FEASIBILITY REPORT

FOR

ROUTE 75 SEWER AND WATER MAIN EXTENSION SUFFIELD, CT

PREPARED FOR

TOWN OF SUFFIELD
83 MOUNTAIN ROAD
SUFFIELD, CT 06078

JUNE 23, 2009

ANCHOR
ENGINEERING SERVICES, INC.

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EXECUTIVE SUMMARY

Anchor Engineering Services Inc. was retained by the Town of Suffield in April, 2009 to study the feasibility of extending existing sewer and water mains in the vicinity of the Route 75 corridor. The 169-acre study area, located at the south end of Town, is bounded by the Windsor Locks town line to the south, Bradley International Airport to the west, Marketing Drive to the north and the Little River to the east.

The purpose of the study was to prepare a feasibility study evaluating the potential for extending sewer and water utilities to serve existing parcels located at the south end of Route 75. These parcels consist of a mix of occupied residential, commercial and industrial properties as well as vacant parcels with projected uses consistent with the PDIP Zone.

Existing information on the study area was compiled with assistance from Town Staff, including the Director of Economic Development, Town Planner, Town Engineer and the Chief Operator of the Water Pollution Control Authority (WPCA). Information was also obtained from State Agencies, such as the Connecticut Department of Transportation (ConnDOT) and Department of Environmental Protection (ConnDEP), and private organizations such as the Connecticut Water Company (CT Water).

Utilizing available information, the development potential of the study area was determined based upon buildable area, which excludes steep slopes, inland wetlands and watercourses and upland review areas, and projected uses. These uses are anticipated to be Retail, Commercial or Industrial as allowed within the PDIP Zone. Projected sewer and water flows for a full development of the study area range from 90,000 and 130,000 gallons per day (GPD). This ultimate build out is not likely to be realized but is used for comparative purposes to available capacity and reasonable installed capacity.

The existing sewer system in the vicinity of the study area was evaluated to confirm sufficient pipe sizes, slopes and capacity to handle such a development and subsequent increase in flows. Based upon this evaluation, it appears that the existing system can accommodate the increase in flows without a need for upgrades or significant modification. Similarly, CT Water confirmed their existing water supply system in the area can accommodate the increase in domestic water flows.

Numerous sewer main extension options were considered to connect the study area with the existing sewer main in the vicinity of Market Drive. Three (3) options were ultimately considered in this report based upon service capabilities, topography along the route, inland wetlands and watercourses and property ownership. Likewise, three (3) water main extension options were evaluated. Based upon a comparison of the sewer and water main extension options and associated design, administration, construction and inspection costs, the following options are recommended to serve the existing properties along the south end of Route 75.

Extension Option	Unit Const. Cost	Total Const. Cost	Total Design, Admin. & Insp. Costs
Sewer Ext. Option 3	$132/ft	$803,000	$230,000
Water Ext. Option 2	$175/ft	$931,000	$258,000

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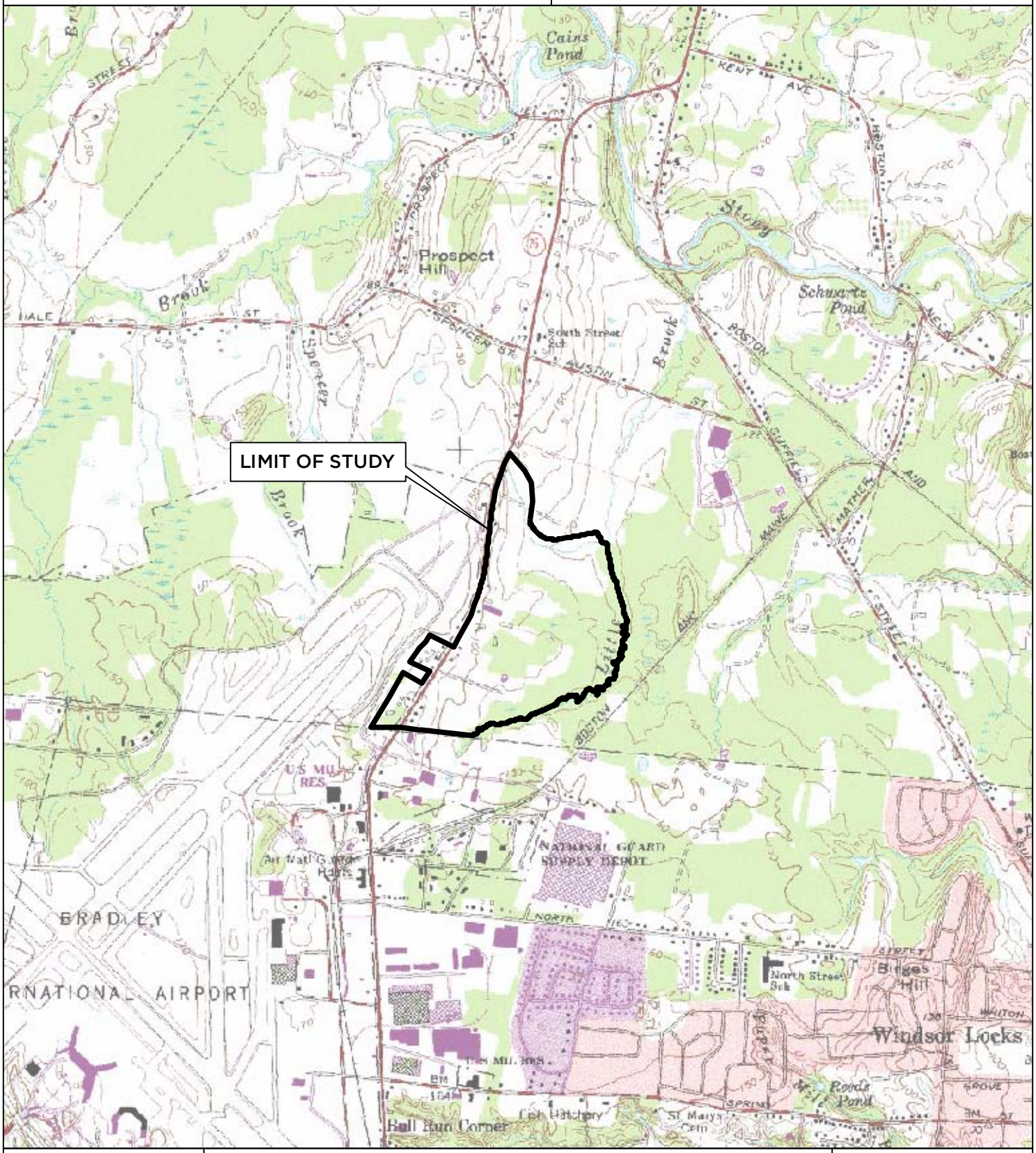
SITE LOCATION MAP

PREPARED FOR TOWN OF SUFFIELD
ROUTE 75 SEWER & WATER MAIN EXTENSION



USGS TOPO
QUAD #22
WINDSOR LOCKS, CT

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PAGE
2

PROJECT
157-17

DATE
JUNE 2009

INTRODUCTION

Anchor Engineering Services Inc. was retained by the Town of Suffield in April, 2009 to study the feasibility of extending existing sewer and water mains in the vicinity of the Route 75 corridor. The 169-acre study area is bounded by the Windsor Locks town line to the south, Bradley International Airport to the west, Marketing Drive to the north and the Little River to the east.

The purpose of the study was to prepare a feasibility study evaluating the potential for extending sewer and water utilities to serve existing parcels located at the south end of Route 75. These parcels consist of a mix of occupied residential, commercial and industrial properties as well as vacant parcels with projected uses consistent with the PDIP Zone.

DATA COLLECTION

Information on the study area was obtained from the following public and private sources:

- Town of Suffield
  - Director of Economic Development
  - Town Planner
  - Town Engineer
  - Town Assessor
  - Town Clerk
- Town of Suffield Water Pollution Control Authority
  - Chief Operator
- Town of Windsor Locks Water Pollution Control Authority
  - Shift Operator
- Connecticut Water Company
  - Senior Technical Services Representative
- Connecticut Department of Transportation
- Connecticut Department of Environmental Protection

Information obtained from these sources includes approved site development plans, roadway reconstruction plans for Route 75, sewer as-built mapping, tax maps and building cards, zoning maps, inland wetland and watercourse maps and field delineations, historic as well as other available plans and maps. Also obtained were digital files for use in Geographical Information Systems (GIS). This digital information included property boundaries, topography, roadways, buildings, sewer lines, wetlands, and zoning districts.

DATA ANALYSIS

Information obtained during the data collection phase was used to identify and delineate the parcels to be served by the water and sewer extensions, evaluate the existing land uses and determine the development potential of the study area.

DELINEATION OF STUDY AREA

The area considered in this analysis generally consists of the Route 75 corridor between the Windsor Locks Town Line to the south and Market Drive to the north. Properties within this corridor considered as part of the study area were identified as parcels currently

developed or with the potential for future development that do not have access to existing water and sewer service. The parcels excluded from the study area along the corridor include land occupied by Bradley International Airport and land on the west side of the Little River. The 169-acre study area is outline in black in Figure No. 1 below.

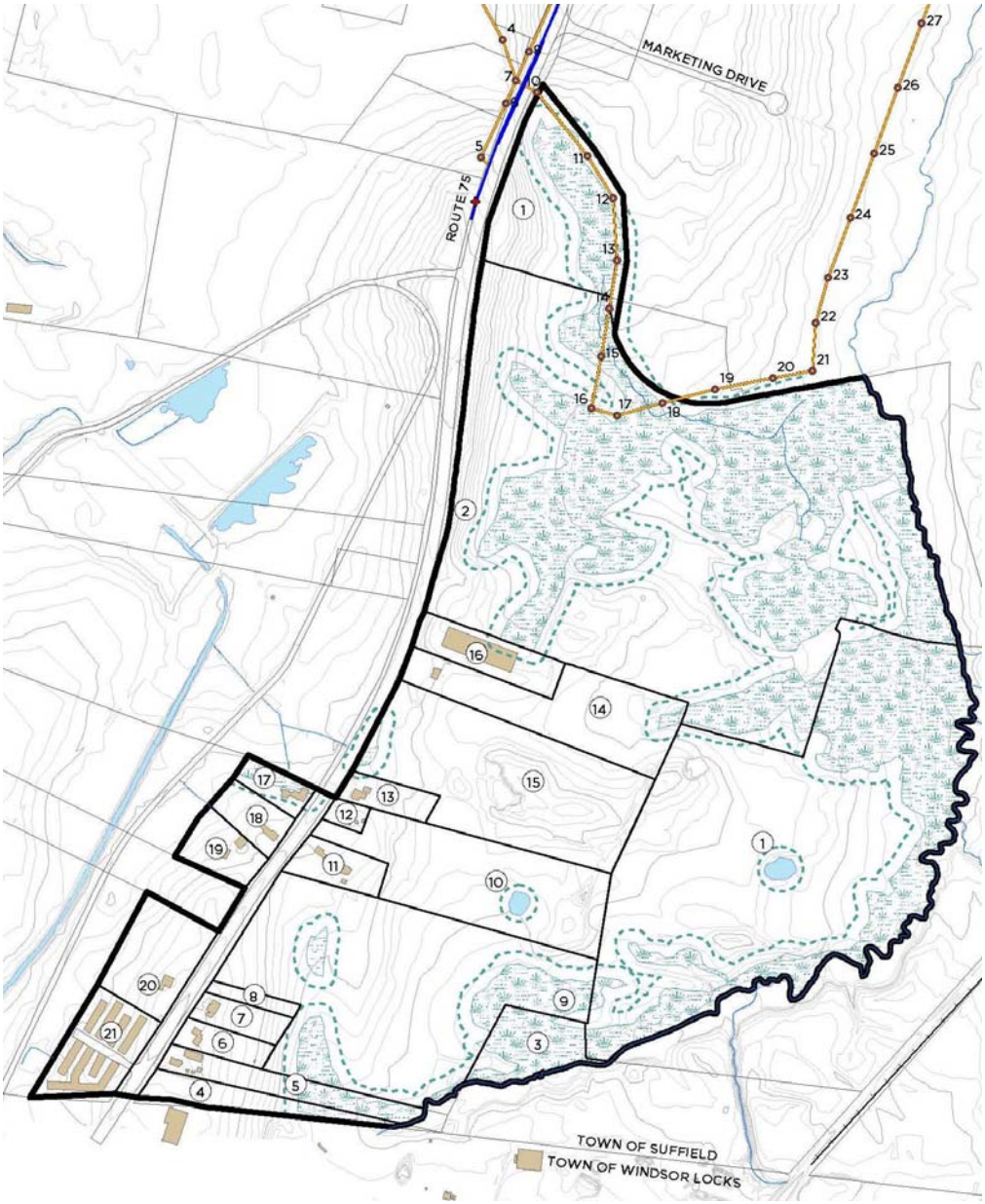


Figure 1 – Route 75 Corridor Study Area

BUILDABLE AREA CALCULATIONS

The buildable area within the study area was determined through an evaluation of the existing land characteristics and identification of site constraints. These site constraints were not considered buildable and include steep slopes (>20%), inland wetlands and watercourses, upland review areas and landlocked sites. Of the total 169-acres in the study area, approximately 74-acres, or 44% are not buildable. As shown in Table No. 1 below, the total buildable area is 95 acres.

Parcel Identification		Site Constraints			
Study ID	Total Area (AC)	Inland Wetlands (AC)	50' URA (AC)	Surface Water w/ URA (AC)	Total Buildable Area (AC)
1a	6.34	2.37	1.08	0.00	2.88
1b	36.24	12.84	4.89	0.59	17.93
2	57.57	26.64	12.41	0.00	18.52
3	2.48	2.15	0.33	0.00	0.00
4	1.81	0.34	0.16	0.00	1.31
5	2.25	0.89	0.20	0.00	1.15
6	0.99	0.00	0.00	0.00	0.99
7	1.07	0.00	0.00	0.00	1.07
8	0.48	0.00	0.02	0.00	0.46
9	19.27	2.74	3.12	0.00	13.40
10	8.14	0.00	0.00	0.39	7.75
11	1.38	0.00	0.00	0.00	1.38
12	0.38	0.00	0.06	0.00	0.31
13	1.05	0.13	0.03	0.00	0.89
14	5.90	0.12	0.36	0.00	5.41
15	11.39	0.14	0.40	0.00	10.84
16	2.15	0.00	0.00	0.00	2.15
17	0.92	0.45	0.33	0.00	0.14
18	1.23	0.00	0.04	0.00	1.20
19	1.49	0.00	0.00	0.00	1.49
20	3.13	0.00	0.00	0.00	3.13
21	2.93	0.00	0.00	0.00	2.93
Totals	168.57	48.81	23.43	0.98	**95.34**

Table 1 –Buildable Area Calculations

DEVELOPMENT POTENTIAL

The development potential of the study area is based upon the projected use of the property and the maximum development that can occur on the available, or in this case, buildable land. Based upon current Suffield Zoning Regulations, the entire study area lies within the PDIP Zone, which allows for a wide range of commercial office and retail uses as well as industrial developments. This zone allows for a maximum of 60% impervious coverage, which includes buildings, parking areas and access drives, sidewalks, and etc. This 60% maximum coverage was applied to the buildable area.

