phase. A general discussion of DEP approved technologies follows and a summary is provided in **Table 3-1**:

Recirculating Sand Filter

A recirculating sand filter (RSF) is a non-proprietary I/A treatment technology that consists of a septic tank, a recirculation tank and pump, a sand filter with underdrains, and an SAS. The RSF qualifies for a nitrogen reduction credit under General use.

Amphidrome™ Process

The Amphidrome™ process is a fixed media, sequencing batch reactor (SBR). The system combines filter technology with an equalization tank and a clear well, along with standard components of a septic system. Treatment takes place under both aerobic and anaerobic conditions, resulting in both nitrification and denitrification of the effluent, and reduction of BOD, TSS and nitrogen.

Bioclere™ Treatment Process

The Bioclere™ system is a self-contained tank, recirculating trickling filter, and pump unit. This process can be used in tandem with a traditional septic system to

provide a higher degree of treatment. The filter can be modified to provide nutrient removal.

Fast® System

The Fast® (Fixed Activated Sludge Treatment) system is a submerged filter unit installed below ground. Aerobic and anoxic treatment is provided, allowing for denitrification and removal of BOD, TSS, and nitrogen.

Cromaglass System

The Cromaglass unit is a sequencing batch reactor (SBR). It can be designed to provide denitrification. It can accommodate varying flows and reduces SAS field size.

Jet Aeration System

The Jet Aeration system is an activated sludge system and is used in place of a conventional septic tank. The system is composed of a pretreatment settling chamber, an extended aeration chamber that contains fixed film media, and a final settling compartment. An optional tertiary sand filter can be added prior to discharge to the SAS. The Jet Aeration plant achieves high levels of BOD and TSS removal.

Waterloo Biofilter

The Waterloo Biofilter is a fixed film trickling filter. The high-density foam used for the fixed film media provides a large surface area to provide for the reduction of BOD, TSS, and nitrogen. A recycle option allows for approximately 75% of the effluent to be recycled back to the system, providing a level of denitrification.

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Advantex

The Advantex system is a recirculating packed bed filter. It removes BOD, TSS, and nitrogen.

SeptiTech Treatment System

The SeptiTech treatment system is a trickling filter used in conjunction with a traditional septic system. It provides aerobic and anaerobic treatment and removal of BOD, TSS and nutrients.

Orenco Intermittent Sand Filter

The Orenco product is a low rate sand filter, typically used in high groundwater/poor soil conditions. The filter removes BOD and TSS up to 5 mg/L.

Norweco Singulaire

The Norweco Singulaire is an aerobic treatment unit. It is a multiple stage system consisting of aerobic, anaerobic, and anoxic digestion. It reduces BOD, TSS, nutrients and pathogens.

Alternatives for soil absorption (SAS) systems work in conjunction with traditional septic systems or I/A systems. The alternative SAS systems below are approved in Massachusetts:

Leaching Chambers

Leaching chamber systems are not proprietary and employ high density polyethylene (HDPE) units designed to increase soil contact surface area and decrease the required leaching field area by up to 50%. Effluent storage capacity

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for these units ranges from 70 gal/unit to 416 gal/unit. They are approved for General use in Massachusetts. A few of these systems are:

- Cultec Contactor and Recharger
- Hancor EnviroChamber
- Infiltrator chamber
- BioDiffuser
- Eljen Expandable chamber
- EZ FLOW

Eljen In-Drain System

The Eljen In-Drain system is very similar to conventional leaching structures. The modules include a Bio-Matt geotextile fabric that provides a surface for biological slime to grow, thus promoting aerobic treatment of the effluent. The In-Drain system reduces required leaching area by 30%.

**Table 3-1
Summary of Innovative/Alternative Systems**

System	Description	Type of Approval
Treatment Systems:		
Recirculating Sand Filter	Non-proprietary, sand filter	General and Remedial
Amphidrome	Proprietary, SBR, nitrification/denitrification	General, Provisional, Piloting, and Remedial
Bioclere	Proprietary, trickling filter	General, Provisional, and Remedial
Fast	Proprietary, filter unit, nitrification/denitrification	General, Provisional, and Remedial
Chromaglass	Proprietary, SBR, nitrification/denitrification	General, Piloting, and Remedial
Jet Aeration	Proprietary, activated sludge	General and Remedial
Waterloo Biofilter	Proprietary, trickling filter, nitrification/denitrification	General, Provisional, Piloting, and Remedial
Advantex	Recirculating packed bed filter.	General and Provisional.
SeptiTech	Trickling filter.	General, Provisional, Piloting, and Remedial
Orenco Intermittent Sand Filter	Low rate sand filter.	General and Piloting
Norweco Singulaire	Aerobic treatment.	General and Piloting
SAS reduction:		
Leaching Chambers	Nonproprietary, reduction up to 50%	General
Eljen-in-drain	Proprietary, reduction up to 30%	General

Wastewater System Operations and Maintenance

The proposed wastewater collection, transmission and treatment system will require mechanisms for administration and operation and maintenance (O&M) of the facilities. A Sewer Board/Commission will be required, as well as a Sewer Department. The Sewer Department will require a separate budget and adequate staffing to operate and maintain the facility and collection system. The Town should consider establishing an Enterprise Fund for O&M of the sewer system, so that revenue generated returns to the system to pay for the cost of current and future upkeep.

The annual costs for O&M of the wastewater system should be distributed among the users of the system, based on the ratio of individual flow to total average daily flow. O&M estimates include power usage, chemical usage, and sludge hauling. Additional costs will include plant staffing. For a plant between 0.25 and 1 MGD, a minimum of one operator trained to a minimum of Grade 4 proficiency is expected, at least part-time, five days per week. Administration and management of the collection system may require additional part to full time staffing provided by the DPW/Sewer Department to operate and maintain the new pump stations and sewer lines.

A sewer rate study was conducted state-wide in 2004 and reported the following:

- A flat rate structure is used by 58% of the communities in Massachusetts
- An ascending rate structure is used by 25% of communities
- A flat fee structure is used by 12%
- Sewer costs are applied to the general tax fund in 2% of the communities

Table 3-2 summarizes some of the sewer rates in communities surrounding Westport. The average annual rate is as reported by each Town. Commercial rates may be higher than residential, depending upon the size and water use of the property.

**Table 3-2
Sewer Rates & Structures**

Town	Type of Structure	Rate	Average Annual Rate
Dartmouth	Ascending Rate Split	Residential: Up to 3,200 cf = \$1.49/100 cf > 3,200 cf = \$1.69/100 cf Business: Up to 3,200 cf = \$1.985/100 cf > 3,200 cf = \$2.185/100 cf	\$142
Dighton	Flat Rate	\$1.50/100 cf Service fee of \$100/year	\$280
Fall River	Flat Rate Split	Residential = \$3.34/100 cf Business = \$1.55/100 cf	\$401
New Bedford	Flat Rate	\$2.95/100 cf Service fee of \$70/year	\$424
		Average:	\$312

As an alternative, a sewer district could be established to operate and maintain the system. The District must be approved by a majority of properties located in the District, by the Town at Town meeting, and by a special act of the legislature. Once the District is established, the boundaries are set and properties cannot enter or leave the District. The District can be managed either by the town or by a board established by the District. If a board is chosen, the Town relinquishes all rights to influence decisions made regarding operation of the District.

