

Appendix F:
Town of Waitsfield Municipal Sewer Project of the Town of
Waitsfield: Buildout and Wastewater Flow Analysis



* TOWN OF WAITSFIELD

MUNICIPAL SEWER PROJECT FOR THE TOWN OF WAITSFIELD: BUILDOUT AND WASTEWATER FLOW ANALYSIS

This report is part of the workplan for the Municipal Planning Grant received in 1998 from the Department of Housing and Community Affairs for the Study of the Irasville Growth Center and the Village District. This study is to evaluate the potential buildout of Irasville and the Village District under existing zoning bylaws and proposed changes to the zoning bylaws and to examine the total wastewater flows for these districts. This analysis is a first step toward developing a specific implementation and financing plan for a municipal sewer system to serve the Village and Irasville.

PROJECT BACKGROUND

Planning for the future of the Irasville Commercial area and the Village District is crucial to the economy, character, and environmental quality of the Town of Waitsfield and the entire Mad River Valley. In Irasville, the Town of Waitsfield has made "...a deliberate attempt to concentrate high density commercial and residential development into a compact Village setting" (1993 Town Plan p. 89). However, the lack of safe and reliable sewage disposal for Irasville has prevented appropriate, compact development and contributes to serious water quality problems in the Mad River. The 1993 Town Plan speaks directly to the need for development planning and sewer installation:

While past land use policies have encouraged compact development in Irasville, these policies have been only partly successful. Exclusive reliance on on-site sewage disposal, the proximity to several well-head protection zones, and an automobile orientation of the Village has resulted in a fragmented development pattern... However, the relatively high quality of past development... presents an opportunity for creating a more cohesive, compact settlement pattern in the future (91).

The Town Plan goes on to cite sewerage and zoning changes as the most important steps for implementation of this goal for Irasville:

The development of central sewage and water systems are critical to the long term function of Irasville as a commercial growth center. The development of such a solution... should be scheduled to address the

Municipal Sewer Project: Buildout and Wastewater Flow Analysis
May 20, 1998

demand for commercial growth anticipated in the next eight to ten years (93).

Waitsfield Village is also facing similar problems with groundwater pollution. Very little additional growth can be accommodated without a municipal wastewater system in place.

REVISING THE ZONING BYLAWS

A revision of the Zoning Bylaws for Irasville and the Village is needed in order to reflect the planning goals for development in these areas. As stated in the Town Plan:

While the village's historic character is largely intact, much of the recent development, especially at the northern end, deviates from the traditional styles found elsewhere in the village. Historic district development standards are one available means of ensuring that future development in this area is designed in a way which is more compatible with the village's historic character. Also, current zoning standards might actually require that development occur in a manner inconsistent with traditional village patterns. Special consideration should be given to allowing development on small lots, reducing or eliminating setbacks, and reducing building coverage requirements (87).

These discrepancies in the zoning bylaws for the Irasville Commercial District are also recognized in the Town Plan:

In order for infill development to enhance the village character of Irasville, existing development criteria relating to setbacks, building coverage and other site standards may need to be revised (91).

As part of the overall workplan for this project, the zoning bylaws will be revised for the Village District and Irasville Commercial District to encourage redevelopment and future development that is consistent with the historic character of Waitsfield with the assumption of a municipal sewer system in place.

GOALS OF THE BUILDOUT ANALYSIS

1. Maximum buildout capacity for residential, commercial and mixed uses for current one acre minimum lot size zoning and for proposed half acre zoning and where this development can occur.
2. Total future wastewater flows for the Village Commercial District, the proposed Village Residential District and the Irasville Commercial District at one acre and half acre minimum zoning.