Commercial office buildings are typically employee intensive, and therefore require an increased area of site improvements, such as parking and access. For the purposes of this study, a ratio of four (4) parking/access units for every one (1) building unit was used to determine the maximum building footprint area. The building unit ratio of 20% was applied to the maximum 60% coverage, resulting in a maximum footprint area of 12% of the total property. This value was used in the sewer and water flow calculations for a commercial office use.

Large scale retail and industrial uses typically encompass a larger building footprint with less employee presence. To account for the increase in building and reduction in parking/access, a 2:1 ratio was applied. The building unit ratio of 33% was applied to the maximum 60% coverage, resulting in a maximum building footprint area of 20% of the total property. This value was used in the flow calculations for retail or industrial.

SEWER MAIN EXTENSION

Following data collection and analysis, the existing sewer main was evaluated and potential sewer main extension routes to the study area were considered. Work performed in this phase consisted of determining sewage flow rates generated by future development, identification of sewer extension route options, and evaluation of the existing downstream system to determine the overall impact of the project.

SEWER FLOW RATE CALCULATIONS

The Regulations and Technical Standards of the Connecticut Public Health Code, as revised January 2009, were utilized to determine sewage design flows for the potential uses within the study area. As recommended in Section IV, Table No. 4 of the Health Code, the following flow rates were used in the calculations.

- Office – 20 GPD per employee (200 SF gross floor area per employee)
  - 1,242 Gallons per acre
- Large Retail/Commercial – 0.1 GPD per SF gross floor area)
  - 871 Gallons per acre

Total wastewater flow entering the sewer main extensions can increase through the *infiltration* of groundwater and *inflow* of stormwater runoff. These extraneous flows, known as I&I, can enter the gravity sewer system through manholes and pipe joints. Although I&I can be controlled using modern materials and construction methods, flow should be expected to occur as the system ages. The town of Suffield WPCA Facility Plan completed in 2001 showed an I&I factor of less than 5%. For this study, an I&I flow of 10% which is equivalent to approximately 8,000 to 12,000 gallons was utilized

As shown in Table #2 below, the maximum calculated flow rate for the study area utilizing a build out of commercial office uses is approximately 130,000 GPD, while a build out of retail or light industrial uses is approximately 91,000 GPD. In comparison to historical flows provided by the Suffield WPCA for parcels in the vicinity of the study area, the projected sewage flows are significantly higher than existing conditions. This discrepancy is likely the result of the conservative rates provided in the Health Code, a heavy industrial use present in the area, and no consideration of I&I flows.

Parcel			Office		Retail/Industrial	
Study ID	Total Area (AC)	Total Buildable Area (AC)	Gallons/AC	Flows (GPD)	Gallons/AC	Flows (GPD)
Totals	168.57	95.34	1,366	130,232	958	91,372

Table 2 –Sewage Flow Calculations

SEWER MAIN EXTENSION ROUTE OPTIONS

Sewer main extension route options were considered to connect the study area with existing sewer services in the vicinity. Routes connecting to the existing sewer main to the north of the study area shown in brown include two options in the Route 75 ROW and multiple options through town owned and private property within the study area. Sewer main extension options were also considered to the south, connecting to the Windsor Locks sewer main and pump station located on King Spring Road.

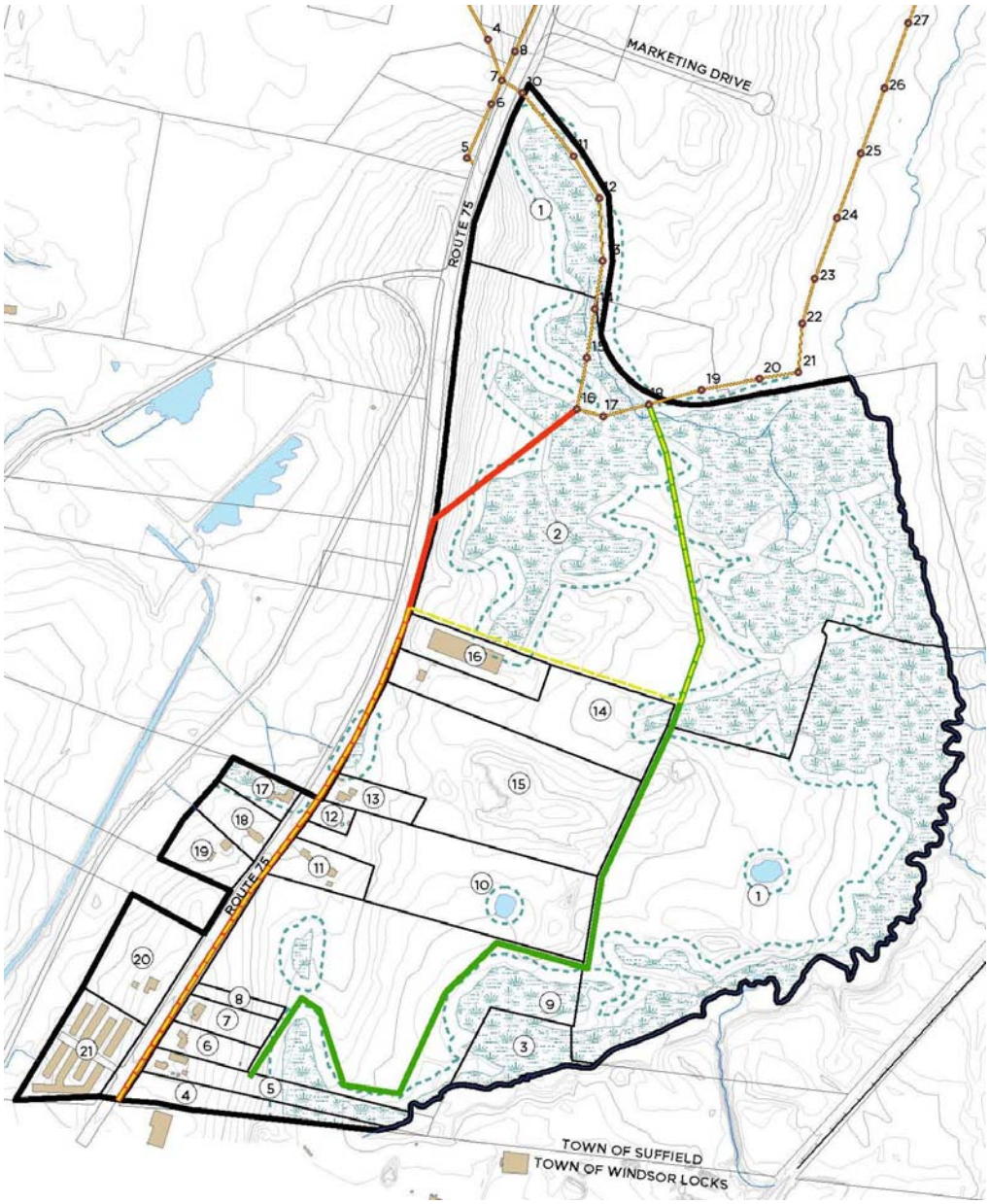


Figure 2 – Sewer Main Extension Routes

Three (3) options were ultimately considered in this report based upon service capabilities, topography along the route, inland wetlands and watercourses and property ownership. Each route depicted in Figure No. 2 above has been selected to maximize the buildable area and minimize inland wetland & watercourse disturbance.

The existing sewer is shown in brown with manhole location and numbers, Concept 1 in red, Concept 2 in yellow and Concept 3 in green.

SEWER EXTENSION OPTION 1

Option #1 would extend sewer service from existing manhole #16 through property owned by the Town of Suffield (Parcel 2) to a point located within the Route 75 ROW. The sewer main would continue south within the eastern shoulder of Route 75, ending at the Windsor Locks Town Line.

This route consists of the installation of 3,430 linear feet of 8" diameter gravity sewer main at slopes ranging from 0.005 ft/ft to 0.051 ft/ft. Most of the installation would be performed within the Route 75 ROW with the remainder of the pipe installed through Town owned property. Construction will result in approximately 1,475 square feet of direct wetland disturbance and 5,170 square feet of URA disturbance.

A limited number of properties along Route 75 within the study area may require a pump service to connect to this sewer location. This pump service would consist of small grinder pumps designed and installed at the time of development. Connection options for Parcel 1 are limited. Based upon the ROW widths and presence of utilities, approximately 2,300 feet of sewer would be constructed in paved portions of Route 75.

SEWER EXTENSION OPTION 2

Option #2 would extend sewer service from existing manhole #18 through the center portion of Parcel 2 to a point located within the Route 75 ROW at the northeast corner of Parcel 16. Similar to Option 1, the sewer main would continue south along the eastern shoulder of Route 75, ending at the Windsor Locks Town Line.

This option consists of the installation of 4,740 linear feet of 8" diameter gravity sewer main at slopes ranging from 0.004 ft/ft to 0.017 ft/ft. Approximately one-half of the installation would be performed within the Route 75 ROW with the remainder of the pipe installed through Town owned property. Construction will result in approximately 2,110 square feet of direct wetland disturbance and 8,760 square feet of URA disturbance.

A limited number of properties along Route 75 within the study area may require a pump service to connect to this sewer location. This pump service would consist of small grinder pumps designed and installed at the time of development. However, gravity service would be provided to Parcels 2, 14 and 16 along with a feasible connection provided to Parcel 1. Similar to Option 1, approximately 2,300 feet of sewer would be constructed in paved portions of Route 75.

SEWER EXTENSION OPTION 3

Option #3 would extend sewer service from existing manhole #18 through the center portion of Parcel 2 into the northwestern potion of Parcel 1, which is privately owned. The

sewer extension would continue along the rear boundaries of parcels 10, 14 and 15 and extend into Parcel 9, which is also privately owned, were it would terminate at the boundary with parcel #5.

This option consists of the installation of 4,530 linear feet of 8" diameter gravity sewer main at slopes ranging from 0.004 ft/ft to 0.026 ft/ft. Approximately one-third of the installation would be performed through Town-owned property with the remainder being installed on privately owned parcels, thereby requiring easement. Construction will result in approximately 1,460 square feet of direct wetland disturbance and 6,650 square feet of URA disturbance.

Most, if not all, properties on the east side of Route 75 would be served via gravity connections. However, connection to properties on the west side of Route 75 would be limited without obtaining easements. Potential vernal pool(s) on parcel #2 may impact the location of this option.

EVALUATION OF EXISTING SEWER SYSTEM

Each of the three (3) options considered in this study connect via gravity to an existing sewer main system at the northeast corner of the delineated study area. The existing system serves portions of Suffield north and east of the study area with a connection point on Austin Street at the Little Brook crossing.

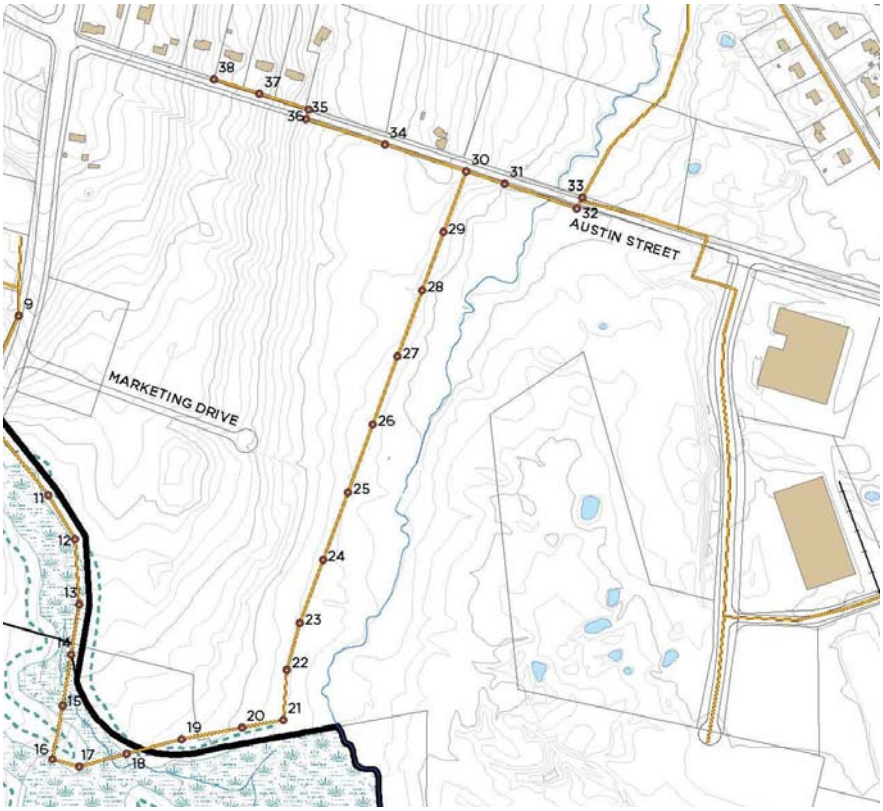


Figure 3 – Existing Sewer System

In order to evaluate the capacity of the existing system, the most restrictive pipe, based upon size and slope, was identified. As shown in Figure No. 3, the most restrictive pipe is located

on Austin Street at the Little Brook crossing between points 31 & 32. This 15" diameter PVC pipe has a slope of 0.00015 ft/ft and a capacity of approximately 900,000 GPD.

A maximum flow of approximately 250,000 to 300,000 GPD was estimated to flow to this pipe. This estimate is based upon existing flow rates provided by the Suffield WPCA, the maximum projected flow rates of 130,000 GPD for the study area, and an estimated I&I of 30,000 GPD for the existing 9,700 feet of sewer main piping flowing to this point.

WATER MAIN EXTENSION

Following the sewer main extension study, the public water service study area was determined to be the same study area as utilized for the sewer shed analysis.