There are costs associate with all of the wastewater alternatives presented. Decentralized localized system costs are typically comparable to the centralized costs presented above. Costs for I/A systems may tend to be more expensive, especially once long term

maintenance, equipment replacement, and permitting costs are factored in. The average cost to maintain a septic system is \$200/year; however a typical septic system has a life span of 20 years before significant replacement is required. Current costs to replace a septic system in Westport, based on Board of Health records, is \$20,000-\$25,000. Averaged over 20 years, the lifecycle cost of a septic system is \$1,200-\$1,450 per year (in current dollars).

Water Supply, Treatment and Distribution

There are two decentralized alternatives for supplying water to Westport's Central Village:

- Individual wells for each developed lot
- Development of a public (municipal) water supply for Central Village

These options are discussed below. **Figure 3-1** shows MassGIS data of public water supplies and interim wellhead protection areas in the Central Village area.

Individual Wells

Existing parcels in the project area rely on individual wells for water supply. Continued use of individual wells may not be a viable option under the proposed future development conditions (i.e., increased density). Title 5 requires the separation distance between septic systems and private water supply to be no less than 100 feet. This may not be feasible due to future parcel size, site conditions, and constraints.

An alternative to individual wells on each lot is several Non-Community Potable Water Supplies, which could serve up to 25 people and have no more than 18 service connections. These wells require co-ownership and property owners are responsible for operating and maintaining the well supplies. Deed restrictions are often placed on the lands containing these wells. The hydrogeologic conditions in the project area may also limit the size of potential wells.

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Figure 3-1 Water Supply Map

Development of Public Water Supply

Construction of a new public water supply near the project area may be a viable option. This alternative will serve to keep water withdrawals and wastewater discharges within the subbasin.

A municipal well needs to be located in permeable material with adequate saturated thickness and sufficient long-term recharge. Sand and gravel deposits hydraulically coupled to surface water bodies are the first choice for municipal aquifers in the Northeast. With such aquifers, recharge is furnished not only by precipitation on the sand and gravel itself, but also by induced infiltration from an adjacent pond, lake, stream, or river.

Municipal wells in crystalline bedrock of the region must be located where the bedrock is sufficiently fractured to be permeable, and where there is a good source of recharge to such fractures. While the fractured bedrock is the permeable medium in which a well can be located, it is the overlying glacial sediments that provide the groundwater storage, which sustains the yield of the well. Direct hydraulic coupling with surface water bodies is not desired in the case of fractured bedrock wells, but indirect coupling through glacial deposits is beneficial. Given these fundamental hydrogeologic requirements, the general technical approach used by Weston & Sampson included the review of available geologic and hydrogeologic data to delineate:

- Permeable glacial deposits
- Pre-glacial bedrock channels potentially filled by sand and gravel
- Hydraulic coupling among glacial deposits, bedrock fractures, and surface water
- Primary and secondary recharge areas
- Wetlands and floodplains where well construction is restricted
- Regulatory Setbacks (Zone I and Surface Waters)

Figure 3-2 shows the results of the various datalayers overlaid upon the study area including the medium and high yield aquifers delineated by the U.S. Geological Survey, watershed and subbasin boundaries, and existing public water supplies. The surficial geologic features of the area, as mapped by the USGS, were reviewed as well.

As can be seen on the map, the study area is divided somewhat coincident with a north-south drainage divide. The subsurface can be characterized as a thin veneer of till deposits overlying bedrock. These characteristics are not highly advantageous to siting a surficial public water supply well and are therefore not recommended for further evaluation. The only surficial deposits worthy of further exploration are located outside of the half-mile study area to the east on the bank of the East Branch of the Westport River.

The local bedrock geology in the area can be characterized by crystalline igneous and metasedimentary Paleozoic and Precambrian rocks of the Avalon terrane. These rock types have been tapped by several smaller public water supplies in the study area with limited success with respect to yield (see **Table 1-3**). The maximum yield obtained from the most successful bedrock well reported in the area is 15 gpm (21,600 gpd). Available information on the factors that influence the availability and recharge characteristics of fractured bedrock aquifers in deformed crystalline rocks of this area is limited.

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Figure 3-2 USGS water supply datalayers

Additional non-intrusive and intrusive investigations would be required to evaluate this alternative further. Specific tasks may involve one or more of the following techniques to explore for a sufficient supply from a bedrock well or series of bedrock wells:

- Fracture trace analysis
- Surface and borehole geophysical techniques
- Exploration well drilling

In addition to the analysis of the physical landscape, a constraints map was developed to restrict exploration areas due to regulatory setbacks. The two most important state-level setbacks include the required 400-foot protective radius required by the DEP for a source withdrawing greater than 100,000 gpd and a 150-foot radius from surface water bodies to qualify for an exemption from the Surface Water Treatment Rule (SWTR). In addition to regulatory constraints, it is important to reveal any potential contaminant sources in the watershed that may have an effect on the water quality of a public water supply. The results of this constraint and potential contaminant source mapping is presented on **Figure 3-3** and reveal a more restricted area of investigation, as well as two DEP Tier Classified Oil and/or Hazardous Material Sites. These Tier 1C sites include the Old Westport Town Garage located at 820 Main Road and the Cumberland Farms located at 809 Main Road. As these sites are located east of a subbasin divide, groundwater flow in this area is presumed to be flowing east-southeast toward the East Branch of the Westport River. Exploration of bedrock water supplies between these sites and the River is not recommended.

The water distribution system would consist of water mains to carry the water from the supply well to Central Village. A water storage tank would be required to meet peak hourly demands, minimize pressure fluctuations during periods of demand changes in the distribution system, and furnish a reserve for fire fighting. Storage may also serve to provide an emergency supply in case of temporary breakdown of pump facilities.

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Figure 3-3

Water Treatment Systems

Based on available information, iron and manganese removal is the only treatment expected for a water supply well in Central Village. Potential treatment alternatives to be evaluated further are listed below.

Sequestering of Iron and Manganese

Polyphosphates and silicates can be used to sequester elevated metal levels in drinking water. The term sequester means to “bind up” or “complex” reactants so as to prevent normal chemical reactions. The iron and manganese in the raw water is not removed or reduced when the sequestering chemical is effective, rather they are maintained in their dissolved state in the water. Sequestering has no effect on insoluble iron and manganese.

As long as the sequestering chemical prevents the metals from oxidizing, customers will not detect the metals in the water. Sequestering chemicals may not be able to maintain metals in their dissolved state if the water is heated (i.e. in a water heater) and/or chlorinated.