Municipal Sewer Project: Buildout and Wastewater Flow Analysis
May 20, 1998

3. Recommendations for bylaw amendments and subdivision regulations. Issues for further study.

METHODS AND ASSUMPTIONS

In conducting a buildout analysis of the Village and Irasville, the following assumptions were made:

1. Future development can only occur if the infrastructure is in place. A road network on either side of Route 100 is intended to provide a means to divert traffic off Route 100 and provide direction to where future residential and commercial development can occur. For both the one acre and half acre buildout scenarios, future road locations are mapped out and it is assumed for this analysis that they will be constructed at some time in the future in the general vicinity of where they are shown on the maps.
2. The lot layout illustrated by the two maps of one acre and half acre buildout is merely to estimate the possible number of lots given the infrastructure available. The maps do not indicate any prediction or recommendation that the lots be laid out in grid fashion.
3. The one acre buildout assumes the current zoning district uses allowed but assumes no commercial development along the two main future roads in the current Agricultural/Residential District. The half acre buildout assumes residential and commercial development according to the uses allowed in the proposed zoning Districts as depicted on the buildout map. The proposed Village Commercial District allows residential and commercial uses. The proposed Village Residential District that encompasses the rest of the Village District and part of the Agricultural/Residential District allows residential uses only.
4. Parcels of land located in the designated 100 year floodplain or at slopes greater than 25% will not be included as available land to be developed for residential or commercial purposes.
5. The Waitsfield Zoning Ordinance currently allows a maximum 25% building footprint coverage per lot. This figure will be used. The future footprints on the maps range in size from 1800 square feet to 5000 square feet and are drawn in for illustrative purposes only and are not indicative of what may actually be built either in the size or the placement of the building.
6. Development in Irasville will be assumed to be mixed use, 2-story minimum, commercial and residential. For calculating future square feet of space for buildout and flows, for a half acre lot, a 5000 square feet building (25% building coverage), multi use with residential second floor (8 bedrooms), retail or office first floor would be allowed, for a total of 10,000 square feet of space. Approximately 32 parking

which
one?
BEHIND
FLENER'S -
EAST SIDE
OF RT. 100

MAINTAIN
COUNT

Municipal Sewer Project: Buildout and Wastewater Flow Analysis
May 20, 1998

spaces under the current regulations would be required which would equal 5760 square feet of parking. At one acre minimum, these figures would be doubled.

7. For residential development 25% building coverage is allowed. However, it is unlikely that homes would be 10,000 or even 5,000 square feet. For calculating wastewater flows the figures are based on the number of bedrooms. The assumption will be three bedrooms and for calculating future square footage, 2,500 square feet will be used as an average for both one acre and half acre calculations.
8. For this analysis, all buildout and wastewater estimates will be overestimates rather than underestimates.
9. For existing square footage totals for residential, commercial, and mixed use development in the Village and in Irasville, the figures are rough estimates. Precise figures would require more time than is available.
10. Buildout for the Mad River Green Shopping Center is based on plans submitted by Brothers Building Company.

All these assumptions are depicted on the buildout maps.

RESULTS

The approximate number of acres within the two districts, and part of the Agricultural/Residential District is 630 acres. There are approximately 265 acres that are not available for development either because the property is located in the floodplain, the slopes may be too steep to be developed, or the infrastructure is not in place to access the property. Approximately 185 acres are currently developed and another 180 acres are available to develop. This 180 acres includes dividing up larger parcels of land and creating new lots along the future roadway network as depicted on the buildout maps. These two maps illustrate the assumptions listed in the previous section. They are representational only to see where development is most likely to occur. There is great flexibility for residential development if the future infrastructure is put in place. Most of the commercial development will occur in Irasville and most of the residential development will most likely occur in the Village District.

The following table shows the breakdown of developable land by one acre and half acre lot sizes and the available lots for residential and commercial development. These lots do not all represent one acre and half acre lots. In some cases the lots are larger because of the nature of the landscape or the logical division of the land.