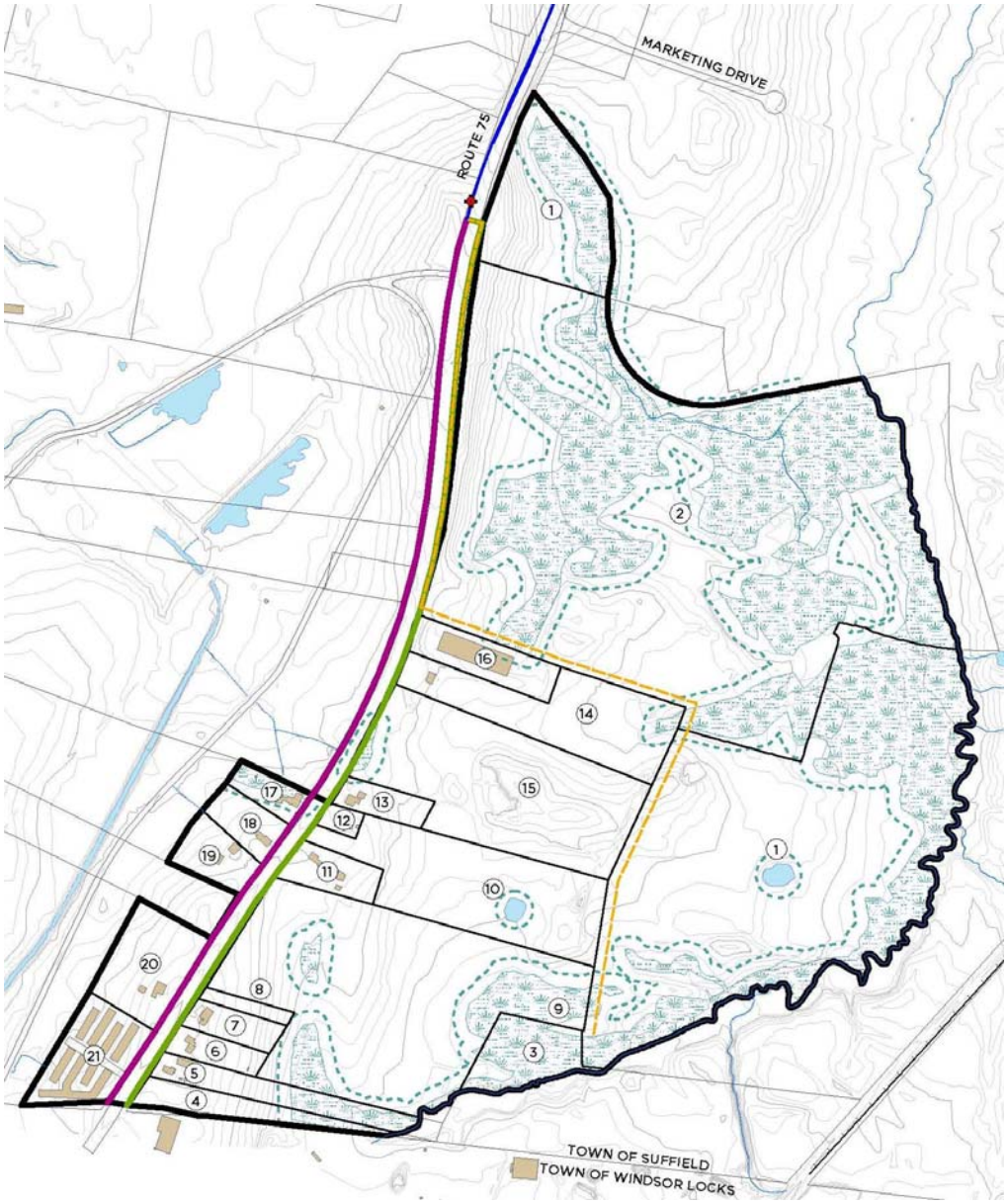


Figure 4 – Water Main Extension Routes

The projected domestic water demand for this study area ranged from 80,000 to 120,000 GPD per the calculations performed for the sewer main extension less I&I flows. The projected fire service water demand for this study area will be based on building size and coordinated with CT Water at the time of development.

The existing water main was evaluated and potential water main extension routes to the study area were considered. Work performed in this phase consisted of identifying water main extension route options and coordinating work with the Connecticut Water Company.

WATER MAIN EXTENSION ROUTE OPTIONS

Three water main extension options were considered to connect the study area with the existing 12" water main in the vicinity of Kenny Roberts Drive. These options were located based upon the existing service location, property ownership and easement requirements, and recommendations provided by the Connecticut Water Company. Each route is depicted in Figure No. 3 below. The existing water route is shown in blue, Concept 1 in red, Concept 2 in green and Concept 3 in yellow.

WATER EXTENSION OPTION 1

Option #1 would extend water service from the point of connection with the existing service, along the western side of Route 75 to the Windsor Locks Town Line. CT Water has indicated they would be in favor of a 12" diameter water main extension in this location.

This option consists of the installation of 3,910 linear feet of 12" diameter water main extension and would be constructed entirely within the Route 75 ROW. Direct service connections would be provided for all properties along Route 75, however service connections for properties to the east of Route 75 would be required to cross the road. Also, connection options for Parcel 1 are limited.

WATER EXTENSION OPTION 2

Option #1 would extend water service from the point of connection with the existing service across Route 75 and along the eastern side of Route 75 to the Windsor Locks Town Line. Similar to Option 1, CT Water has indicated they would be in favor of a 12" diameter water main extension in this location.

This option consists of the installation of 3,970 linear feet of 12" diameter water main extension and would be constructed entirely within the Route 75 ROW. Direct service connections would be provided for all properties along Route 75, however service connections for properties to the west of Route 75 would be required to cross the road. There are a limited number of undeveloped properties on the west side of Route 75. Similar to Option 1, connection options for Parcel 1 are limited.

WATER EXTENSION OPTION 3

Option #3 would extend water service from the point of connection with the existing service at Parcel 1, along the eastern side of Route 75 and into the town-owned Parcel 2. CT Water has indicated they would not be in favor of a water main extension in this location due to foreseen difficulties with access and easements on Town and private property as well as the limited service provided to properties fronting on Route 75.

This option consists of the installation of 4,200 linear feet of 12" diameter water main extension, with approximately one-half of the water main installed within the Route 75 ROW and the remaining pipe installed on Town-owned and privately owned property. Construction will result in approximately 900 square feet of direct wetland disturbance and 1,800 square feet of URA disturbance.

PERMITTING

The extension of existing water and sewer services into the study area will require work within State, Town, and possibly on privately owned lands. This work may also impact inland wetlands and watercourses and the adjacent Bradley International Airport. Based upon the potential scope of work required for the extensions, the following permits may be required prior to proceeding with work.

LOCAL (TOWN)

1. Suffield Conservation Commission
    a. Permit Application for Inland Wetland & Watercourse Activity
2. Suffield Zoning and Planning Commission
    a. Special Permit/Site Plan Application
3. Suffield Water Pollution Control Authority
4. Connecticut Water Company

STATE / FEDERAL

1. Connecticut Department of Transportation
    a. Encroachment Permit submitted to the Bureau of Engineering and Highway Operations
2. Connecticut Department of Environmental Protection
    a. Statewide Inland Wetlands & Watercourses Activity Reporting Form
3. The Army Corp. of Engineers
    a. Application for work within a wetland area if the disturbance exceeds 5,000 square feet
4. The Federal Aviation Administration;
    a. Notice of Proposed Construction or Alteration

PRELIMINARY COST ESTIMATE

Following the sewer and water main extension study, a preliminary cost estimate was developed for each of the proposed service options.

Construction costs associated with the sewer and water main extension range from $1,900,000 to $2,400,000 depending on the route selected for design and installation. The estimated total costs take into consideration design, permitting, administration, construction, and inspection. The estimated cost per foot pricing takes into consideration only the construction items.

	Length	Cost per Foot	Total Cost
Option 1	3,430	$159	$949,000
Option 2	4,740	$144	$1,174,000
Option 3	4,530	$132	$1,033,000

Table 3 –Sewer Main Extension Cost Estimate

	Length	Cost per Foot	Total Cost
Option 1	3,910	$164	$1,107,000
Option 2	3,970	$175	$1,189,000
Option 3	4,200	$133	$972,000

Table 4 –Water Main Extension Cost Estimate

RECOMMENDATIONS

Following the compilation of data and determination of three (3) feasible options for the extension of sewer and water services to the study area, a comparative analysis of the selected options was performed. This analysis focused on the following factors.

1. Service benefit to study area with higher rating for servicing undeveloped parcels with potential for commercial and/or industrial development
2. Project cost
3. Direct and indirect impact on inland wetlands and watercourses
4. Impact on Route 75 traffic and roadway condition

Based on the above factors, Anchor Engineering recommends that Sewer Main Extension Option 3 and Water Main Extension Option 2 be considered by the Town of Suffield for design and construction.

SEWER MAIN EXTENSION

Anchor Engineering concluded that Sewer Main Extension Option #3 provides the greatest sewer service connection benefit for the study area, specifically Parcels #1, 2 and 9, which have potential for commercial and/or industrial development. This option will allow sanitary connections to be made to most, if not all, of the remaining properties on the east side of Route 75 within the study area. Although connections to the west side of Route 75 would be limited, it is our understanding that these properties are already developed and operate on functioning septic systems. Should future connection be required, an extension for this purpose could be considered at that time.

The preliminary cost estimate for Option #3 as outlined above is approximately $1,033,000, or $132 per linear foot for the construction with additional design, administration and inspection fees. This cost per linear foot for construction is the least expensive option identified in this report which can be attributed to the absence of roadway improvements or work within the Route 75 ROW.

Option 3 results in the least direct impact on inland wetlands and watercourses, however due to the potential for vernal pools in the area, care should be taken in the layout, design and construction phases to further minimize impact.

WATER MAIN EXTENSION

The Connecticut Water Company did not endorse Water Main Extension Option 3, therefore it was disregarded from the comparative analysis. Upon a comparison of Options 1 and 2, Anchor Engineering concluded that Option 2 provides the greatest water service connection benefit for the study area. This is primarily due to the location on the easterly side of Route 75 and close proximity to most of the parcels within the study area, including all of the undeveloped parcels. CT Water endorsed Option 2.

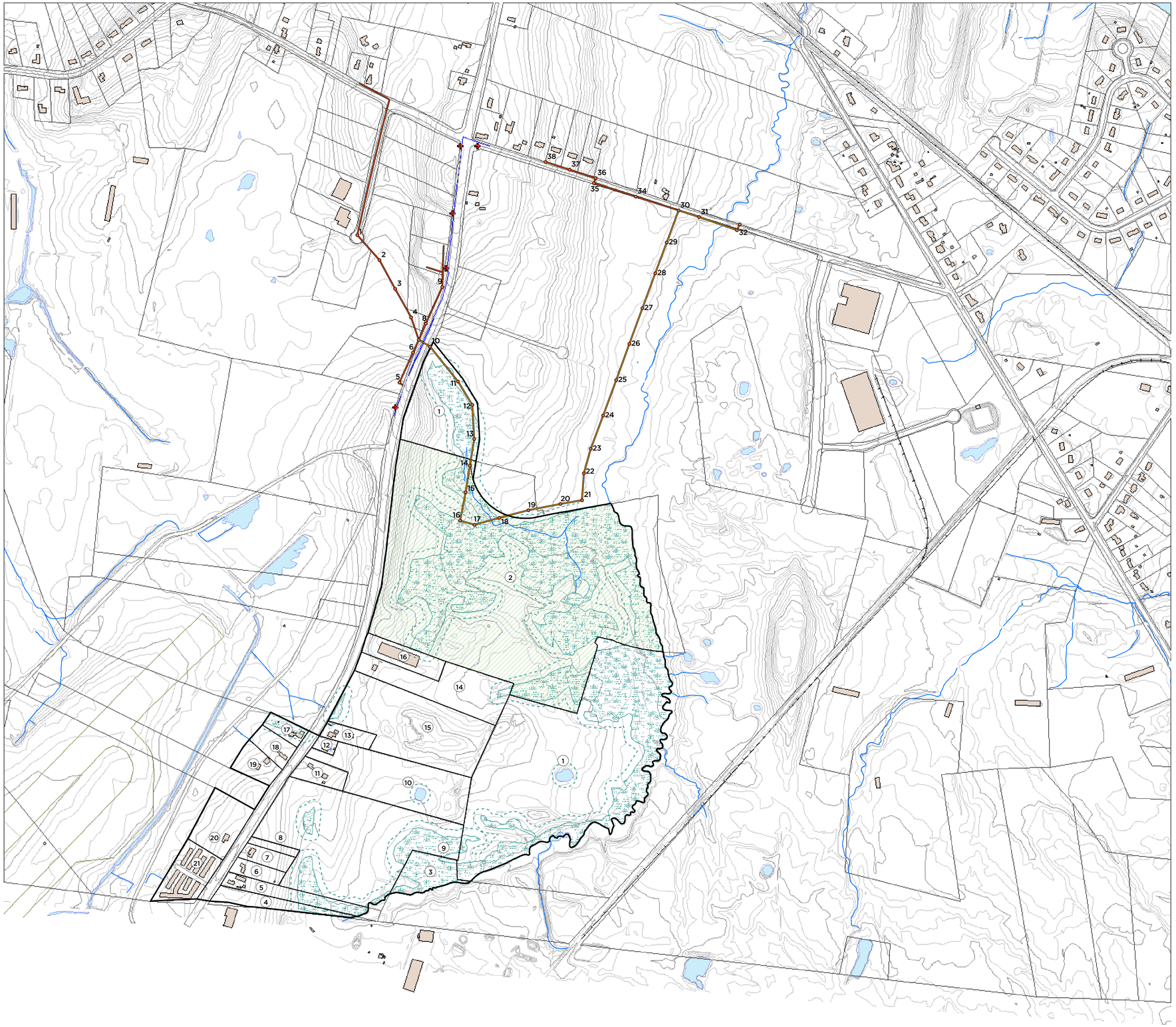
Anchor Engineering's preliminary cost estimate for Option 2 as outlined above is $1,189,000, or $175 per linear foot for construction with additional design, administration and inspection fees. Although slightly higher in unit cost than Option 1, Option 2 will not require numerous sawcuts or significant disturbance of Route 75 traffic to connect to private properties. The cost and overall impact of these private connections was not considered in this report, however it is anticipated that the State would prefer minimizing the disturbance of a recently reconstructed road.

APPENDIX A

Existing Data (Digital Format)

APPENDIX B

Study Area Mapping and Calculations



WETLAND SOILS REFERENCES:

1. GIS MAPPING PROVIDED BY TOWN OF SUFFIELD
2. DATA ACCUMULATION PLAN PREPARED FOR DEWHIRST ASSOCIATES ROUTE 75, SUFFIELD, CONNECTICUT, PREPARED BY FUSS & O'NEILL INC., DATED 01/02/01, SHEET 1 OF 1, SCALE 1"= 300'.
3. 29H-37-14 (PARCEL 9)WETLANDS LOCATED BY J.R. RUSSO & ASSOCIATES AUGUST AND SEPTEMBER 2008.
4. 29H-37-18 (PARCEL 15) EXISTING CONDITIONS PLAN, PROPOSED VALET PARKING, PROPERTY OF GRACE ALAMRI PROPERTIES LLC & TDN PROPERTIES, ROUTE 75 , SUFFIELD CONNECTICUT, PREPARED BY CLOSE, JENSON & MILLER, DATED 5/14/07, SHEET 2 OF 11, SCALE 1"= 50'.

