

SEWER FEASIBILITY STUDY MILLIS, MASSACHUSETTS

AREA "C"

BASE SERVICE AREA: VILLAGE AND DYER STREET, BLUEBERRY LANE

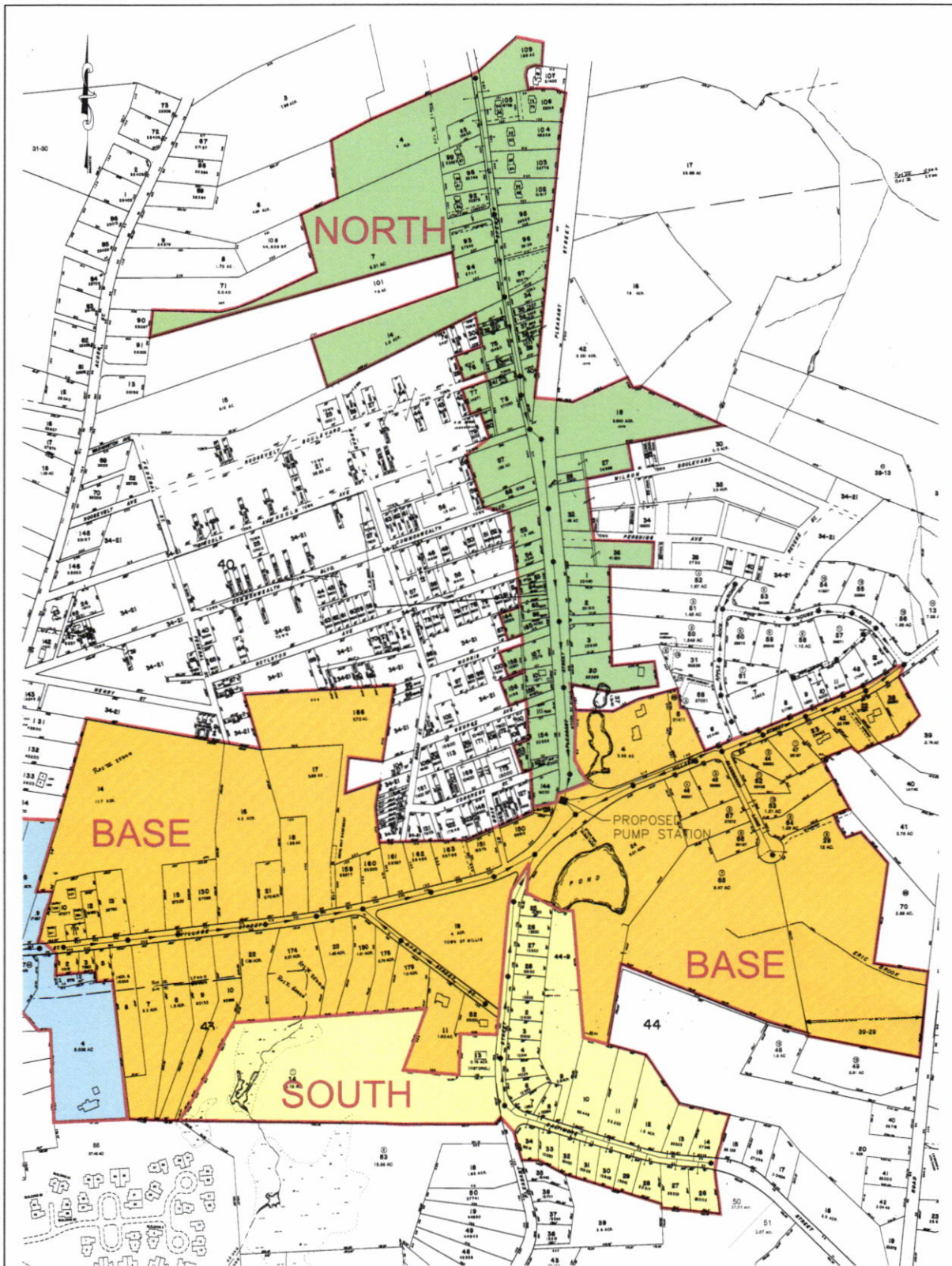
NORTH SERVICE AREA: PLEASANT STREET, SPENCER STREET

SOUTH SERVICE AREA: PLEASANT STREET, BALTIMORE STREET

WEST SERVICE AREA: VILLAGE STREET

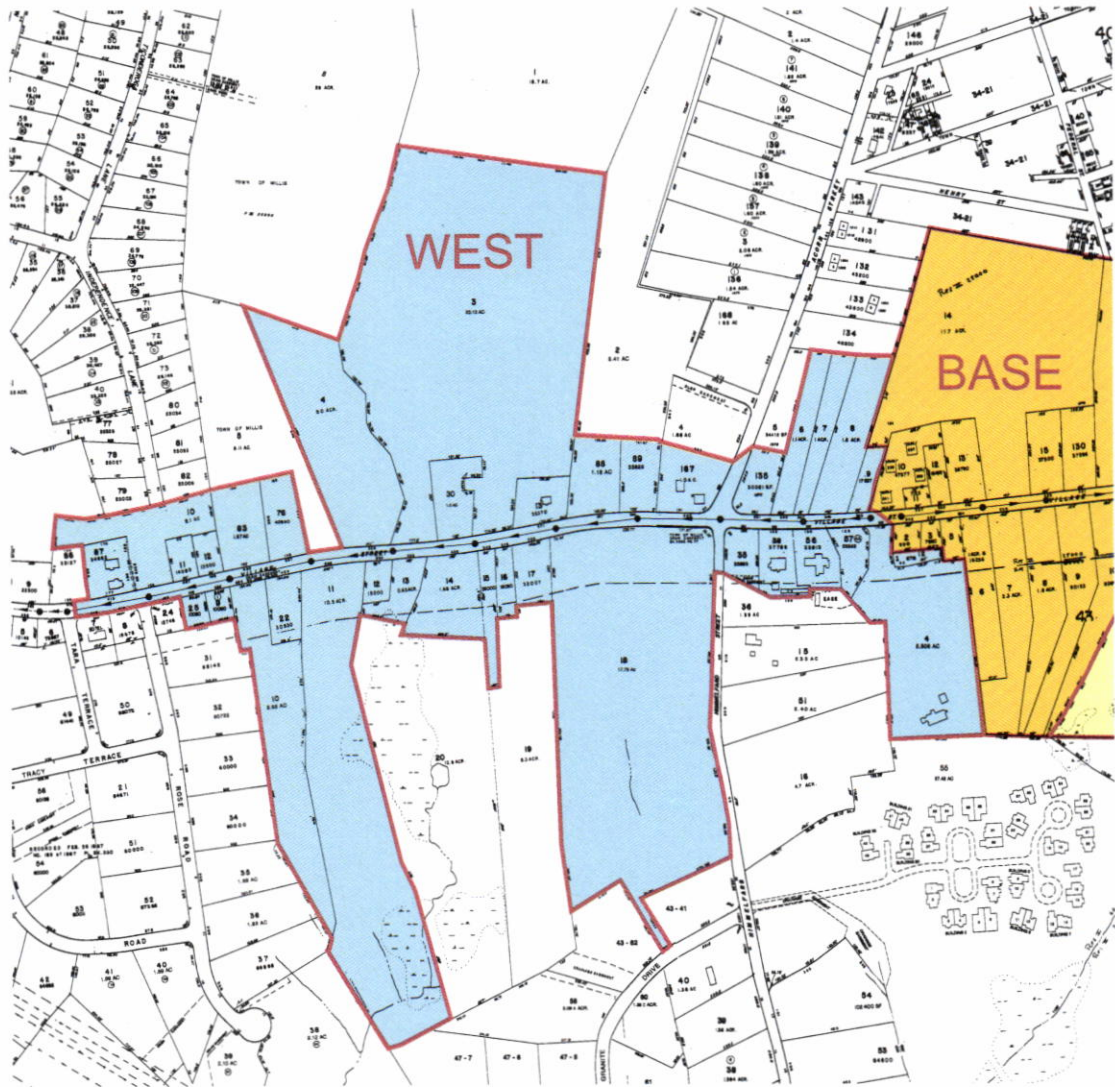
Information Package

MARCH 24, 2014



● MANHOLE
 — PROPOSED SEWER
 - - - EXISTING SEWER
 — SERVICE AREA LIMIT

TOWN OF MILLIS, MASSACHUSETTS SEWER SYSTEM FEASIBILITY STUDY			
SEWER AREA "C"—BASE—NORTH—SOUTH SEWER SCHEMATIC DESIGN			
GCG ASSOCIATES, INC. WILMINGTON MASSACHUSETTS			
SCALE: 1" = 700'	DATE: MARCH 6, 2014		
JOB NO./FILE NAME: 1414_AREA_C.dwg	DESIGNED BY: JTC DRAWN BY: JTC CHECKED BY: JTC	PLAN NO. 1 of 2	