Municipal Sewer Project: Buildout and Wastewater Flow Analysis
 May 20, 1998

TABLE 1
LOTS AVAILABLE TO DEVELOP ACCORDING TO LOT SIZE

MINIMUM LOT SIZE	TOTAL # OF LOTS	# OF LOTS DEVELOPED	# OF LOTS AVAILABLE TO DEVELOP	# OF LOTS AVAILABLE FOR RESIDENTIAL DEVELOPMENT	# OF LOTS FOR COMMERCIAL OR MIXED USE DEVELOPMENT
ONE ACRE MINIMUM	292 LOTS	162 LOTS	130 LOTS	95 LOTS +	35 LOTS = 130
HALF ACRE MINIMUM	64 incl. 354 LOTS	2 160 LOTS	64 increase 194 LOTS	115 151 LOTS +	7 42 LOTS = 49
			324	246 + 77	= 323

The next table illustrates the approximate square feet of residential and commercial use in both Irasville and the Village. These figures are very rough estimates based on the assumptions previously made and include the residences along Bridge Street to the intersection of East Warren and Joslin Hill Road. The average size of an existing residence is 2,500 square feet. The average size of an existing mixed use building and a commercial building is 5,000 square feet and 4,700 square feet respectively.

8
increase

TABLE 2
EXISTING SQUARE FEET OF RESIDENTIAL AND COMMERCIAL SPACE

EXISTING BUILDINGS	TOTAL GROSS SQUARE FEET OF BUILDING FOOTPRINTS	APPROXIMATE SQUARE FEET (INCLUDING ALL FLOORS)
TOTAL OF 88 RESIDENTIAL BUILDINGS	227,000	254,000
TOTAL OF 20 MIXED USE BUILDINGS	99,000	134,000
TOTAL OF 70 COMMERCIAL BUILDINGS	336,000	364,500

GRAND TOTAL

752,500

752,500 GS

Table 3 looks at the available square feet of commercial and residential space based on assumptions #6 and #7 explained in the previous section. For commercial or mixed use lots for half acre and one acre, the expected results would be to see a greater density at half acre lot sizes. With only seven additional lots at half acre rather than double the amount of lots from one acre, the results seem to indicate a greater density at one acre. These lots are mostly in Irasville and most of the available commercial land is located on the west side of Route 100 and owned by relatively few landowners. Their final

Municipal Sewer Project: Buildout and Wastewater Flow Analysis
 May 20, 1998

development decisions could drastically alter these numbers. The 42 lots indicated may be each greater than a half acre.

**TABLE 3
 FUTURE SQUARE FEET OF RESIDENTIAL AND COMMERCIAL SPACE**

FUTURE LOTS	HALF ACRE	ONE ACRE	TOTAL SQUARE FEET OF SPACE	
			HALF ACRE	ONE ACRE
NUMBER OF RESIDENTIAL LOTS	151 LOTS	95 LOTS	377,500	237,500
NUMBER OF COMMERCIAL OR MIXED USE LOTS	42 LOTS	35 LOTS	420,000	700,000

Table 4 shows the approximate total wastewater flows for existing residential and commercial uses and predicted future flows based on the buildout figures for half acre and one acre minimum lot size zoning.

**Table 4
 Waitsfield Village/Irasville Zoning Build out
 Estimated Wastewater Flows (GPD)**

*40K residential
 65K commercial*

	Half acre Build out	One Acre Build out
Estimated Existing Flow (1)	115,500	115,500
Expansion of Existing Lots (1)	22,900	22,900
Future Residential Flow (gal/day) (2)	54,360	34,200
Future Mixed Use/Commercial Flow (gal/day) (3)	107,242	87,290
Total Flow for Build out	300,002	259,890

- Notes:
- 1) Based on design flow analysis by Phelps Engineering, Inc. April 1987
 - 2) Calculated on a per lot basis. One Lot = (450 gal/day x 20% Flow Reduction) = 360 gal/day
 - 3) Based on average commercial lot flow, with an 8 bedroom complex = 2,494 gal/day
 - 4) Units for all figures are gallons per day.