MAP REFERENCES:

1. SUFFIELD INDUSTRIAL AND BUSINESS PARK, BID DOCUMENTS, PREPARED FOR SUFFIELD ECONOMIC DEVELOPMENT COMMISSION, SPENCER STREET & CT. ROUTE 75, PREPARED BY DECARLO & DOLL, INC. HAMDEN & HEBRON, CT, SHEET 5, DATED FEB. 1994.
2. SUFFIELD INDUSTRIAL AND BUSINESS PARK, AS-BUILTS PREPARED FOR SUFFIELD ECONOMIC DEVELOPMENT COMMISSION, SPENCER STREET & CT. ROUTE 75, PREPARED BY DECARLO & DOLL, INC. HAMDEN & HEBRON, CT, SHEET 9-13, DATED FEB. 1994.
3. BRADLEY BUSINESS CENTER, SUFFIELD, CT, PROPOSED SANITARY SEWER CONSTRUCTION PLANS, RECORD DRAWINGS, PREPARED FOR REYNOLDS METALS DEVELOPMENT CORP., PREPARED BY FUSS & O'NEILL, INC., MANCHESTER, CT, SHEETS 2-8, DATED JUNE 20, 1995.
4. IMPROVEMENT LOCATION SURVEY, SEWER AS-BUILT, PREPARED FOR MAIOLO REAL ESTATE INVESTMENT CO., INC. SHOWING IMPROVEMENTS ALONG AUSTIN STREET, SUFFIELD, CT, PREPARED BY SREENATH ASSOCIATES, SOMERS, CT, SCALE 1"=40', REV. AUG. 19, 1998.
5. WATER MAIN & HYDRANT LOCATIONS ARE APPROXIMATE AND LOCATED PER MAPPING PROVIDED BY THE TOWN OF SUFFIELD, CONNDOT RECONSTRUCTION AND EXPANSION OF CONN. ROUTE 75 FROM KING SPRING ROAD TO AUSTIN STREET, SHEETS 25-30, DATED 1997.

SEWER MANHOLE TABLE

Anchor ID	T.F.	Inv. N	Inv. S	Inv. E	Inv. W	Map Ref.
1	149.51	136.88	0.00	136.88	0.00	1
2	138.50	0.00	0.00	132.92	132.92	1
3	137.30	0.00	0.00	131.50	131.50	1
4	139.50	0.00	0.00	130.30	130.30	1
5	151.50	143.50	0.00	143.50	0.00	2
6	140.50	132.06	132.06	0.00	0.00	2
7	140.00	129.37	129.37	129.37	129.37	2
8	145.00	137.70	137.70	0.00	0.00	2
9	161.00	153.70	153.70	0.00	0.00	2
10	139.50	0.00	128.73	0.00	128.73	2
11	136.00	126.51	126.51	0.00	0.00	2
12	136.00	125.47	125.47	0.00	0.00	2
13	133.50	124.21	124.21	0.00	0.00	2
14	132.80	123.35	123.35	0.00	0.00	2
15	132.00	122.19	122.19	0.00	0.00	2
16	128.00	120.20	0.00	120.20	0.00	3
17	125.94	0.00	0.00	119.11	119.11	3
18	125.80	0.00	0.00	117.18	117.18	3
19	124.80	0.00	0.00	114.95	115.18	3
20	120.80	0.00	0.00	112.45	112.45	3
21	119.30	110.51	0.00	0.00	110.76	3
22	117.85	109.97	109.97	0.00	0.00	3
23	117.21	109.37	109.37	0.00	0.00	3
24	116.90	108.28	108.28	0.00	0.00	3
25	116.20	107.40	107.40	0.00	0.00	3
26	115.00	106.13	106.13	0.00	0.00	3
27	114.76	105.06	105.06	0.00	0.00	3
28	115.47	103.66	103.66	0.00	0.00	3
29	115.50	102.74	102.74	0.00	0.00	3
30	117.93	0.00	102.05	102.05	111.79	3
31	114.60	0.00	0.00	101.79	101.79	3
32	111.23	101.35	0.00	0.00	101.35	3
33	112.17	101.30	101.30	0.00	0.00	3
34	120.05	0.00	0.00	113.30	113.30	4
35	130.70	117.90	0.00	117.90	0.00	4
36	130.00	0.00	118.30	0.00	118.30	4
37	145.90	0.00	0.00	136.00	136.00	4
38	155.30	0.00	0.00	145.40	0.00	4

SEWER PIPE TABLE

Anchor ID	Dia.	Material	Slope	As-Built Length	Type	Map Ref.
01-02	08"	PVC	1.6%	245	GRAVITY	1
02-03	08"	PVC	0.58%	245	GRAVITY	1
03-04	08"	PVC	0.5%	240	GRAVITY	1
04-07	08"	PVC	0.56%	175	GRAVITY	1
05-06	08"	PVC	4.6%	240	GRAVITY	2
06-07	08"	PVC	2.9%	105	GRAVITY	2
07-10	08"	DI	0.5%	100	GRAVITY	2
08-07	08"	PVC	6.05%	130	GRAVITY	2
09-08	08"	PVC	5.4%	295	GRAVITY	2
10-11	08"	PVC	0.5%	340	GRAVITY	2
11-12	08"	PVC	0.5%	200	GRAVITY	2
12-13	08"	PVC	0.5%	253	GRAVITY	2
13-14	08"	PVC	0.5%	196	GRAVITY	2
14-15	08"	PVC	0.99%	200	GRAVITY	2
15-16	08"	PVC	0.99%	212	GRAVITY	2
16-17	08"	PVC	1.01%	108	GRAVITY	3
17-18	08"	PVC	1%	192	GRAVITY	3
18-19	08"	PVC	1.01%	220	GRAVITY	3
19-20	10"	PVC	1.04%	240	GRAVITY	3
20-21	10"	PVC	1.04%	162	GRAVITY	3
21-22	15"	PVC	0.6%	196.5	GRAVITY	3
22-23	15"	PVC	0.3%	188.5	GRAVITY	3
23-24	15"	PVC	0.42%	260.5	GRAVITY	3
24-25	15"	PVC	0.32%	278.5	GRAVITY	3
25-26	15"	PVC	0.45%	281.5	GRAVITY	3
26-27	15"	PVC	0.38%	279	GRAVITY	3
27-28	15"	PVC	0.51%	274.5	GRAVITY	3
28-29	15"	PVC	0.38%	240	GRAVITY	3
29-30	15"	PVC	0.27%	252	GRAVITY	3
30-31	15"	PVC	0.15%	158	GRAVITY	3
31-32	15"	PVC	0.15%	294	GRAVITY	3
32-33	15"	RCP	0.14%	0	GRAVITY	3
34-30	08"	PVC	0.46%	331.2	GRAVITY	4
35-34	08"	PVC	1.44%	323.1	GRAVITY	4
36-35	08"	PVC	0.91%	38.7	GRAVITY	4
37-36	08"	PVC	8.84%	200	GRAVITY	4
38-37	08"	PVC	5.08%	185.2	GRAVITY	4

PARCEL TABLE

Anchor ID	Map	Map ID	Block	Lot	Lot ID	Location	Total Acres	Wetland Area	Upland Review Area	Water Body U.R.A.	Total Usable Area	EXISTING USE
	Town of Suffield Assessor's Information						Buildable Area Calculations					
1a	27	H	37	1		840 SOUTH ST	6.34	2.37	1.08	0.00	2.88	UNDEVELOPED
1b	27	H	37	1		840 SOUTH ST	36.24	12.84	4.89	0.59	17.93	UNDEVELOPED
2	28	H	37	24	1	110 SOUTH ST	57.57	26.64	12.41	0.00	18.52	UNDEVELOPED
3	29	H	37	1	A	SOUTH ST	2.48	2.15	0.33	0.00	0.00	UNDEVELOPED
4	29	H	37	10		1394 SOUTH ST	1.81	0.34	0.16	0.00	1.31	COMMERCIAL/INDUSTRIAL
5	29	H	37	11		1372 SOUTH ST	2.25	0.89	0.20	0.00	1.15	RESIDENTIAL
6	29	H	37	12		1360 SOUTH ST	0.99	0.00	0.00	0.00	0.99	RESIDENTIAL
7	29	H	37	13		1348 SOUTH ST	1.07	0.00	0.00	0.00	1.07	RESIDENTIAL
8	29	H	37	14	A	SOUTH ST	0.48	0.00	0.02	0.00	0.46	UNDEVELOPED
9	29	H	37	14		SOUTH ST	19.27	2.74	3.12	0.00	13.40	UNDEVELOPED
10	29	H	37	15	A	SOUTH ST	8.14	0.00	0.00	0.39	7.75	UNDEVELOPED
11	29	H	37	15		1266 SOUTH ST	1.38	0.00	0.00	0.00	1.38	RESIDENTIAL
12	29	H	37	16		1254 SOUTH ST	0.38	0.00	0.06	0.00	0.31	RESIDENTIAL
13	29	H	37	17		1242 SOUTH ST	1.05	0.13	0.03	0.00	0.89	COMMERCIAL/INDUSTRIAL
14	29	H	37	18	A	1186 SOUTH ST	5.90	0.12	0.36	0.00	5.41	COMMERCIAL/INDUSTRIAL
15	29	H	37	18		SOUTH ST	11.39	0.14	0.40	0.00	10.84	COMMERCIAL/INDUSTRIAL
16	29	H	37	19		1160 SOUTH ST	2.15	0.00	0.00	0.00	2.15	COMMERCIAL/INDUSTRIAL
17	31		25	70		1257 SOUTH ST	0.92	0.45	0.33	0.00	0.14	RESIDENTIAL
18	31		25	71		1287 SOUTH ST	1.23	0.00	0.04	0.00	1.20	RESIDENTIAL
19	31		25	72		1277 SOUTH ST	1.49	0.00	0.00	0.00	1.49	RESIDENTIAL
20	31		25	75		1353 SOUTH ST	3.13	0.00	0.00	0.00	3.13	COMMERCIAL/INDUSTRIAL
21	31		25	75	A	1395 SOUTH ST	2.93	0.00	0.00	0.00	2.93	COMMERCIAL/INDUSTRIAL
							168.57	48.81	23.43	0.98	95.34	

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0 175 350 700 1,050 Feet

ANCHOR
ENGINEERING SERVICES, INC.
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Glastonbury, CT 06033
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FEASIBILITY STUDY

PREPARED FOR TOWN OF SUFFIELD
ROUTE 75 SEWER & WATER MAIN EXTENSION

STUDY AREA MAP

SUFFIELD CONNECTICUT

SCALE	PROJECT	DATE	FIGURE
1" = 350'	157-17	JUNE 2009	STUDY AREA

APPENDIX C

Sewer Main Extension Mapping and Calculations

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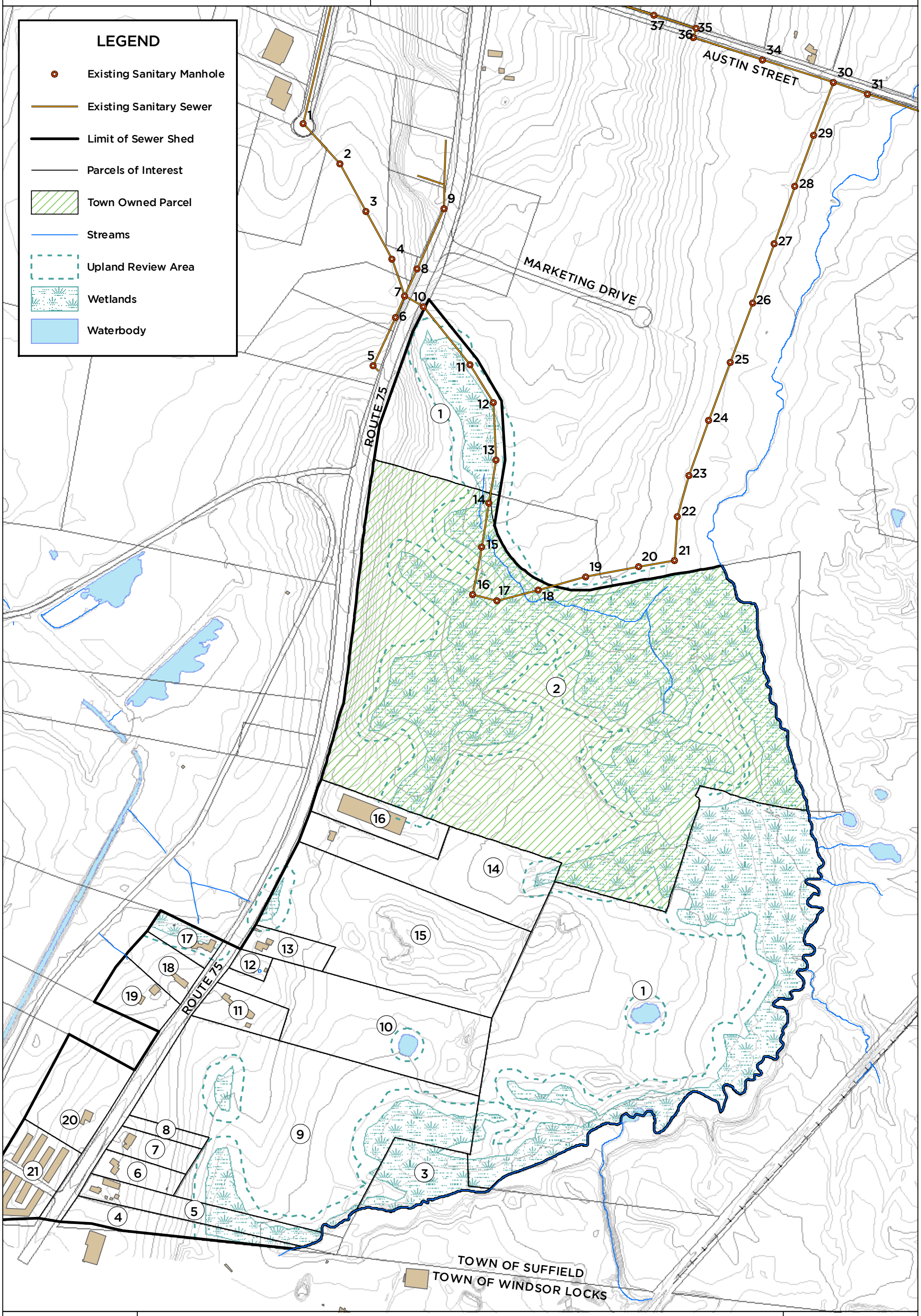
SANITARY SEWER: EXISTING CONDITIONS