Oxidation of Iron and Manganese

Oxidation of iron and manganese prior to treatment can be accomplished with aeration, chlorination, ozonation, potassium permanganate addition, or chlorine dioxide addition. These oxidation processes would not be used with all filtration processes. For iron, aeration is a good oxidation process because it does not require the addition of chemicals.

Pressure Filtration

Pressure filtration involves pumping the water through filter media designed to filter out any oxidized iron and manganese from the water. Prior to the filters, a chemical oxidant, such as chlorine or potassium permanganate is added to the water to oxidize iron and manganese to a filterable form. There are several media available, including manganese

greensand and proprietary synthetic media that work by adsorbing the oxidized iron and manganese.

An alternative to adsorption type media is biologically activated media. Naturally occurring bacteria is used to catalyze the oxidation of iron and manganese. The media used in these filters is sand coated with a specific biofilm that will react with the iron and manganese. Since the biofilm is naturally occurring, the media does not need to be regenerated.

Membrane Filtration

Membranes separate particles from water using a simple sieving process. The pore openings of various available membrane media determine which application the membranes will be used for. In drinking water treatment, ultrafiltration and microfiltration membranes are commonly used.

Membrane filtration can either be a pressure-driven or vacuum-driven process. The way in which a membrane separates solids will also define the type of membrane process. Raw water can flow inside the membrane media and be forced out via pressure for what is known as inside-out process. Target particles are trapped on the inside of the membrane. The outside-in process has the water flow from the outside of the membrane media forcing the water into the hollow structures. The particles are trapped on the outside of the membrane.

Depending on the iron and manganese levels, an initial clarification step may be necessary prior to membrane filtration for best removal results. This will increase the costs of treating the water with membrane filtration.

Package Treatment

Package treatment is the combination of all the features of conventional filtration, flocculation, and sedimentation. Typically these units will consist of an upflow clarifier, in which the processes of flocculation and sedimentation take place, and a downflow multi-media sand filter. Coagulant chemicals are used in conventional filtration. There are several manufacturers of these types of treatment systems. Pressure filtration processes are typically more cost effective than package treatment processes for iron and manganese removal.

Water System Operations & Maintenance

The proposed water supply, treatment, and distribution system will require mechanisms for administration and operation and maintenance (O&M) of the facilities. A Water Board or Water Commission will be required, as well as a Water Department. The Water Department will require a separate budget and adequate staffing to operate and maintain the well supply, treatment plant, and distribution system. The Town should consider establishing an Enterprise Fund for O&M of the water system, so that revenue generated returns to the system to pay for the costs of current and future upkeep.

The costs for annual O&M of the water system should be distributed among the users of the system, based on the ratio of individual flow to total average daily flow. O&M estimates include chemicals, energy/power, heat, general maintenance, and treatment plant residuals handling. Additional costs will include staffing for maintaining the plant and distribution system. DEP requires licensed operators for both the treatment and distribution systems, and the staffing requirements are dependant on the facility classification. Assuming that the well water would need to be treated for iron and manganese removal, the treatment facility will be classified as a 1T or 2T facility. A 2T classification will require the treatment facility to be staffed a minimum of four hours per day when the facility is in operation. The Primary Operator must work at least one shift per week. The distribution system would likely be classified as 2D. Classification of the

distribution system is dependent on the population served. Administration and management of the collection system may require 2 to 3 more staff persons, provided by the DPW, to operate and maintain the new well pump station, water storage tank, and water main lines.

Table 3-3 summarizes the annual residential water bills for communities in the Westport area based on information from a 2004 Massachusetts Water Rate Survey and a MWRA Advisory Board Annual Water and Sewer Rate Survey, dated November 2005. These costs are based on a household consumption of 120 hundred cubic feet (90,000 gallons) per year.

The Town should consider implementing a rate structure that includes a basic service charge and a volumetric charge. The basic service charge should cover the Town's costs of service that are not affected by the customer's level of usage. This may include the costs of meter reading, billing customers and customer service, and supplying, installing, and maintaining meter service. The second charge would be based on the volume of water used by the consumer and would cover costs associated with water supply, treatment, and distribution. These costs should be spread equitably among the customers, so that those using more water would pay a larger portion of the overall cost.

**Table 3-3
Annual Residential Water Costs**

Community	Annual Cost
Acushnet	\$254
Dartmouth	\$259
Dighton Water District	\$193
Fall River	\$139
Freetown	\$318
New Bedford	\$157
Seekonk	\$262
Somerset	\$218
Swansea	\$194
Average:	\$221

Regulatory Requirements

MEPA Review

Wastewater

The primary goal of the Massachusetts Environmental Policy Act (MEPA) review is to facilitate environmental planning and mitigate impacts on the environment from the proposed project. MEPA review is required if a project triggers the MEPA review thresholds. Depending upon potential environmental impacts, an Environmental Notification Form (ENF) and an Environmental Impact Report (EIR) may be required. For wastewater projects, the mandatory ENF/EIR review thresholds are as follows:

- Construction of a new wastewater treatment facility with a capacity of 2.5 million gallons per day (MGD) or more.
- Interbasin transfer of 1 MGD or more.
- Construction of more than 10 miles of new sewer main.
- New sewer service across municipal boundaries.

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- New discharge or expansion of discharge into an Outstanding Resource Water.
- New capacity or expansion of treatment, storage, combustion, or disposal of 150 tons per day or more of sewage sludge, ash, grit, screenings, or other sewage residuals.

Central Village project is not expected to trigger a mandatory EIR. However, it is expected that the project will require an ENF. An ENF is required for any project that discharges more than 50,000 gpd of treated wastewater to groundwater in areas not designated as public water supply protection areas. In the event that a public water supply well is installed in the vicinity of Central Village, a discharge of 10,000 gpd or more could trigger an ENF. Other MEPA review may be required by the Secretary after review of the ENF.

Water

Depending upon potential environmental impacts, an Environmental Notification Form (ENF) and an Environmental Impact Report (EIR) may be required. For water projects, the mandatory ENF/EIR review thresholds are as follows:

- New withdrawal from a groundwater source of 1.5 million gallons per day (MGD) or more
- New withdrawal from a surface water source of 2.5 MGD or more
- Interbasin transfer of water of 1.0 MGD or more
- Construction of more than 10 miles of new water main.
- New water service to a municipality or water district across a municipal boundary through new or existing pipelines

Central Village project is not expected to trigger a mandatory EIR. However, it is expected that the project will require an ENF in the event a central public water supply is

developed. An ENF is required for any project with a new withdrawal of 100,000 gpd. Other MEPA review may be required by the Secretary after review of the ENF.

Other State and Local Review

DEP review of the proposed wastewater discharge design will also be required, separate from MEPA review, in order to secure a groundwater discharge permit for the localized wastewater treatment system. Another potential regulatory review may include State DEP and local Conservation Commission review for wetland impacts.