260 - 300K

259,890

Municipal Sewer Project: Buildout and Wastewater Flow Analysis
May 20, 1998

CONCLUSIONS & RECOMMENDATIONS

This report is a first step toward implementing a municipal sewer system for Waitsfield Village and Irasville and provides a foundation for further engineering work and study.

It is clear from this analysis that total wastewater flows for any future development will be affected by the zoning bylaws in place that guide density and whether the infrastructure will be in place to access the available land. This analysis indicates that the Village and Irasville have the capacity to grow and expand to accommodate many more homes and businesses. Planning efforts now to guide ~~inevitable~~ growth will go a long way toward having a community that reflects the vision of its residents.

With a municipal ^{more} sewer system in place, future development in the Village and Irasville can follow ~~the~~ traditional rural village settlement patterns. The Town is already working with Irasville business owners and property owners to coordinate development plans in the future for the majority of the remaining land which is located on the west side of Route 100. This Irasville Planning Study is underway.

Preliminary revisions of the zoning bylaws for the Village District have been incorporated into this buildout analysis including the proposed Village Commercial and Village Residential Districts. The next step is to prepare bylaw amendment text for the Village Commercial District, the Village Residential District, and the Irasville Commercial District. Allowable uses, maximum sizes for uses, setbacks and dimensional standards, site plan standards, parking and open space requirements, and design guidelines for future development will be reviewed. The existing subdivision regulations will also be examined. Public input is encouraged throughout this process.

Recommendations so far include:

1. Increasing density to minimum half acre lots with an open space requirement.
2. Requiring minimum two story mixed use development in Irasville that could offer affordable housing to residents and allow residents to access services without driving.
- * 3. Develop design guidelines and site plan review standards in Irasville and the Village that reflect historic rural development patterns and ~~that~~ focus on pedestrian orientation and access.
4. Revise subdivision regulations that will ensure development is appropriate to the current land use and landscape.
5. Adopt an official Town Map that shows where future roads will be built. yes

The engineers for this study, Phelps Engineering, will continue to assist the Town in the next phase of this workplan to develop a funding and construction schedule for proceeding with the planning, design, and construction of the proposed wastewater disposal system.