PREPARED FOR TOWN OF SUFFIELD

ROUTE 75 SEWER & WATER MAIN EXTENSION



MAP BASED ON
CT DEP GIS &
TOWN OF SUFFIELD
GIS & MAPPING

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0 200 400 800 1,200 Feet

FIGURE
SANITARY SEWER 1

PROJECT	DATE
157-17	JUNE 2009

ANCHOR
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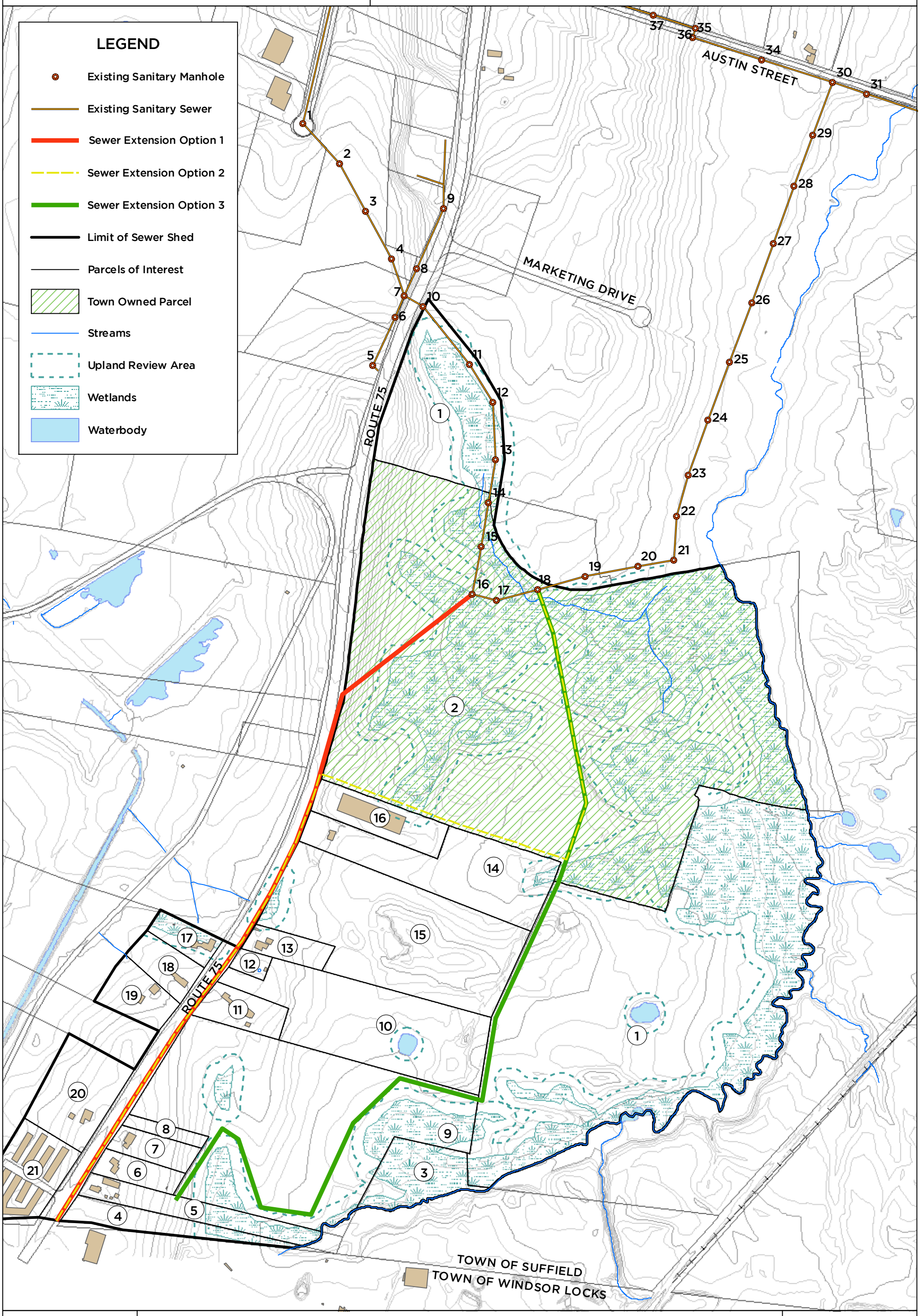
SANITARY SEWER: PROPOSED CONDITIONS

PREPARED FOR TOWN OF SUFFIELD

ROUTE 75 SEWER & WATER MAIN EXTENSION



MAP BASED ON
CT DEP GIS &
TOWN OF SUFFIELD
GIS & MAPPING

N
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0 200 400 800 1,200 Feet

FIGURE
SANITARY SEWER 2

PROJECT	DATE
157-17	JUNE 2009

ANCHOR
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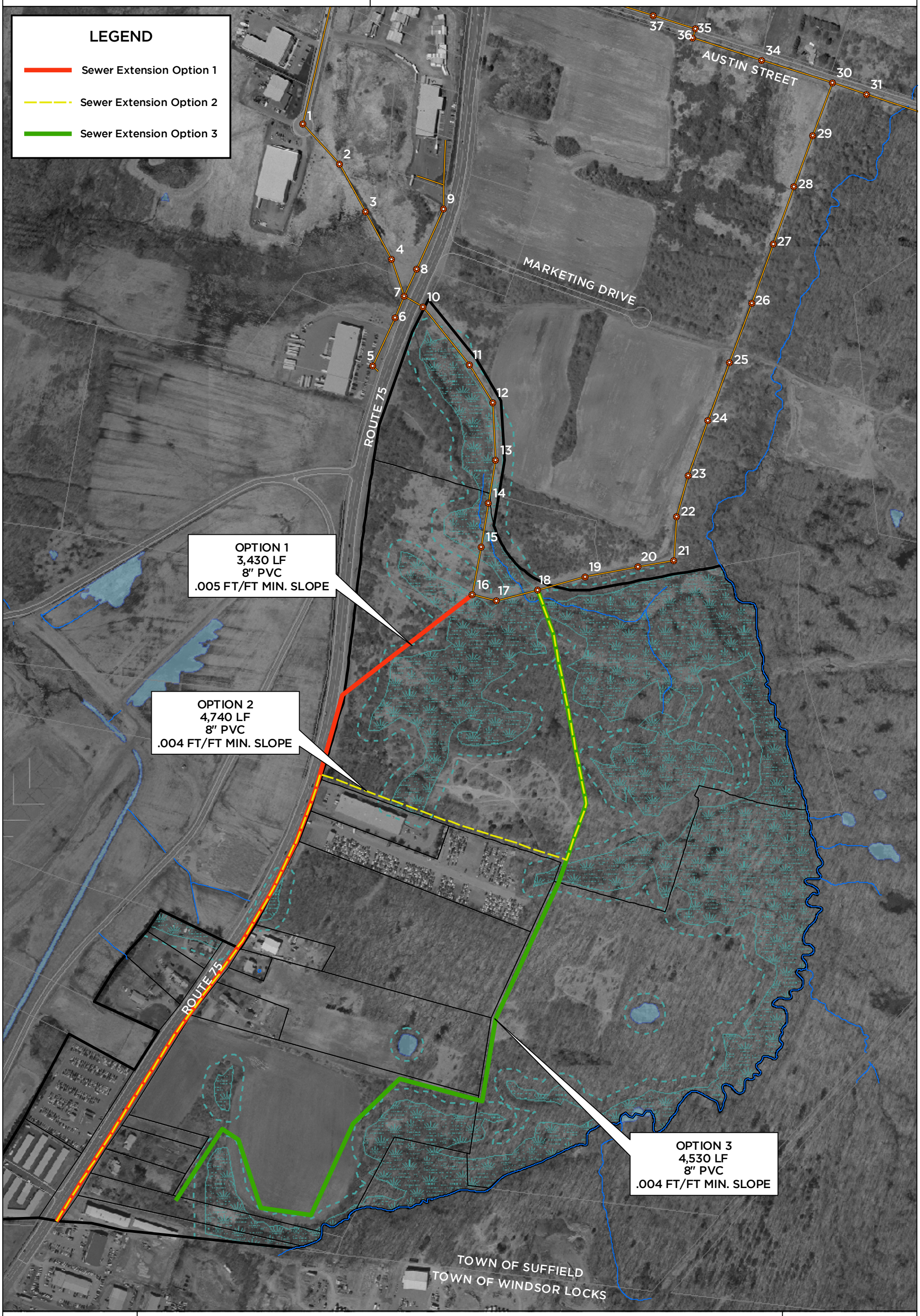
SANITARY SEWER: PROPOSED CONDITIONS OVER AERIAL

PREPARED FOR TOWN OF SUFFIELD

ROUTE 75 SEWER & WATER MAIN EXTENSION



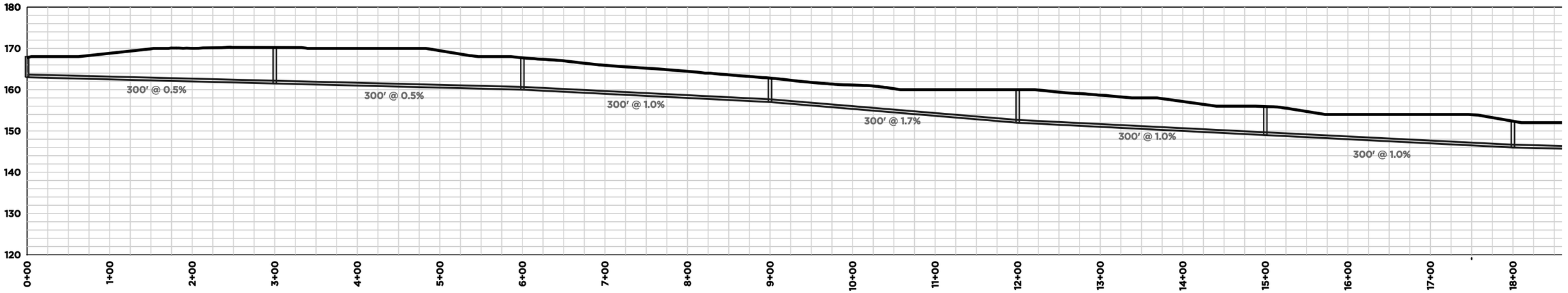
MAP BASED ON
CT DEP GIS &
TOWN OF SUFFIELD
GIS & MAPPING

N W E S

0 200 400 800 1,200 Feet

FIGURE
SANITARY SEWER 3

PROJECT	DATE
157-17	JUNE 2009



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Civil Engineering • Environmental Consulting • Land Surveying • Construction Management

J:\157\7\DESIGN .dgn

PROJ. ENGINEER	KRG
PROJ. MANAGER	BJH
OFFICE REVIEW	BJH

REVISIONS	

SCALE: HOR: 1"= 120'
VER: 1"= 24'

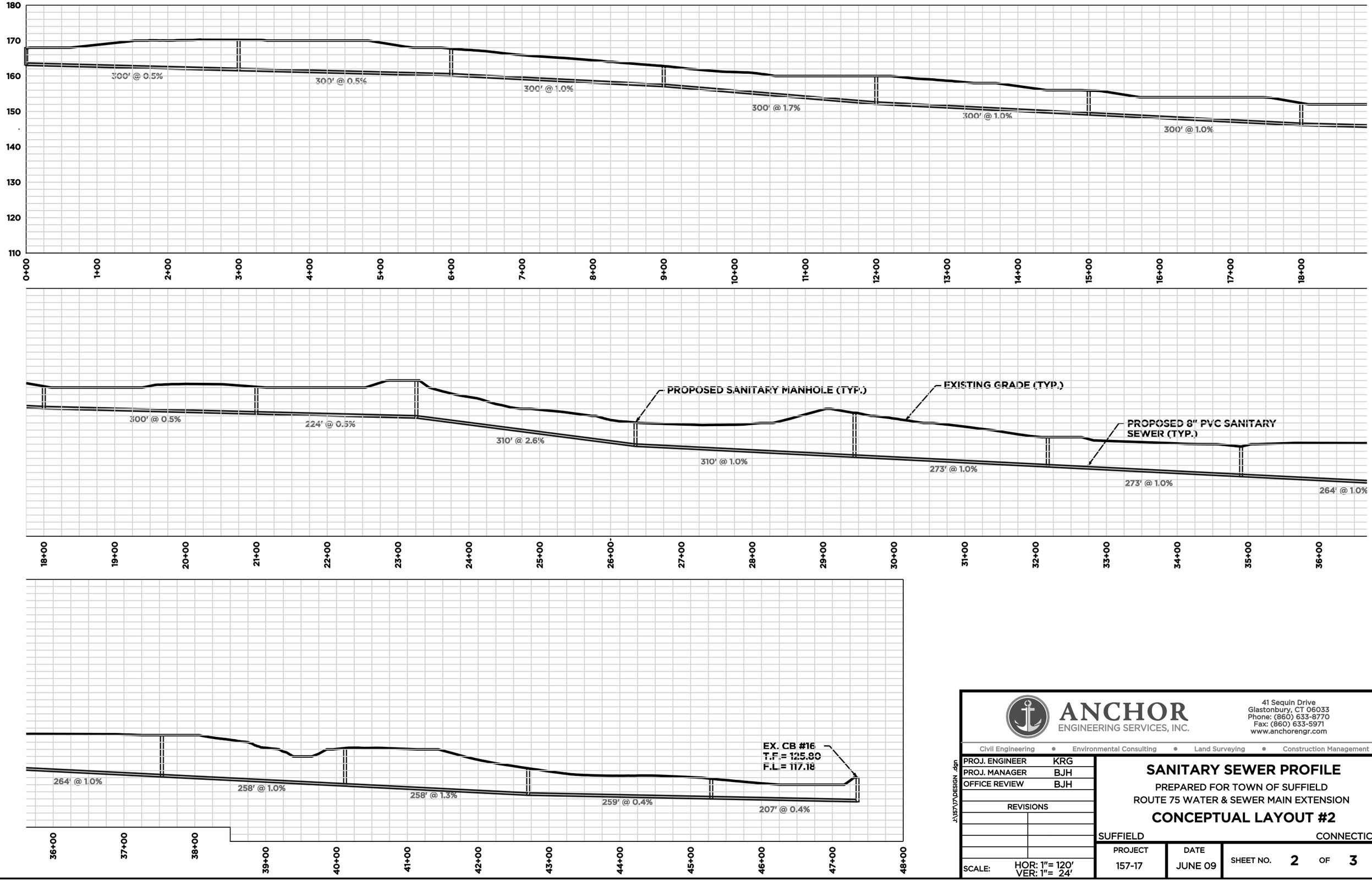
SANITARY SEWER PROFILE

PREPARED FOR TOWN OF SUFFIELD
ROUTE 75 WATER & SEWER MAIN EXTENSION

CONCEPTUAL LAYOUT #1

SUFFIELD CONNECTICUT

PROJECT	DATE	SHEET NO.		OF	
157-17	JUNE 09		1		3



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J:\157\7\DESIGN .dgn

PROJ. ENGINEER	KRG
PROJ. MANAGER	BJH
OFFICE REVIEW	BJH

REVISIONS

SCALE: HOR: 1"= 120'
VER: 1"= 24'