Wastewater

The following Bureau of Resource Protection (BRP) permits will be required if a localized system is the chosen wastewater alternative:

- BRP WP 06 or 08 Minor/major groundwater discharge permit
- BRP WP 06 or 08 Minor/major annual compliance fee
- BRP WP 68 Treatment works plan approval
- BRP WP 17 or 18 Minor/major sewer connection

Depending upon individual site conditions, a wetlands notice of intent (NOI) may also be required.

Water

In order to develop a new community public water supply well, several state permits will be required, including:

- Department of Environmental Protection (DEP) BRP WS 17 – Approval to Site a Source Greater than 70 gpm
- DEP BRP WS 19 – Approval of a Pumping Test Report for source 70 gpm or Greater
- DEP BRP WS 20 – Approval to Construct a Source Greater than 70 gpm
- DEP BRP WM 03- Water Management Act Permit
- DEP BRP WS 21 – Approval to Conduct a Pilot Study

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- DEP BRP WS 22 – Approval of a Pilot Study Report
- DEP BRP WS 23 – Approval to Construct a Facility to Treat Less than 1.0 MGD

Summary

Wastewater

In order for Central Village to increase the density of commercial and mixed use development, some sort of decentralized wastewater treatment will be necessary to accommodate increased flows and to protect groundwater and natural resources. In the event that none of the identified properties can handle the flows discussed in the medium and higher density buildout scenarios, the Committee may want to examine the possibility of having multiple disposal sites and/or siting the treatment plant and disposal field(s) outside Central Village.

Continued use of individual septic systems would be a “no action” alternative for Central Village. Use of septic systems would limit the potential density of growth, as well as present an increased risk to groundwater supplies from improperly functioning septic systems.

A localized wastewater treatment plant or use of multiple I/A systems would process the wastewater to a higher standard than septic systems, while still recharging groundwater. If I/A systems are used, individual property owners would be responsible for operation and maintenance of their wastewater treatment units. This may result in higher capital and operating costs to property owners. Individual systems would be evaluated on their regulatory compliance within each lot, with some lots being able to develop at a higher density than others due to better soil conditions. The permitting process for individual I/A systems would not look at the “big picture” for Central Village as a whole. Use of I/A systems is advantageous in that each lot can develop independently and the Town does not need to increase staffing for oversight of the treatment systems.

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If a localized system is used, the Town or a Sewer District would be responsible for operations, maintenance, and reporting. The Town would also have more control over the expansion of properties in Central Village in that they would control the wastewater flows and they could look at the impact to the entire Village from increases in development. The users of the system would all pay a percentage of the total cost to run the system, proportional to their wastewater flow.

Water

In order for Central Village to grow to meet the Committee's vision, some sort of public water supply will also be necessary to accommodate increased demand. The two options presented above include exploration for sand and gravel or bedrock wells. Considering the hydrogeologic conditions present within the recommended study area, a gravel well does not seem feasible unless the Committee agrees to expand the search area to the east side of the East Branch of the Westport River. The other alternative is a bedrock well or series of bedrock wells to supply the Town with the projected demand. Bedrock well yields in this area have demonstrated limited capacity, but additional investigations may prove to locate a well with the capacity to supply the demand.

In the event that no sites can be identified to meet the demands discussed in the medium and higher density buildout scenarios, the Committee may want to examine the possibility of an interconnection with Fall River.

Continued use of individual wells would be a "no action" alternative for Central Village. Use of individual wells would limit the potential density of growth, as well as present an increased risk that groundwater supplies would dry up and/or become contaminated from nearby Title 5 septic systems.

CHAPTER 4 – WASTEWATER AND WATER ALTERNATIVES

Introduction

Chapters 2 and 3 discussed the buildout scenarios used during this study and the options available for provision of water and wastewater services in Central Village. This chapter will discuss the methodology for estimating current and future water and wastewater flows.

Wastewater Needs

To create a planning level estimate of wastewater flows, the buildout alternatives and assumptions discussed in Chapter 2 were used. Title 5 of the State Sanitary Code was referenced to develop wastewater estimates for current development and industry standards were used to supplement Title 5 estimates for future development. Flows for single family homes were estimated as 330 gpd/unit, while flows for multi-family homes were estimates as 150 gpd/unit. Commercial flows translate to 75 gpd/1000 sf. Specific assumptions are summarized in **Table 4-1**. Wastewater flows are summarized in **Table 4-2**. The flow calculation worksheets are included in **Appendix C**.

**Table 4-1
Development Scenario Assumptions**

Scenario	Assumptions
Current	<ul style="list-style-type: none"> • Existing development and flows unchanged.
Current & Growth	<ul style="list-style-type: none"> • Existing development and flows unchanged. • Commercial flow of 450 gpd per acre for undeveloped properties.
Rezoned Option 1	<ul style="list-style-type: none"> • Existing commercial property would be built-out to accommodate multi-level, mixed use (redevelopment). • Existing single family properties will be built-out to single family use (increased density). • Commercial/office wastewater flows of 450 gpd per acre. • Multi-family wastewater flows of 600 gpd per acre (4 units). • Single family wastewater flows of 660 gpd per acre (2 units).
Rezoned Option 2	<ul style="list-style-type: none"> • Existing commercial property would be built-out to accommodate multi-level, mixed use (redevelopment). • Existing single family properties will be built-out to single family use (increased density). • Commercial/office wastewater flows of 900 gpd per acre. • Multi-family wastewater flows of 1,200 gpd per acre (8 units). • Single family wastewater flows of 1,320 gpd per acre (4 units).

**Table 4-2
Wastewater Flow Estimates**

Scenario	Wastewater Needs (gpd)
Current	42,250
Current & Growth	82,372
Rezoned Option 1	238,300
Rezoned Option 2	481,800

* gpd = Gallons per day

Wastewater Effluent Disposal

An estimate of wastewater flows under the four different scenarios was presented above. For the purpose of this discussion, we will assume we are designing for the Rezoned Option 1 buildout alternative. Therefore, the design must accommodate approximately 250,000 gpd. Using an application rate of 2 gallon per day per square foot, the required effective disposal area will be approximately 3 acres. The area requirements can be reduced by up to one-half by the use of infiltration chambers; however, separation to groundwater and the size of the groundwater mound must be taken into consideration. Utilization of a property for subsurface disposal does not mean the site cannot be used for another purpose; playing fields, parks, and parking lots can all be constructed over wastewater effluent disposal fields.

Also previously discussed in Chapter 1, the depth to bedrock in the study area is approximately 26 feet. This does not allow for a very deep substrata to absorb and filter discharged effluent. Septic data in the project area shows groundwater depths between 3 feet and 7 feet. Undeveloped properties on the western side of Main Road were not considered as potential treated wastewater effluent sites since this area is topographically lower than land on the eastern side of Main Road. Several undeveloped properties and two developed properties were identified as potential effluent disposal sites. The two

developed sites are Lee’s Market and the Town Hall property; the potential to locate a disposal field under parking areas exists at these locations. As the other locations are undeveloped, use of part of the property for wastewater disposal can be incorporated into future development plans.