PHELPS ENGINEERING, INC. • MIDDLEBURY, VERMONT

IRASVILLE GROWTH CENTER ZONING AND SEWER IMPLEMENTATION PROGRAM FLOW CHART MAY 20, 1998

May 20, 1998 Meeting to Discuss Build-Out Scenarios

Obtain Public Input

Develop Funding and Schedule to Proceed with Planning, Design, and Construction

Complete Draft Municipal Sewer Project Build-Out Analysis Report

Local Review and Public Input

Finalize Report

June 15th

File for R.I.F Planning Advance

Bill, JB to ANR on May 26th

Initiate Basis of Design Report

Investigate Subsurface Disposal Sites

*• Negotiate w/ Sugarbush
• Dredge up documents from ANR*

Investigate Spray Irrigation Sites

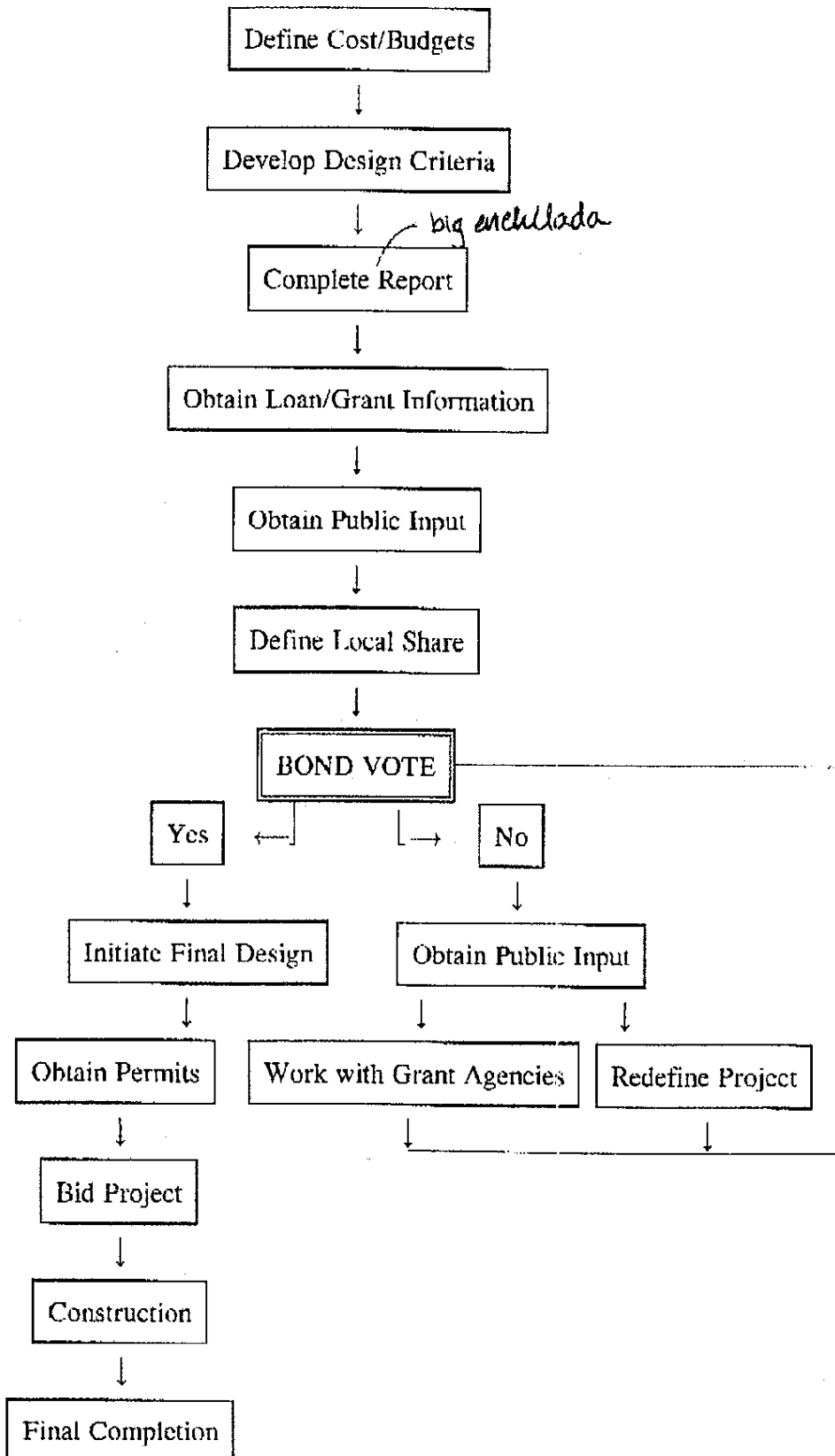
Obtain Public Input



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Irasville Flow Chart

Page 2



APPENDIX A

**TOWN OF WAITSFIELD
FLOW ALLOCATION
MAY 20, 1998**

Irasville/Waitsfield Village - Zoning Build-Out Estimated Sewer Flows

1. Information from Kimberly Boyd:

- | | | | |
|----|---|---|-----|
| A. | Number of acres currently developed | = | 185 |
| B. | Number of acres remaining for build-out | = | 180 |

2. Estimated Wastewater Flows:

Mad River Valley Planning District Regional Wastewater Plan
Phelps Engineering Study, April 1997

A. Existing Estimated Wastewater Flows

- | | | | |
|----|------------|------------|--|
| 1. | Waitsfield | 32,950 gpd | |
| 2. | Irasville | 82,485 gpd | |