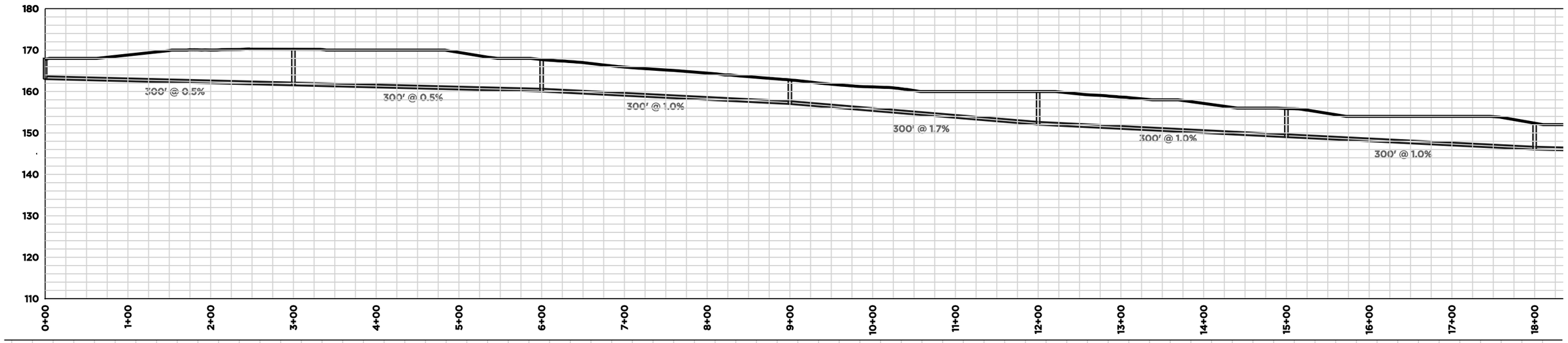
SANITARY SEWER PROFILE

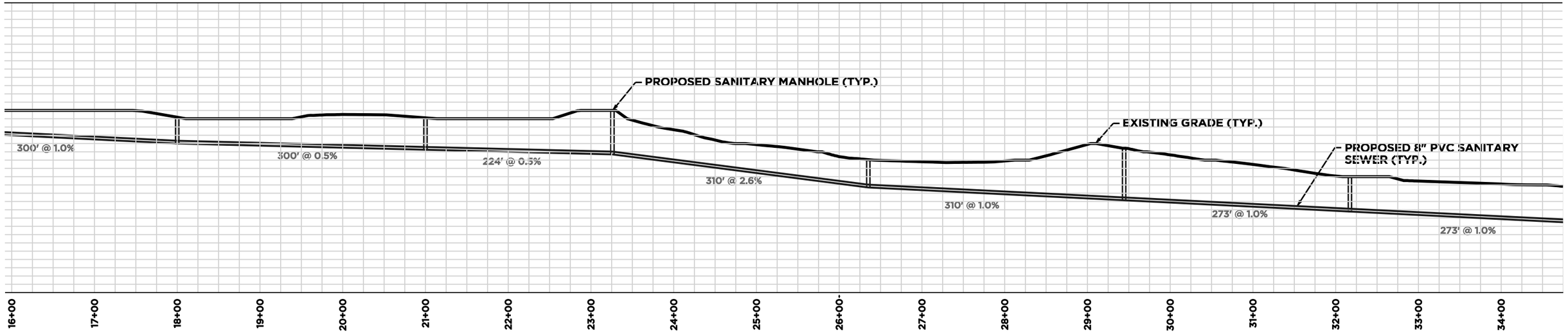
PREPARED FOR TOWN OF SUFFIELD
ROUTE 75 WATER & SEWER MAIN EXTENSION

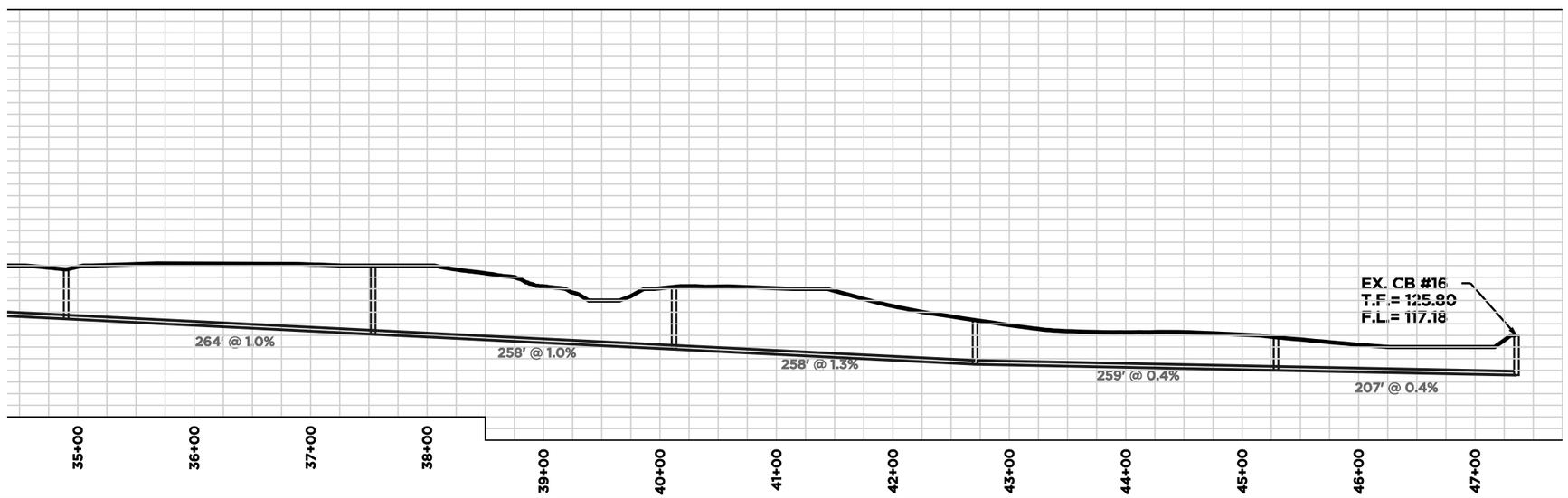
CONCEPTUAL LAYOUT #2

SUFFIELD CONNECTICUT

PROJECT	DATE	SHEET NO.		OF	
157-17	JUNE 09		2		3







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J:\157\17\DESIGN .dgn

PROJ. ENGINEER	KRG
PROJ. MANAGER	BJH
OFFICE REVIEW	BJH

REVISIONS

SCALE: HOR: 1"= 120'
VER: 1"= 24'

SANITARY SEWER PROFILE

PREPARED FOR TOWN OF SUFFIELD
ROUTE 75 WATER & SEWER MAIN EXTENSION

CONCEPTUAL LAYOUT #3

SUFFIELD CONNECTICUT

PROJECT	DATE	SHEET NO.		OF	
157-17	JUNE 09		3		3

	Office Calculations				Retail & Industrial Calculations		
Anchor I.D.	Maximum Building area (12% Usable Area	Maximum Floor Area (2 Floors Typ.)	Design Flows (Gallons Per Day/200 sf)	Calculated Flows (Gallons Per Day)	Maximum Building area (20% Usable Area	Design Flows (Gross Area)	Calculated Flows (Gallons Per Day)
1a	15,054	30,108	20	3,011	25,090	0.1	2,509
1b	93,714	187,428	20	18,743	156,190	0.1	15,619
2	121,001	242,001	20	24,200	161,334	0.1	16,133
3	0	0	20	0	0	0.1	0
4	8,579	17,158	20	1,716	11,439	0.1	1,144
5	7,524	15,048	20	1,505	10,032	0.1	1,003
6	6,489	12,978	20	1,298	8,652	0.1	865
7	6,987	13,974	20	1,397	9,316	0.1	932
8	3,020	6,040	20	604	4,027	0.1	403
9	87,580	175,160	20	17,516	116,773	0.1	11,677
10	50,652	101,304	20	10,130	67,536	0.1	6,754
11	9,038	18,077	20	1,808	12,051	0.1	1,205
12	2,052	4,104	20	410	2,736	0.1	274
13	5,806	11,613	20	1,161	7,742	0.1	774
14	35,371	70,742	20	7,074	47,162	0.1	4,716
15	70,858	141,716	20	14,172	94,477	0.1	9,448
16	14,036	28,071	20	2,807	18,714	0.1	1,871
17	885	1,771	20	177	1,180	0.1	118
18	7,817	15,635	20	1,563	10,423	0.1	1,042
19	9,719	19,437	20	1,944	12,958	0.1	1,296
20	20,470	40,941	20	4,094	27,294	0.1	2,729
21	15,314	30,627	20	3,063	25,523	0.1	2,552
				118,393			**83,065**

APPENDIX D

Water Main Extension Mapping

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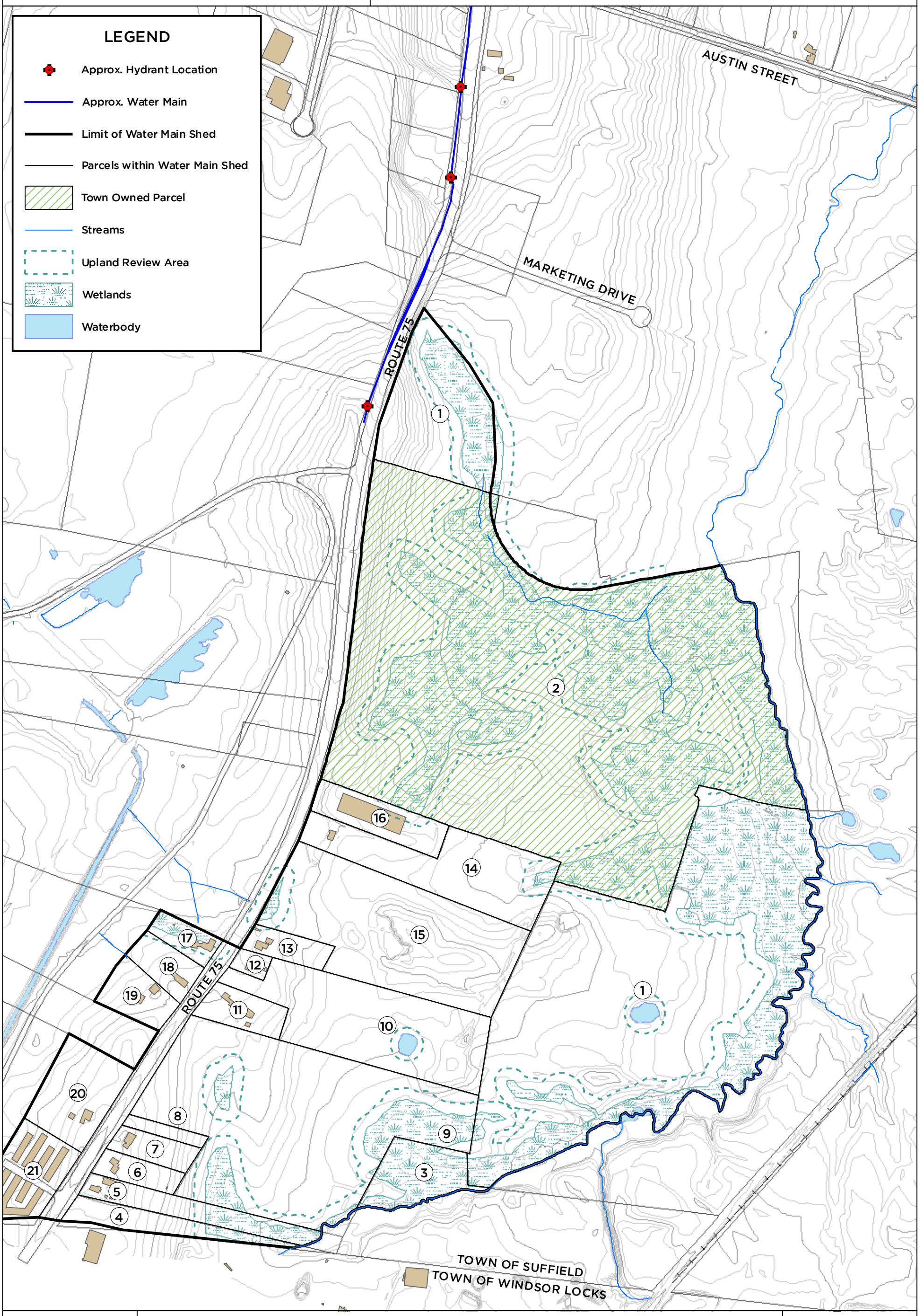
Phone: (860) 633-8770
Fax: (860) 633-5971

WATER MAIN: EXISTING CONDITIONS

PREPARED FOR TOWN OF SUFFIELD



MAP BASED ON CT DEP GIS & TOWN OF SUFFIELD GIS & MAPPING

N W E S

0 200 400 800 1,200 Feet

NOTE: EXISTING WATER MAIN & HYDRANT LOCATIONS ARE APPROXIMATE AND LOCATED PER CONNDOT RECONSTRUCTION AND EXPANSION OF CONN. ROUTE 75 FROM KING SPRING ROAD TO AUSTIN STREET, SHEETS 25-30, DATED 1997.