- MANHOLE
- PROPOSED SEWER
- - - EXISTING SEWER
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TOWN OF MILLIS, MASSACHUSETTS SEWER SYSTEM FEASIBILITY STUDY		
SEWER AREA "C" WEST SEWER SCHEMATIC DESIGN		
GCG ASSOCIATES, INC. WILMINGTON MASSACHUSETTS		
SCALE: 1" = 700'	DATE: MARCH 6, 2014	
JOB NO./FILE NAME: 1414_AREA_C.dwg	DESIGNED BY: JTC DRAWN BY: JTC CHECKED BY: JTC	PLAN NO. 2 of 2

BASE SERVICE AREA

The "Base" service area consists of installing a gravity sewer system on Village Street from the existing gravity sewer system on Village Street at the intersection of Pine House Road west on Village Street to beyond and including Dyer Street to a high point located in front of #341/342 Village Street. Extending the gravity sewer further on Village Street to the intersection of Acorn Street would require a depth of approximately 32 feet at this highpoint and is better serviced in the "West" service area discussed later. A low pressure sewer system is utilized to service Blueberry Lane, which discharges into the gravity system at the intersection with Village Street. A grinder pump is required to connect into the low pressure system

A municipal sewage pump station is necessary at the intersection of Pleasant Street and Village Street and requires approximately 800 linear feet of forced main piping which discharges to a new gravity sewer at the intersection of Blueberry Lane and Village Street, which flows by gravity east along Village Street to the existing sewage pump station located at the intersection of Norfolk Road and Village Street. The existing pump station will require upgrading to handle the additional wastewater flow, which is expected to be either shimming or changing of the impellers for the pumps.

A potential of 72 units with an estimated wastewater flow of 23,540 gallons per day would be served by this system according to the uniform method adopted by the Town and as calculated on the attached betterment and flow analysis. The sewer system consists of approximately 4,800 linear feet of gravity sewer and 26 manholes. The low-pressure portion of the sewer system consists of approximately 530 linear feet of low pressure main and 6 services. We have estimated the cost to construct this sewer to be \$2,245,595 and an engineering cost of \$175,000. If the Town supplies the grinder pump systems and emergency generators to the property owners on Blueberry Lane than an additional cost would be required depending on the system chosen. See the following detailed construction cost estimate which includes the cost of the municipal pump station and a separate sidewalk/drainage improvement estimate for Village Street

NORTH SERVICE AREA

The "North" service area consists of installing a gravity sewer system on Pleasant Street from the proposed sewage pump station at the intersection with Village Street to and including Spencer Street to #70 Spencer Street. A low pressure sewer system is utilized to continue on Spencer Street to approximately #51 Spencer Street. A grinder pump is required to connect into the low pressure system beyond #70 Spencer Street.

The "North" service area is considered an addition to the "Base" service area and requires the municipal sewage pump station at the intersection of Pleasant Street. The existing pump station at Norfolk Road may need modifications to handle additional flow.

A potential of 46 units with an estimated wastewater flow of 15,730 gallons per day would be served by this system according to the uniform method adopted by the Town and as calculated on the attached betterment and flow analysis. The sewer system consists of approximately 2,800 linear feet of gravity sewer and 16 manholes. The low-pressure portion of the sewer system consists of approximately 610 linear feet of low pressure main and 10 services. We have estimated the cost to construct this sewer to be \$1,096,508 and an engineering cost of \$130,000. If the Town supplies the grinder pump systems and emergency generators to the property owners on Spencer Street than an additional cost would be required depending on the system chosen. See the following detailed construction cost estimate which does not include the cost of the municipal pump station considered in the "Base" service area.

SOUTH SERVICE AREA

The "South" service area consists of installing a gravity sewer system on Pleasant Street from the proposed sewage pump station at the intersection with Village Street to the intersection of Baltimore Street. A low pressure sewer system is utilized to continue on Baltimore Street to approximately #26 Spencer Street. A grinder pump is required to connect into the low pressure system beyond #190 Pleasant Street.

The "South" service area is considered an addition to the "Base" service area and requires the municipal sewage pump station at the intersection of Pleasant Street. The existing pump station at Norfolk Road may need modifications to handle additional flow.