The locations of these potential sites are shown on **Figure 4-1**. Map and lot number, ownership, and acreage are summarized in **Table 4-3**. Further investigation, soils testing, and groundwater modeling will be required to determine the suitability and potential disposal capacity of these sites. In addition, if the preferred location is privately owned, negotiations with the current owner for purchase/use of the property will be required.

Table 4-3
Summary of Potential Effluent Disposal Sites

Map	Lot	Owner	Developed/ Undeveloped	Approx. Acres
54	14/18	Town of Westport	U	8
54	23A	Town of Westport	U	2
54	13	Town of Westport Town Hall	D	2
54	10, 8M, 11, 12	Lee’s Market	D	25
54	8K, 8F, 8J, 8H, 8L, 8	Pasquareillo (aka Village Commons)	U	5-6
54	17, 26, 27, 28	Candeias	U	16.5
54	32B	Michaels	U	16.5
77	12	Christ	U	30
77	17	Carter	U	3.5

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Figure 4-1

Water Estimates

The water use estimates under each of the four buildout alternatives were developed from the estimated wastewater needs. Typically, Title 5 estimates represent 200 percent of average day potable water use. In addition, water systems typically experience 20% consumptive water loss and 10% “unaccounted for” water. Using these assumptions, the water needs estimates were calculated as follows:

$$\text{Wastewater flow}/(2*0.8*0.9) = \text{Water flow}$$

Table 4-4 summarizes the water needs under the four buildout scenarios.

**Table 4-4
Water Flow Estimates**

Scenario	Water Needs (gpd adf)
Current	29,300
Current & Growth	57,200
Rezoned Option 1	165,486
Rezoned Option 2	334,500

* adf = average daily flow

CHAPTER 5 – ORGANIZATIONAL MODEL

Introduction

Implementation of water and sewer infrastructure will require changes in Westport’s organizational structure to provide operations and management for the new system(s). This section will review Westport’s existing organizational structure and zoning, proposed changes to zoning to promote the Committee’s goals, and discuss the different management options available to the Town.

Existing Political/Organizational Structure

Westport’s current political/organizational structure is one of Town Government. A five-member elected Board of Selectmen govern the Town with an appointed Town Administrator managing the day-to-day activities. Decisions affecting the Town budgets and bylaws are voted on at Town Meeting. Annual Town meeting is held in the spring of each year.

There are five elected members to the Planning Board, as well as a five member appointed Zoning Board of Appeals (ZBA). The ZBA also has two “Associate” members. Members of the Housing Authority and Board of Health are also elected. The Town has a Building Department and full and part-time building/electrical/plumbing inspectors. The Highway Department manages town roads. The Town does not have a Water Department, Sewer Department, or Department of Public Works.

The Town’s 2004 Master Plan and the work completed by the Designing the Village Committee were prepared by groups of volunteers. These two plans, as well as the application to the State’s Smart Growth Grant Program, has laid the groundwork for this project.

Alternatives For Management of Water and Wastewater Systems

Since Westport does not have an existing public water or wastewater utility, formation of some entity to oversee operations and management of the new systems will be necessary. There are many options available as discussed below. **Table 5-1** summarizes the functions of each option discussed.

- Board of Selectmen (BOS) oversight - In the simplest model, the BOS can act as Water and Sewer Commissioners. The advantage is there is no need to create a separate board or hold separate meetings. The disadvantages might be additional work for BOS and the lack of a higher entity to review appeals. In addition to the BOS overseeing the decisions and management of the system, establishing a local utility department with additional staff to conduct day-to-day operations would be required.
- Water and Sewer Commission (Commission) – The Commission is an elected body that oversees management of the system. They would hold Commission meetings, establish rates, and make decisions related to the operations and long-term management of the system. Customers wishing to appeal a decision of the Commissioners would be able to go to the BOS. Establishing a local utility department with additional staff to conduct day-to-day operations would be required.
- DPW oversight - Management of the new water and sewer systems could be delegated to a newly created DPW, formed by the expansion of the Highway Department. This would require that new staff be hired under the purview of the DPW Director. The advantage lies in the expansion of an existing department rather than the creation of a new department, such as a Water and Sewer Department.
- Water and Sewer Department - A new Water and Sewer Department would be responsible for the day-to-day management of the system. They would report directly to the Commissioners, the DPW Director, or the BOS. The advantage

of a Water and Sewer Department is having full-time, town-employed staff available to address any complaints or problems. The disadvantage is the cost of hiring and managing new municipal staff.

- Water and Sewer District – Creation of a Water and Sewer District would effectively take the responsibility of water and sewer systems out of the Town’s hands and give it to a District Board of Directors. The “District” would be made up of the properties served by the water and sewer systems. The advantage is limiting the Town’s responsibility to ongoing O&M, once established. The disadvantage is the District can make decisions regarding the system without Town-wide approval. Creation of a Water and Sewer District would require Town Meeting vote and special legislation.
- Privatization - Whether the Town maintains responsibility for the system or allows a District to be established, privatization of the O&M of the system is another option. A long-term contract would be signed with a firm capable of running the system and responding to problems. Advantages to this approach are less responsibility to the Town, no need to hire new Town employees, and highly experienced, staff running the systems.

**Table 5-1
Management Options**

Structure/Option	Oversight	Management	Operations
BOS as Water & Sewer Commissioners	X	X	
Water & Sewer Commission	X	X	
Water & Sewer Department		X	X
DPW staff			X
Water & Sewer District	X	X	
Private O&M company			X

Changes to Zoning for Central Village

The area encompassing Central Village is currently zoned “Business.” This designation includes commercial as well as single and dual family residential. Multi-family residential is currently excluded. In order to re-zone Central Village to encourage mixed-use development, multi-family use must be allowed. The appearance of the Village and accessibility of the shops to pedestrians are also key components of the new Village design. Lot sizes, setbacks, and parking requirements will need to be re-evaluated to discourage strip development and encourage small shops and walkable areas. The Compact Village Concept includes the addition of sidestreets to the west and east of Main Road in order to link parking lots and provide access to the “back” of deep parcels. Subdivision of these parcels will require a decrease in allowable lot size. Institution of central or shared public parking will also require changes to current requirements.

Westport’s current zoning is summarized below, along with proposed changes to zoning to accommodate denser development in Central Village. The proposed zoning changes will support the previously stated goals of Central Village concept and are in agreement

with Village Zoning and Smart Growth principles applied in other communities. **Table 5-2** summarizes the proposed changes. These are suggested changes and will still need to be reviewed and approved by the Town.

Transfer of Development Rights

Transfer of Development Rights (TDR) is a mechanism to allow municipalities to increase development density in specific areas without changing the overall build-out potential of the Town. TDR is used to encourage redevelopment or infill in town centers, to preserve open space, natural resources, or rural character outside of town centers, and to provide incentives for clustered development. Using TDR can help concentrate infrastructure, reduce traffic, reduce pollution, preserve resource-based industries, and promote revitalization. The Committee has discussed utilizing TDR as part of Central Village project.