FIGURE
WATER MAIN 1

PROJECT	DATE
157-17	JUNE 2009

ANCHOR
ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
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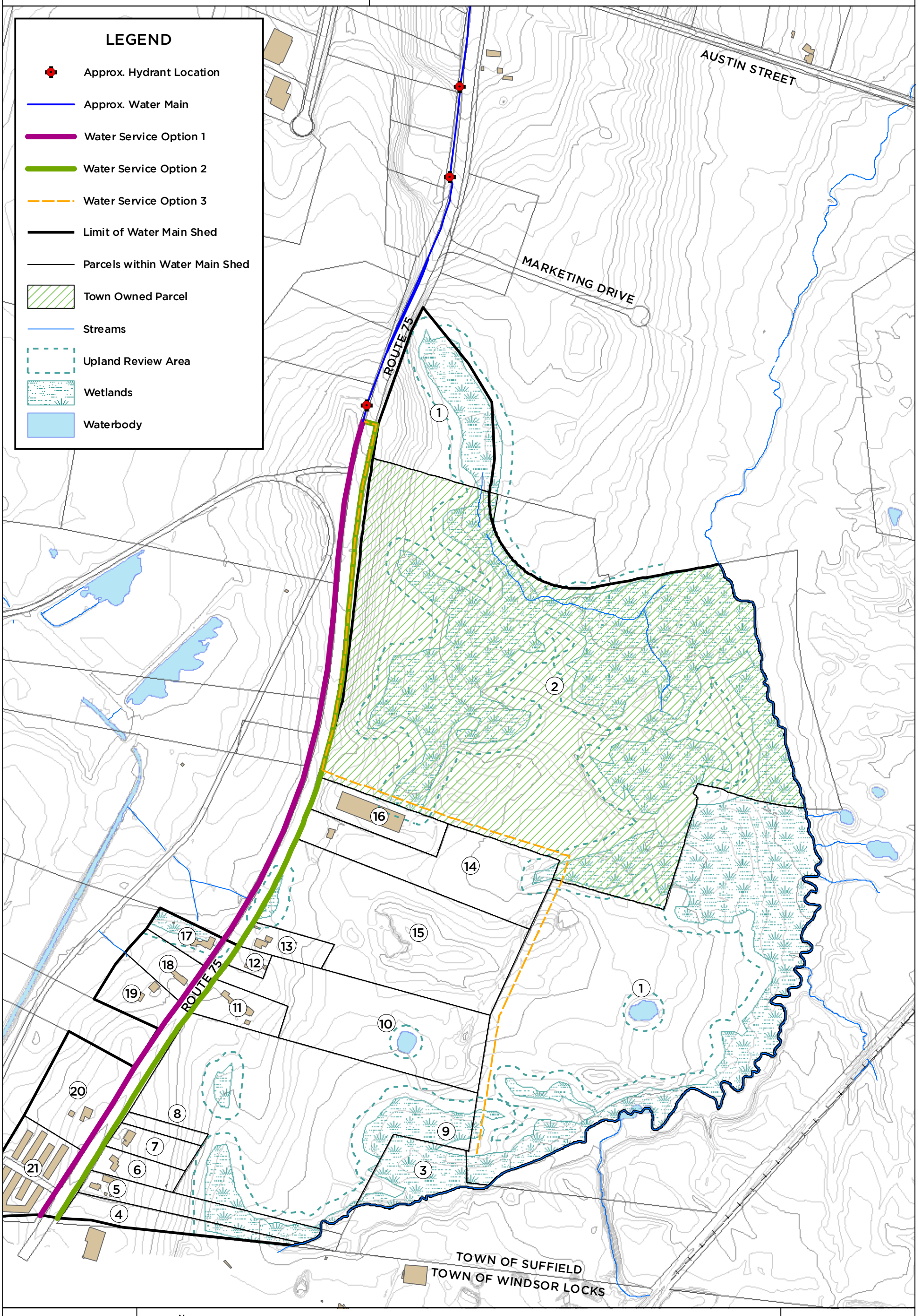
WATER MAIN: PROPOSED CONDITIONS

PREPARED FOR TOWN OF SUFFIELD

ROUTE 75 SEWER & WATER MAIN EXTENSION



GIS & MAPPING

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0 200 400 800 1,200 Feet

NOTE: EXISTING WATER MAIN & HYDRANT LOCATIONS ARE APPROXIMATE AND LOCATED PER CONNDOT RECONSTRUCTION AND EXPANSION OF CONN. ROUTE 75 FROM KING SPRING ROAD TO AUSTIN STREET, SHEETS 25-30, DATED 1997.

FIGURE
WATER MAIN 2

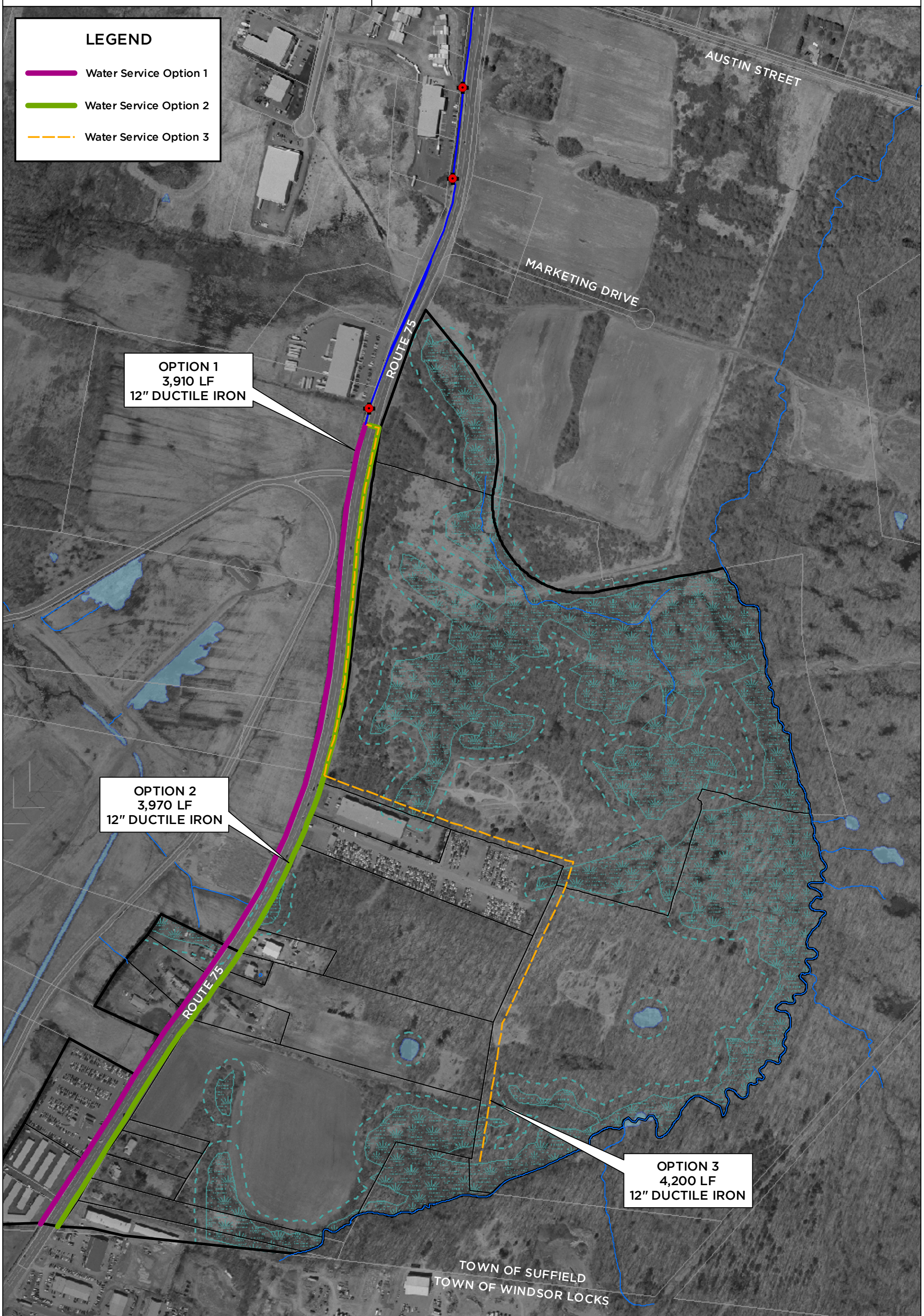
PROJECT	DATE
157-17	JUNE 2009

ANCHOR
ENGINEERING SERVICES, INC.

41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
Fax: (860) 633-5971

WATER MAIN: PROPOSED CONDITIONS OVER AERIAL

PREPARED FOR TOWN OF SUFFIELD
ROUTE 75 SEWER & WATER MAIN EXTENSION



MAP BASED ON
CT DEP GIS &
TOWN OF SUFFIELD
GIS & MAPPING

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0 200 400 800 1,200 Feet

NOTE: EXISTING WATER MAIN & HYDRANT LOCATIONS ARE APPROXIMATE AND LOCATED PER CONNDOT RECONSTRUCTION AND EXPANSION OF CONN. ROUTE 75 FROM KING SPRING ROAD TO AUSTIN STREET, SHEETS 25-30, DATED 1997.

FIGURE
WATER MAIN 3

PROJECT	DATE
157-17	JUNE 2009

APPENDIX E

Quantity Cost Estimates

ROUTE 75 SEWER MAIN EXTENSION OPTION #1
OPINION OF CONSTRUCTION COST
SUFFIELD, CT
JUNE 2009

CONSTRUCTION ITEM	QUANTITY	PAY UNIT	UNIT COST	TOTAL COST
ENGINEERING ITEMS				
AS BUILT	1	LS	$25,000	$25,000
DESIGN (15%)	1	LS	$82,000	$82,000
CONST. INSP. & ADM. (15%)	1	LS	$82,000	$82,000
EASEMENTS	1	LS	$25,000	$25,000
			TOTAL GENERAL ITEMS	**$214,000**
GENERAL ITEMS				
MOBILIZATION (7.5%)	1	LS	$36,000	$36,000
TRAFFIC MAINTENANCE FOR ROAD CLOSURE (4.0%)	1	LS	$19,000	$19,000
CONSTRUCTION STAKING (1.0%)	1	LS	$5,000	$5,000
CLEARING & GRUBBING (2.0%)	1	LS	$10,000	$10,000
			TOTAL GENERAL ITEMS	**$70,000**
SEWER SERVICE ITEMS				
8" PVC	3430	LF	$30	$102,900
MANHOLE	13	EA	$4,000	$52,000
6" PVC SERVICE LAT.	500	LF	$15	$7,500
TRENCH EX. & BACKFILL	3850	CY	$30	$115,500
BEDDING	770	CY	$30	$23,100
E&S CONTROL	4600	LF	$5	$23,000
TURF ESTABLISHMENT	1300	SY	$5	$6,500
			TOTAL SEWER SERVICE ITEMS	**$330,500**
ROADWAY ITEMS				
SAWCUT	4600	LF	$10	$46,000
REMOVE PAVEMENT	760	SY	$25	$19,000
SUBBASE	260	CY	$45	$11,700
PROCESSED AGGREGATE BASE	225	TON	$30	$6,750
BIT. CONC. CL 4	265	TON	$100	$26,500
BIT. CONC. CL 1	240	TON	$100	$24,000
MILLING REPAIR	1300	SY	$8	$10,400
			TOTAL ROADWAY ITEMS	**$144,350**
TOTAL PROJECT COSTS				
TOTAL GENERAL, WATER & ROADWAY ITEMS				**$758,850**
CONTINGENCY (25%)				**$189,713**
TOTAL ESTIMATED CONSTRUCTION COST				**$948,563**
			SAY	**$949,000**

1 Items & quantities based on a preliminary design prepared for the Route 75 Sewer and Water Main Extension Feasibility Report prepared by Anchor Engineering Services, Inc.

2 Option #1 proposes an 8" sewer main, extended 3,430 total linear feet. Anchor Engineering assumes approximately 2,280 linear feet of this service shall be within the pavement structure of Route 75.

ROUTE 75 SEWER MAIN EXTENSION OPTION #2
OPINION OF CONSTRUCTION COST
SUFFIELD, CT
JUNE 2009

CONSTRUCTION ITEM	QUANTITY	PAY UNIT	UNIT COST	TOTAL COST
ENGINEERING ITEMS				
AS BUILT	1	LS	$25,000	$25,000
DESIGN (15%)	1	LS	$103,000	$103,000
CONST. INSP. & ADM. (15%)	1	LS	$103,000	$103,000
EASEMENTS	1	LS	$25,000	$25,000
			TOTAL GENERAL ITEMS	**$256,000**
GENERAL ITEMS				
MOBILIZATION (7.5%)	1	LS	$45,000	$45,000
TRAFFIC MAINTENANCE (4.0%)	1	LS	$24,000	$24,000
CONSTRUCTION STAKING (1.0%)	1	LS	$6,000	$6,000
CLEARING & GRUBBING (2.0%)	1	LS	$12,000	$12,000
			TOTAL GENERAL ITEMS	**$87,000**
SEWER SERVICE ITEMS				
8" PVC	4740	LF	$30	$142,200
MANHOLE	18	EA	$4,000	$72,000
6" PVC SERVICE LAT.	500	LF	$15	$7,500
TRENCH EX. & BACKFILL	5300	CY	$30	$159,000
BEDDING	1100	CY	$30	$33,000
E&S CONTROL	4800	LF	$5	$24,000
TURF ESTABLISHMENT	2700	SY	$5	$13,500
			TOTAL SEWER SERVICE ITEMS	**$451,200**
ROADWAY ITEMS				
SAWCUT	4600	LF	$10	$46,000
REMOVE PAVEMENT	760	SY	$25	$19,000
SUBBASE	260	CY	$45	$11,700
PROCESSED AGGREGATE BASE	225	TON	$30	$6,750
BIT. CONC. CL 4	265	TON	$100	$26,500
BIT. CONC. CL 1	240	TON	$100	$24,000
MILLING REPAIR	1300	SY	$8	$10,400
			TOTAL ROADWAY ITEMS	**$144,350**
TOTAL PROJECT COSTS				
TOTAL GENERAL, WATER & ROADWAY ITEMS				**$938,550**
CONTINGENCY (25%)				**$234,638**
TOTAL ESTIMATED CONSTRUCTION COST				**$1,173,188**
			SAY	**$1,174,000**

1 Items & quantities based on a preliminary design prepared for the Route 75 Sewer and Water Main Extension Feasibility Report prepared by Anchor Engineering Services, Inc.

2 Option #2 proposes an 8" sewer main, extended 4,740 total linear feet. Anchor Engineering assumes approximately 2,280 linear feet of this service shall be within the pavement structure of Route 75.

ROUTE 75 SEWER MAIN EXTENSION OPTION #3
OPINION OF CONSTRUCTION COST
SUFFIELD, CT
JUNE 2009

CONSTRUCTION ITEM	QUANTITY	PAY UNIT	UNIT COST	TOTAL COST
ENGINEERING ITEMS				
AS BUILT	1	LS	$25,000	$25,000
DESIGN (15%)	1	LS	$90,000	$90,000
CONST. INSP. & ADM. (15%)	1	LS	$90,000	$90,000
EASEMENTS	1	LS	$25,000	$25,000
			TOTAL GENERAL ITEMS	**$230,000**
GENERAL ITEMS				
MOBILIZATION (7.5%)	1	LS	$40,000	$40,000
TRAFFIC MAINTENANCE FOR ROAD CLOSURE (0.0%)	1	LS	$0	$0
CONSTRUCTION STAKING (1.0%)	1	LS	$6,000	$6,000
CLEARING & GRUBBING (4.0%)	1	LS	$22,000	$22,000
			TOTAL GENERAL ITEMS	**$68,000**
SEWER SERVICE ITEMS				
8" PVC	4530	LF	$30	$135,900
MANHOLE	18	EA	$4,000	$72,000
6" PVC SERVICE LAT.	300	LF	$15	$4,500
TRENCH EX. & BACKFILL	7400	CY	$30	$222,000
BEDDING	1000	CY	$30	$30,000
E&S CONTROL	7700	LF	$5	$38,500
TURF ESTABLISHMENT	5000	SY	$5	$25,000
			TOTAL SEWER SERVICE ITEMS	**$527,900**
ROADWAY ITEMS				
SAWCUT (ONE SIDE ONLY)	0	LF	$10	$0
REMOVE PAVEMENT	0	SY	$25	$0
SUBBASE	0	CY	$45	$0
PROCESSED AGGREGATE BASE	0	TON	$30	$0
BIT. CONC. CL 4	0	TON	$100	$0
BIT. CONC. CL 1	0	TON	$100	$0
MILLING REPAIR	0	SY	$8	$0
			TOTAL ROADWAY ITEMS	**$0**
TOTAL PROJECT COSTS				
TOTAL GENERAL, WATER & ROADWAY ITEMS				**$825,900**
CONTINGENCY (25%)				**$206,475**
TOTAL ESTIMATED CONSTRUCTION COST				**$1,032,375**
			SAY	**$1,033,000**

1 Items & quantities based on a preliminary design prepared for the Route 75 Sewer and Water Main Extension Feasibility Report prepared by Anchor Engineering Services, Inc.