A potential of 30 units with an estimated wastewater flow of 10,340 gallons per day would be served by this system according to the uniform method adopted by the Town and as calculated on the attached betterment and flow analysis. The sewer system consists of approximately 1,125 linear feet of gravity sewer and 7 manholes. The low-pressure portion of the sewer system consists of approximately 1,000 linear feet of low pressure main and 17 services. We have estimated the cost to construct this sewer to be \$674,575 and an engineering cost of \$120,000. If the Town supplies the grinder pump systems and emergency generators to the property owners on Baltimore Street than an additional cost would be required depending on the system chosen. See the following detailed construction cost estimate which does not include the cost of the municipal pump station considered in the "Base" service area.

WEST SERVICE AREA

The "West" service area consists of installing a gravity sewer system on Village Street from the existing gravity sewer at the intersection of Tara Terrace east to beyond Acorn Street to the high point at #348 Village Street and the border western border of the "Base" service area. The "West" service area is considered an addition to the "Base" service area, but does not require the municipal sewage pump station at the intersection of Pleasant Street and would not share the station cost.

A potential of 74 units with an estimated wastewater flow of 28,380 gallons per day would be served by this system according to the uniform method adopted by the Town and as calculated on the attached betterment and flow analysis. The sewer system consists of approximately 3,000 linear feet of gravity sewer and 16 manholes. We have estimated the cost to construct this sewer to be \$1,325,995 and an engineering cost of \$130,000.

BASE, NORTH & SOUTH SERVICE AREA

The "Base", "North" and "South" service areas require a sewage pump station located at the intersection of Village and Pleasant Streets, which discharges by force main and new sanitary sewer to the existing gravity sewer on Village Street at the intersection of Pine House Road, which flows to the sewage pump station located at the intersection of Village Street and Norfolk Road. The "North" and "South" service areas are considered additions to the "Base" service area and do not include the pump station cost when reviewed individually in the following Cost Summary Table. The following table provides cost comparisons for the various combinations of the service areas sharing the cost of the pump station. The cost of the pump station is not shared by the "West" service area and is not required to be built.

MARCH 2014

SEWER SYSTEM FEASIBILITY STUDY
 AREA C
 SUMMARY TABLE

MILLIS, MA

AREA C SERVICE AREA	TOTAL CONSTRUCTION/CONTINGENCIES COST (\$)	TOTAL ENGINEERING COST (\$)	TOTAL PROJECT COST (\$)	20% TOTAL CONSTRUCTION COST (\$)	TOTAL BETTERMENT UNITS	BETTERMENT UNIT COST (\$)	80% BETTERMENT UNIT COST (\$)	TOTAL SEWAGE FLOW (GPD)	SEPTIC IMPROVEMENT
BASE	2,245,595	175,000	2,420,595	484,119	72	33,619	26,896	23,540	
NORTH	1,096,508	130,000	1,226,508	245,302	46	26,663	21,331	15,730	
COMBINED BASE AND NORTH	3,342,103	305,000	3,647,103	729,421	118	30,908	24,726	39,270	
SOUTH	674,575	120,000	794,575	158,915	30	26,486	21,189	10,340	
COMBINED BASE AND SOUTH	2,920,170	295,000	3,215,170	643,034	102	31,521	25,217	33,880	
COMBINED BASE, NORTH AND SOUTH	3,950,678	425,000	4,375,678	875,136	148	29,565	23,652	49,610	
WEST	1,325,995	130,000	1,455,995	291,199	74	19,676	15,740	28,380	
* North Service Area Construction Cost Revised March 18, 2014									

	Remaining capacity-gallons	
Contract capacity	628,000	
Current avg day	409,000	219,000
GAF residential	44,000	175,000
A&H commercial	10,750	164,250
Exsiting BR	65,890	98,360
Fox Project Acorn St.	39,710	58,650
Cedar St.	5,610	53,040

all based on 110 gallons per bedroom, 200 2

base flow 3000 gpd and (2) 100 seat restaurants

other areas requesting sewer in the past
 Area BII Dover Rd Crestview Klifford, Ironwood 39,930 gallons
 Area BIII Village St. Main to Forest , parts of Birch 38,280 gallons
 Area C Village, Pleasant, Baltimore 35,640 - 78,000 gallons

If the capacity in gray above was based on 80 gallons per bedroom then there would be an additional 52,661 gallons of capacity.