To implement a TDR program, a “sending” area and a “receiving” area are generally designated. The sending area is the area where preservation of open space is desired; the receiving area is the area where denser development is desired. Essentially, the landowner in the sending area is selling the right to ever develop the property. Therefore, the method of assessing a fair “price” must be determined. In the simplest case, it is based on existing zoning and is a one-for-one swap. For example, zoning in Westport is 60,000 sf. For each 60,000 sf of land that sells development rights, one additional “unit” (additional square footage) will be allowed in Central Village. Depending upon specific circumstances, the agreement may be more advantageous for one or the other party to serve as an incentive. For example, in an urban area that has trouble attracting developers, a bonus may be offered to the receiving party. Likewise, in an area where open land may be especially attractive to developers (e.g., waterfront property) an incentive may be offered to the sending party.

Table 5-2
Proposed Changes to Zoning Regulations

Existing Zoning (Business)		Proposed Zoning (Mixed-Use)	
<i>Setbacks (min. ft.) (Article 7):</i>		<i>Setbacks (min. ft.) (Article 7):</i>	
Front	25	Front	10
Side	10	Side	10
Back	6 or 25 from street	Back	6 or 25 from street
Wetland Buffer	80	Wetland Buffer	80
<i>Frontage (min. ft.) (Article 7):</i>		<i>Frontage (min. ft.) (Article 7):</i>	
Business/SFR	150	Business/SFR	100
Two+ family (based on number of units)	200+	Two+ family (based on number of units)	100
<i>Lot size (min. sf) (Article 7):</i>		<i>Lot size (min. sf) (Article 7):</i>	
Business/SFR	60,000	Business/SFR	20,000
Two+ family (based on number of units)	80,000+	Two+ family (based on number of units)	40,000+
<i>Lot Coverage (max. %) (Article 7):</i>		<i>Lot Coverage (max. %) (Article 7):</i>	
Res./Agr.	50%	Res./Agr.	75%
Commercial	50%	Commercial	100% (includes parking)
<i>Height (min. ft.) (Article 7):</i>	40 feet	<i>Height (min. ft.) (Article 7):</i>	40

**Table 5-2 (continued)
Proposed Changes to Zoning Regulations**

<i>Parking (Article 5):</i>		<i>Parking (Article 5):</i>	
Residential	1.5 per unit	Residential	1 per 1 BR unit or 2 per unit
Retail/professional/ Municipal	1 per 200 sf	Retail/professional/ Municipal	Municipal or street parking allowed
Restaurants	1 per 3 seats and 1 per 2 employees	Restaurants	Municipal or street parking allowed
Salon/Barber shop	3 per operator	Salon/Barber shop	Municipal or street parking allowed
Other	1.5 per 1,000 sf and 1 per 2 employees	Other	Municipal or street parking allowed
<i>Other:</i>		<i>Other:</i>	
Table of Use Regulations	See table	Table of Use Regulations	Revise allowed uses
Article 3	Establishment of Districts	Article 3	Add legal description of CV
Article 4	Use regulations	Article 4	Add section for CV
Article 10	Phasing requirements	Article 10	Exclude CV
Article 14	Drive-thrus allowed with Special Permit	Article 14	Drive-thrus NOT allowed in CV

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Development rights can be gauged in other ways as well – square footage, sewer capacity, or appraisal. In most cases, the market will influence the mechanism for “trade” and the final value of the rights being transferred.

In order for Westport to implement TDR for Central Village, a TDR bylaw, and passage of the bylaw at Town Meeting, will be required. The TDR bylaw may, or may not, target specific sending and receiving areas.

CHAPTER 6 – FINANCING OPTIONS

Betterments

The regulations governing the assessment of **sewer betterments** are the Massachusetts General Laws (MGL) **Chapter 83, “Sewers, Drains and Sidewalks.”** Assessments are made by a fixed uniform rate or a rate based upon a uniform unit method as outlined in Chapter 83, Section 15, which states:

“A fixed rate shall be...according to the frontage of such land on any way in which a sewer is constructed, or according to the area of such land within a fixed depth from such way,...or according to both such frontage and area... A uniform unit method shall be based upon sewerage construction costs divided among the total number of existing and potential sewer units to be served,...”

Chapter 83, Section 15 goes on to define “sewer units” as follows:

“Each sewer unit shall be equal to a single family residence. Potential sewer units shall be calculated on the basis of zoning then in effect. Existing and potential multifamily, commercial, industrial and semi-public uses shall be converted into sewer units on the basis of residential equivalents.”

The regulations governing the assessment of **water betterments** are the Massachusetts General Laws (MGL) **Chapter 40, “Powers and Duties of Cities and Towns,” under two subsections titled “Public Water Supply” and “Collection of Water Rates.”** Assessments are made by a rate based upon a uniform unit method as outlined in Chapter 40, Section 42 K, which states:

“... The Water Commissioners may assess betterments in accordance with the provisions of Chapter 80 for the construction and connection of water mains and services by a uniform unit method which shall be based upon the common main construction costs divided among the total number of existing and potential water units to be served after having allocated the Town contribution, if any, and after

having proportioned the cost of special (specific unit) and general benefit facilities. Each water unit shall be equal to a single family residence. Potential water units shall be calculated on the basis of zoning in effect at the date of the assessment. Existing and potentially multi-family, commercial, industrial, and semi-public uses shall be converted into water units on the basis of residential equivalents.”

Some of the issues relative to betterment assessments are:

- Consideration of the preferred method of making Betterment Assessments including 1) sewer/water units; 2) property frontage; 3) property area; or 4) a combination of methods 2 and 3
- Cost allocation strategies (i.e. a breakdown of the percentages of construction costs to be repaid through betterments and through general taxation)
- The interest rate to be charged on betterment assessments that are to be apportioned (either 5 percent interest or up to 2 percent more than the interest rate the Town is paying on project bonding)
- The timing of the betterment assessment, such that a portion of the betterment is due prior to project completion (approved for use) for cash flow purposes
- Options to defer the betterment assessment payment for elderly residents who meet certain income criteria and cannot afford to pay the betterment assessment

With regard to the assessment of betterments, the Uniform Unit Method of assessment is preferred. This method provides for assessments in proportion to the total number of existing and potential sewer units to be served, with each unit equal to a single-family residence. Multi-family, commercial and industrial uses are converted to sewer units on the basis of residential equivalents. While the “units” for municipal properties are

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calculated and used in the analysis, municipal and non-profit properties are not generally assessed (i.e., the Town does not charge themselves).

As Central Village project primarily benefits properties within the Village area, it is assumed that a portion of the project cost will be applied to the general tax base, to account for the portion of the project that serves the Town Hall, Police, Fire, DPW, and potentially a new Public Safety Complex.

Whatever option the Town chooses, if the Town refers to both Chapter 80 and 83 of the MGL in its bylaws, then the following section of Chapter 80, Section 1, applies to both water and sewer projects:

“...no such assessment shall exceed the amount of such adjudged benefit or advantage.”