B. Existing Lots with Future Growth Allocation

- | | | | |
|----|-------------------|--------------------|--|
| 1. | Waitsfield | 39,300 gpd | |
| 2. | Irasville | 99,100 gpd | |
| 3. | Total Flow | 138,400 gpd | |

*Jim - we are engineering for 150K gpd
See my revisions*

3. Half-Acre Build-Out: (Future Flows)

- | | | | |
|----|---|---|-------------------|
| A. | 151 residential lots x (450 gpd per lot x 20% flow reduction) | = | 54,360 gpd |
|----|---|---|-------------------|

B. 43 lots commercial/residential

- | | | | |
|----|---|---|-------------------|
| 1. | Irasville average existing flow per commercial lot | = | 2,300 gpd |
| 2. | Waitsfield average existing flow per commercial lot | = | 717 gpd |
| 3. | Weighted average Irasville/Waitsfield | = | 1,534 gpd |
| 4. | 43 lots commercial ∴ 43 (1,534 gpd) | = | 65,962 gpd |
| 5. | 43 lots residential ∴ 43 x 960 gpd/lot (8 bedrooms) | = | 41,280 gpd |
| 6. | Summary: | | |
| a. | Item 2.B.3 | = | 138,400 gpd |
| b. | Item 3.A | = | 54,360 gpd |

c.	Item 3.B.4	=	65,962 gpd	
d.	Item 3.B.5	=	<u>41,280 gpd</u>	
	Total	=	300,002 gpd	u

4. One Acre Build-Out: (Future Flows)

A. 95 residential x (450 gpd per lot x 20% flow reduction) = 34,200 gpd

B. 35 Commercial/Residential

1. 35 lots commercial \therefore 35 (1,534 gpd) = 53,690 gpd

2. 35 lots residential \therefore 35 x 960 gpd/lot (8 bedrooms) = 33,600 gpd

3. Summary:

a.	Item 2.B.3	=	138,400 gpd
b.	Item 4.A	=	34,200 gpd
c.	Item 4.B.1	=	53,690 gpd
d.	Item 4.B.2	=	<u>33,600 gpd</u>
	Total	=	259,890 gpd

LT:kb

Updated Water Wastewater Flows under Buildout Analysis

HALF-ACRE BUILDOUT:

FUTURE FLOWS:	Village	Irasville	Total
151 residential lots x 450 gpd (3 bedrooms) x 20% reduction			54,360
43 lots commercial/residential:			
43 commercial lots @ 1534 gpd X 20% reduction			52,770
43 lots x 600 gpd (8 bedrooms) x 20% reduction			20,640
Total 1/2 acre buildout future flows			127,770
EXISTING FLOWS with on-site growth allocation:			
Waitsfield Village (with 20% reduction)	31,440		31,440
Irasville (with 20% reduction)		79,280	79,280
Total existing flows			110,720
COMBINED EXISTING & FUTURE FLOWS			238,490

* At this time we are engineering for 150K gpd BUT we may reassess this and shoot for

70K - off-site disposal

110K - managed on-site disposal

180K

Flow reduction + conservation could allow for same SF of development on 1/2 acre scenario above with 180K of "official" capacity

Updated Water Wastewater Flows under Buildout Analysis

ONE-ACRE BUILDOUT

FUTURE FLOWS:

95 residential lots x 450 gpd x 20% reduction			34,200
35 lots commercial/residential:			
35 commercial lots @ 1,534 gpd x 20% reduction			42,952
35 lots residential x 600 gpd (4 bedrooms) x 20% reduction			16,800
Total one-acre buildout future flows			93,952

EXISTING FLOWS with on-site growth allocation:

Waitsfield Village (with 20% reduction)	31,440		31,440
Irasville (with 20% reduction)		79,280	79,280
Total existing flows			110,720

COMBINED EXISTING & FUTURE FLOWS

204,672