2 Option #3 proposes an 8" sewer main, extended 4,530 total linear feet. Anchor Engineering assumes no portion of this service shall be within the pavement structure of Route 75.

ROUTE 75 WATER MAIN EXTENSION OPTION #1
OPINION OF CONSTRUCTION COST
SUFFIELD, CT
JUNE 2009

CONSTRUCTION ITEM	QUANTITY	PAY UNIT	UNIT COST	TOTAL COST
ENGINEERING ITEMS				
AS BUILT	1	LS	$25,000	$25,000
DESIGN (15%)	1	LS	$97,000	$97,000
CONST. INSP. & ADM. (15%)	1	LS	$97,000	$97,000
EASEMENTS	1	LS	$25,000	$25,000
			TOTAL GENERAL ITEMS	**$244,000**
GENERAL ITEMS				
MOBILIZATION (7.5%)	1	LS	$42,000	$42,000
TRAFFIC MAINTENANCE FOR ROAD CLOSURE (4.0%)	1	LS	$23,000	$23,000
CONSTRUCTION STAKING (1.0%)	1	LS	$6,000	$6,000
CLEARING & GRUBBING (2.0%)	1	LS	$12,000	$12,000
			TOTAL GENERAL ITEMS	**$83,000**
WATER SERVICE ITEMS				
12" D.I. PIPE	3910	LF	$55	$215,050
HYDRANT	8	EA	$3,000	$24,000
1" COPPER SERVICE LAT.	25	EA	$3,000	$75,000
12" GATE VALVE	5	EA	$3,500	$17,500
TRENCH EX. & BACKFILL	2600	CY	$30	$78,000
BEDDING	870	CY	$30	$26,100
E&S CONTROL	3910	LF	$5	$19,550
TURF ESTABLISHMENT	2800	SY	$5	$14,000
			TOTAL WATER SERVICE ITEMS	**$469,200**
ROADWAY ITEMS				
SAWCUT	2800	LF	$10	$28,000
REMOVE PAVEMENT	470	SY	$25	$11,750
SUBBASE	155	CY	$45	$6,975
PROCESSED AGGREGATE BASE	140	TON	$30	$4,200
BIT. CONC. CL 4	165	TON	$100	$16,500
BIT. CONC. CL 1	150	TON	$100	$15,000
MILLING REPAIR	780	SY	$8	$6,240
			TOTAL ROADWAY ITEMS	**$88,665**
TOTAL PROJECT COSTS				
TOTAL GENERAL, WATER & ROADWAY ITEMS				**$884,865**
CONTINGENCY (25%)				**$221,216**
TOTAL ESTIMATED CONSTRUCTION COST				**$1,106,081**
			SAY	**$1,107,000**

1 Items & quantities based on a preliminary design prepared for the Route 75 Sewer and Water Main Extension Feasibility Report prepared by Anchor Engineering Services, Inc.

2 Option #1 proposes a 12" water main, extended 3,910 total linear feet. Anchor Engineering assumes approximately 1,400 linear feet of this service shall be within the pavement structure of Route 75.

ROUTE 75 WATER MAIN EXTENSION OPTION #2
OPINION OF CONSTRUCTION COST
SUFFIELD, CT
JUNE 2009

CONSTRUCTION ITEM	QUANTITY	PAY UNIT	UNIT COST	TOTAL COST
ENGINEERING ITEMS				
AS BUILT	1	LS	$25,000	$25,000
DESIGN (15%)	1	LS	$104,000	$104,000
CONST. INSP. & ADM. (15%)	1	LS	$104,000	$104,000
EASEMENTS	1	LS	$25,000	$25,000
			TOTAL GENERAL ITEMS	**$258,000**
GENERAL ITEMS				
MOBILIZATION (7.5%)	1	LS	$46,000	$46,000
TRAFFIC MAINTENANCE FOR ROAD CLOSURE (4.0%)	1	LS	$25,000	$25,000
CONSTRUCTION STAKING (1.0%)	1	LS	$7,000	$7,000
CLEARING & GRUBBING (2.0%)	1	LS	$13,000	$13,000
			TOTAL GENERAL ITEMS	**$91,000**
WATER SERVICE ITEMS				
12" D.I. PIPE	3970	LF	$55	$218,350
HYDRANT	8	EA	$3,000	$24,000
1" COPPER SERVICE LAT.	25	EA	$3,000	$75,000
12" GATE VALVE	5	EA	$3,500	$17,500
TRENCH EX. & BACKFILL	2650	CY	$30	$79,500
BEDDING	880	CY	$30	$26,400
E&S CONTROL	4000	LF	$5	$20,000
TURF ESTABLISHMENT	1800	SY	$5	$9,000
			TOTAL WATER SERVICE ITEMS	**$469,750**
ROADWAY ITEMS				
SAWCUT	2400	LF	$10	$24,000
REMOVE PAVEMENT	1060	SY	$25	$26,500
SUBBASE	265	CY	$45	$11,925
PROCESSED AGGREGATE BASE	230	TON	$30	$6,900
BIT. CONC. CL 4	275	TON	$100	$27,500
BIT. CONC. CL 1	250	TON	$100	$25,000
MILLING REPAIR	1320	SY	$8	$10,560
			TOTAL ROADWAY ITEMS	**$132,385**
TOTAL PROJECT COSTS				
TOTAL GENERAL, WATER & ROADWAY ITEMS				**$951,135**
CONTINGENCY (25%)				**$237,784**
TOTAL ESTIMATED CONSTRUCTION COST				**$1,188,919**
			SAY	**$1,189,000**

1 Items & quantities based on a preliminary design prepared for the Route 75 Sewer and Water Main Extension Feasibility Report prepared by Anchor Engineering Services, Inc.

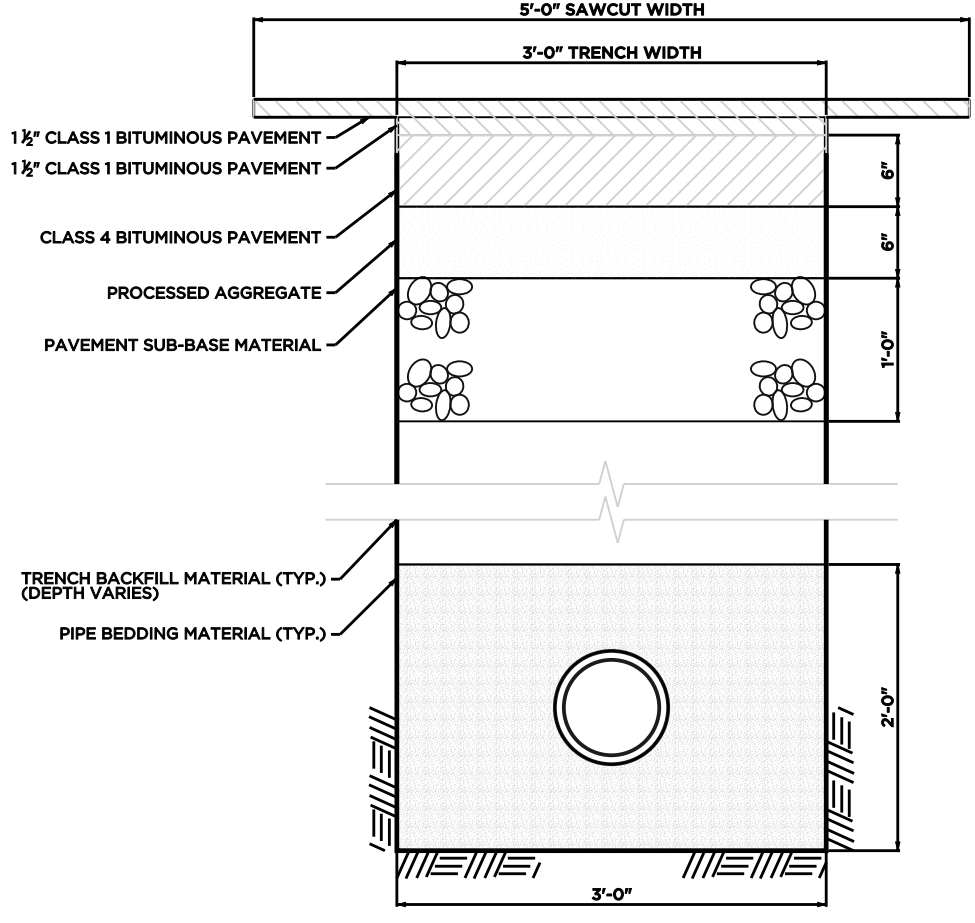
2 Option #2 proposes a 12" water main, extended 3,970 total linear feet. Anchor Engineering assumes approximately 2,370 linear feet of this service shall be within the pavement structure of Route 75.

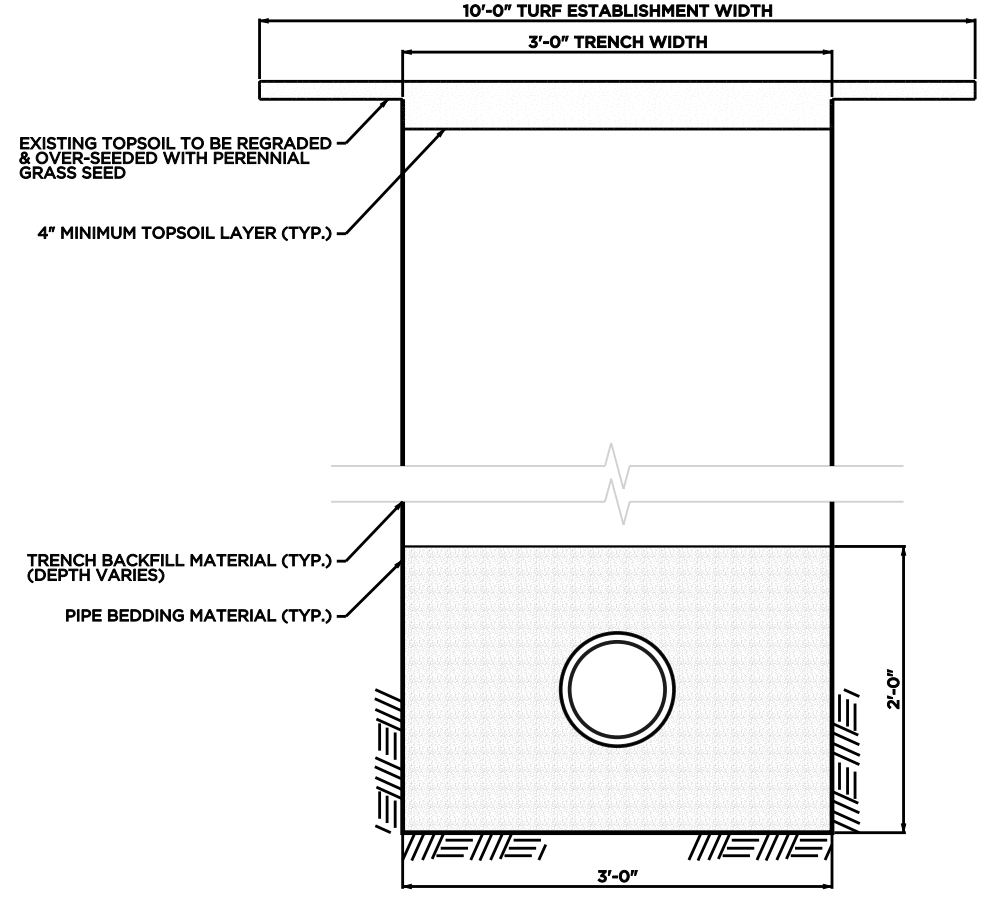
ROUTE 75 WATER MAIN EXTENSION OPTION #3
OPINION OF CONSTRUCTION COST
SUFFIELD, CT
JUNE 2009

CONSTRUCTION ITEM	QUANTITY	PAY UNIT	UNIT COST	TOTAL COST
ENGINEERING ITEMS				
AS BUILT	1	LS	$25,000	$25,000
DESIGN (15%)	1	LS	$84,000	$84,000
CONST. INSP. & ADM. (15%)	1	LS	$84,000	$84,000
EASEMENTS	1	LS	$25,000	$25,000
			TOTAL GENERAL ITEMS	**$218,000**
GENERAL ITEMS				
MOBILIZATION (7.5%)	1	LS	$36,000	$36,000
TRAFFIC MAINTENANCE FOR ROAD CLOSURE (4.0%)	1	LS	$20,000	$20,000
CONSTRUCTION STAKING (1.0%)	1	LS	$5,000	$5,000
CLEARING & GRUBBING (4.0%)	1	LS	$20,000	$20,000
			TOTAL GENERAL ITEMS	**$81,000**
WATER SERVICE ITEMS				
12" D.I. PIPE	4200	LF	$55	$231,000
HYDRANT	8	EA	$3,000	$24,000
1" COPPER SERVICE LAT.	15	EA	$3,000	$45,000
12" GATE VALVE	5	EA	$3,500	$17,500
TRENCH EX. & BACKFILL	2800	CY	$30	$84,000
BEDDING	933	CY	$30	$27,990
E&S CONTROL	4400	LF	$5	$22,000
TURF ESTABLISHMENT	4611	SY	$5	$23,055
			TOTAL WATER SERVICE ITEMS	**$474,545**
ROADWAY ITEMS				
SAWCUT (BOTH SIDES)	100	LF	$10	$1,000
REMOVE PAVEMENT	20	SY	$25	$500
SUBBASE	6	CY	$45	$270
PROCESSED AGGREGATE BASE	6	TON	$30	$180
BIT. CONC. CL 4	6	TON	$100	$600
BIT. CONC. CL 1	5.5	TON	$100	$550
MILLING REPAIR	28	SY	$8	$224
			TOTAL ROADWAY ITEMS	**$3,324**
TOTAL PROJECT COSTS				
TOTAL GENERAL, WATER & ROADWAY ITEMS				**$776,869**
CONTINGENCY (25%)				**$194,217**
TOTAL ESTIMATED CONSTRUCTION COST				**$971,086**
			SAY	**$972,000**

1 Items & quantities based on a preliminary design prepared for the Route 75 Sewer and Water Main Extension Feasibility Report prepared by Anchor Engineering Services, Inc.

2 Option #3 proposes a 12" water main, extended 4,200 total linear feet. Anchor Engineering assumes approximately 50 linear feet of this service shall be within the pavement structure of Route 75.





WATER AND SEWER TRENCH DETAIL TO BE USED TO GENERATE MATERIAL QUANTITIES AND COST ESTIMATES FOR THE TOWN OF SUFFIELD ROUTE 75 WATER AND SEWER MAIN EXTENSION FEASIBILITY STUDY

WATER & SEWER TRENCH DETAIL

NOT TO SCALE