In other words, the Town is allowed to assess amounts that equal the determined value of the improvement (i.e., the increase in property value), but no more. For example, the Town cannot undertake a project that results in a \$20,000 assessment per property unless that the increased value of the property due to the project is at least \$20,000.

State law allows the Town to adopt an interest rate of *up to 2%* over their bond rate or a *flat 5%* for betterments paid over 20 years. This project may not qualify for funding under the Clean Water State Revolving Fund (SRF), since it is an economic development based project. Therefore, the Town will have to separately bond the project. In that event, the Town is best advised to choose an interest rate between 0% and 2% to charge above the rate they are able to bond the project at.

A betterment assessment becomes due when the Assessment Order is filed at the Registry of Deeds. This is usually done upon the completion of the collection/distribution and treatment facility construction and final approval for use. The Town can assess a portion of the cost before completion of the project as an “estimated assessment” under Chapter

83, Section 24 of the General Laws. Some communities use this method of early or “up front” payments when project financing cash flow is an issue. Up to 50% of the project costs can be collected through an “estimated assessment.” Under Massachusetts General Law, the assessment of betterments should be completed in a “reasonable time period” after the close out of the construction project. While this has not been specifically defined, most communities issue betterments with tax bills generally within 6 to 12 months of project completion.

A mechanism to allow elderly property owners with limited income to defer payment of the betterment is often considered. The one method of accomplishing this is to pass a town meeting article accepting the provisions of Chapter 80, Section 13B of the Massachusetts General Laws. While the actual sewer assessments will be completed under Chapter 83, Section 15, the Town’s betterment assessment bylaw needs to include references to specific sections of Chapter 80, “Betterments.” Most, if not all of the Towns in the Commonwealth that assess sewer betterments have adopted Section 13B to allow deferral for elderly homeowners who meet specific income requirements. A similar deferral is available for water betterments. It should be noted that the above-described deferrals are only a postponement of the betterment payment, and the Town will eventually collect all of the funds, with interest, upon sale of the property or the demise of the qualifying property owner(s).

Tax Increment Financing

One of the long-term goals of this project is to increase the density of commercial properties in Central Village, thereby increasing the commercial tax base. Since the businesses will most likely pay the brunt of the costs for installation of the water and wastewater systems, the Town may need to offer a short-term tax incentive in order to attract development. One mechanism to accomplish this is to create a Tax Increment Financing (TIF) District. Properties within the TIF will pay for the costs of infrastructure

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improvements via a limited-time tax abatement program. Once the project costs are paid off, the additional tax revenue from the new businesses will revert to the Town.

User Fees

The Town will need to establish an equitable system of user charges wherein users are assessed the entire cost of operating and maintaining the collection/distribution and treatment system. In Massachusetts, such user charge systems are established pursuant to MGL Chapter 83, Section 16.

If Central Village is connected to public water supply, then water meter readings should be used as a basis for assessing sewer user charges. If the properties remain on private wells, some other way of estimating flow contribution will need to be developed. (e.g., a restaurant will have more flow than a clothing store). The governing board for the sewer system would set the rate per 1000 gallons, (or rate per 100 cubic feet) for sewer service annually. The rate, and revenues collected should be set at a level sufficient to cover all costs of labor, materials, fuel, maintenance, influent/effluent quality monitoring, and all other costs associated with operation and maintenance of the collection and treatment system.

Water rates would be based upon water meter readings, with a similar rate structure. The Town should consider implementing a rate structure that includes a basic service charge and a volumetric charge. The basic service charge should cover the Town's costs of service that are not affected by the customer's level of usage, for example cost of meter reading, billing customers and customer service, and supplying, installing and maintaining meter service. The second charge would be based on the volume of water used by the consumer and would cover costs, associated with the water supply, treatment and distribution. Every user whose property is connected to the public water, excluding municipal facilities would pay an annual charge in proportion to the volume of water each contributed to the system. The Town might consider a graduated system that charges

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more proportionally over a certain amount, in order to encourage water conservation. If possible, the rate should be so structured to encourage water conservation by both residential and commercial/industrial users.

Operations and Maintenance (O&M) - Wastewater

The proposed wastewater collection, treatment and disposal system require mechanisms for administration, operation and maintenance of the facilities. A Sewer Board or Sewer Commission will be required and will need a separate budget and adequate staffing to operate and maintain the localized treatment and collection system.

The costs for annual O&M of the wastewater system should be distributed among the users of the system, based on the ratio of individual flow to total average daily flow. O&M estimates include power usage, chemical usage, sludge hauling, and plant staffing.

Other operational requirements, such as aesthetics and odor control should be part of the regular O&M plan for the facility. Screening of the treatment plant site from nearby development and the street should be considered. Adequate housekeeping and care of the disposal field(s) is also recommended.

Operations and Maintenance (O&M) - Water

The proposed water supply, distribution and treatment system will require mechanisms for administration, operation and maintenance of the facilities. A Water Board or Water Commission will be required and will need a separate budget and adequate staffing to operate and maintain the localized treatment and collection system.

The costs for annual O&M of the water system should be distributed among the users of the system, based on the ratio of individual flow to total average daily flow. O&M estimates include power usage, chemical usage, treatment plant residuals hauling, and plant and distribution system staffing.

Legal and Institutional Mechanisms

Should the Town vote to proceed with the implementation of a localized sewer program, additional institutional procedures and programs to operate and maintain the completed infrastructure will be required. Formation of a separate Board of Sewer Commissioners, or assignment of the Sewer Commissioner duties to an existing entity within the Town (e.g., the Board of Selectmen) is recommended to oversee the system. An alternative would be to set up a separate Sewer District. Once established, the Sewer District would operate as a separate entity and be responsible for the sewer system. If I/A and/or septic system are the chosen alternative, no additional institutional controls will be required. The Town should develop an On-Site Systems Management Plan (OSMP) to aid the Board of Health with management of individual I/A or septic systems.

Growth Management

A management plan to deal with implementation of the system and potential growth issues should be considered by the Town. Growth can occur through infill, subdivision and build-out of larger parcels, and redevelopment (e.g., “tear downs”) of existing parcels. All of these methods of growth may have an impact on the proposed sewer system. New Bylaws and/or Rules and Regulations will need to be developed by the Planning Board, Board of Health, or other Town entity. Bylaws require Town Meeting Approval. The overall goals of the management plan should:

- Quantify potential growth
- Balance growth management with wastewater planning
- Identify and preserve neighborhood values and character

A vision for development of Central Village already exists. Clearly, wastewater and water use estimates will be based upon development potential. In order to determine buildout scenarios, items to be defined in the Draft Village Zoning By-law include:

- Lot coverage limitations

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- Setback dimensions
- Height limitation for buildings
- Parking requirements
- Allowable uses and percentage of each use within the Village
- Open space requirements

A copy of an example Village Zoning Bylaw developed during this study is included in Appendix C. This document requires more refinement and input from Town officials before it is ready to be presented at Town Meeting.

CHAPTER 7 – OBSTACLES

Introduction

Development of a vision for Central Village is only the first step in the process of redesigning this part of Westport into the cultural, economic, and political center of town. In order for the Village to grow – and especially to grow in the desired direction – broadbased support must be present to overcome a variety of obstacles facing potential development. Some of these obstacles are discussed below.

Regulatory/Political

Regulations related to permitting of new drinking water sources or new groundwater discharges may create obstacles to the growth of Central Village. In addition, the MEPA process and approval of the project by DEP will be required prior to the construction of any new infrastructure. Politically, there may be anti-growth groups opposed to the project or other special interest groups that see the growth of Central Village as detrimental to their agenda.

Affordability

One of the key elements to a development plan is affordability. Westport, like many towns in the Commonwealth, has a number of competing needs, like schools, staffing, health care benefits, and emergency services that have resulted in increases to town budgets in recent years. As a result, most residents are paying more in real estate taxes to cover budget needs. Implementation of a sewer and/or water system would entail levying of betterments on individual property owners, as well as include an increase in the general tax rate to account for the “general benefit” provided by the system(s). These increased payments – either through taxes or through assessments - must be of a magnitude that is affordable to Westport residents.

Physical Constraints

Development of Central Village in accordance with the recommendations of the Master Plan is dependent upon the level of service provided and potentially, physical constraints in the Village itself. Some of the issues that have been identified are:

- For any level of growth, reliance on conventional Title 5 septic systems may not be appropriate for Central Village. Setbacks of septic systems from drinking water wells, high groundwater levels, and poor soil permeability all limit the installation of new septic systems. Increased density may result in additional treatment of wastewater (as presently found at the over 55 development off Main Road) or mounded systems to protect groundwater sources.
- Current information regarding groundwater supplies indicates that those supplies may be limited. At the very least, the potential for new water sources from gravel pack wells (i.e., “shallow” wells) is limited. Additional investigations would have to be conducted to determine the volume of water available from bedrock (i.e., “deep”) wells. In order to support any significant growth, Westport may need to purchase water from other municipalities or develop another water source outside of Central Village.
- The use of I/A systems is not allowed for new construction in locations where existing conditions do not meet Title 5 standards. Much of the property to the west of Main Road contains wetland areas. Implementation of I/A systems will not enable a “undevelopable” property to become “developable.”
- Due to high groundwater and poor soil permeability, there are limited locations that could accept the volume of wastewater discharge estimated for the medium or higher density development. If localized wastewater collection, treatment and disposal is pursued, it may be necessary to have multiple disposal locations or to look at water reuse options in conjunction with new development.

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- The current layout of Main Road will not accommodate significant increases to traffic density. The proposed plan to build a bypass for through traffic is recommended.

Public Support

The proposed project will result in increased costs to the taxpayers of Westport if implemented. On the surface, the project appears to benefit a select area of Westport, however, the long term benefits of increasing commercial density and affordable housing will be felt by the town as a whole. Passage of a new by-law will require majority approval at Town Meeting, as will appropriation for funds for the project(s) and, if chosen as a funding mechanism, formation of a TIF. For all these reasons, public support is a key element to the success of this project. Opposition to the project may be based on financial concerns or concerns about growth, among other things. It is essential that the Town conduct an active public outreach program if the project goes forward.

Limited public outreach was conducted as part of this project. Two workshops were held with Town officials and Committee members to discuss the proposed recommendations. Presentation of the project findings and recommendations were made at a televised Board of Selectmen meeting. Comments from the public were addressed at that time. Copies of the workshop and public presentations are included in **Appendix D**.

CHAPTER 8 – RECOMMENDATIONS

Current development within Central Village is sustainable under the use of Title 5 septic systems and individual drinking water wells. However, in order to attract and support growth to the Village, including increases in density and mixed-use development, alternatives to supply economically feasible and environmentally responsible infrastructure need to be examined. Recommendations based on the results of this study and discussions with Town officials and residents are presented below.

Wastewater Recommendations

Two decentralized wastewater alternatives are available to provide service to Central Village: multiple, privately-owned I/A systems or one localized wastewater treatment plant. Depending upon design criteria, both types of treatment system have the capacity to achieve high quality effluent standards. However, treatment costs can increase dramatically as effluent limits are reduced (e.g., low nutrient levels). Both alternatives provide more protection to groundwater supplies and natural resources than the present Title 5 septic systems.

Advantages to multiple, privately-owned I/A systems include minimal restrictions to property owners with respect to when and what kind of system is built. For systems with discharges less than 10,000 gpd, the local board of health has jurisdiction and there is no requirement for a groundwater discharge permit. For a property owner, this may result in a quicker permitting process. For the town, this adds a level of responsibility to ensure regular monitoring of the system to verify efficacy. The costs to own and operate the system would be borne by the property owner. One disadvantage might be that certain properties would not be able to develop to a desired density, due to existing soil and groundwater conditions. In addition, it is potentially more costly to design, build, permit, and maintain several small systems when compared to one larger system.

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Advantages to a localized system include a higher level of oversight and monitoring, as a groundwater discharge permit would be required. In addition, the controlling entity (i.e., the town or sewer district) would have control over future connections to the system. If the town chose to control the wastewater system, a new department and/or sewer board would need to be created, as well as Rules and Regulations to operate the system. If a sewer district was created, the town would have no responsibility for operation of the system, but would also not have any control over the system. The overall costs for a localized system would potentially be less than those for multiple individual systems.

It is recommended that Westport further investigate design and construction of a localized wastewater treatment facility to serve Central Village. Disposal of treated wastewater effluent in open sand (infiltration) beds or subsurface infiltration trenches is recommended to recharge groundwater. The town should consider acquisition of available land for siting of a wastewater treatment plant and disposal areas. It is also recommended that an enterprise fund be established to fund operation of the system.

Water Recommendations

Earlier studies and subsurface geology in Central Village indicate that a large water source in this area of Westport is unlikely. However, estimate water needs for the most likely growth alternative are less than 200,000 gpd. This volume of water might be easily provided via a series of deep, bedrock wells. These wells may be located either in or close to the Village.

Should localized wastewater treatment and disposal be implemented in Central Village, one threat to water quality is removed. However, as past events indicate, the shallow groundwater table is susceptible to both natural (e.g. radon) and manmade contamination. Development of a single water source for the village that can be carefully monitored

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would be the preferred alternative. In addition, non-health related water quality issues (i.e. iron) could be remedied and a better quality water provided to residents.

Further evaluation of potential water supply sites is recommended. This evaluation should extend as far east as the West Branch of the Westport River. The town should consider acquisition of available land for water supply development. Similar to the wastewater alternatives, the town may choose to establish a water department and oversight board or may choose to establish a water district. In either event, an enterprise fund to operate the water system is recommended.

Appendices

Appendix A – Assessor’s information and Limits of Study

Appendix B – Existing use and buildout scenarios

Appendix C - Wastewater Flow Estimates

Appendix D – Public Participation

Appendix E – Example Draft Zoning Bylaw