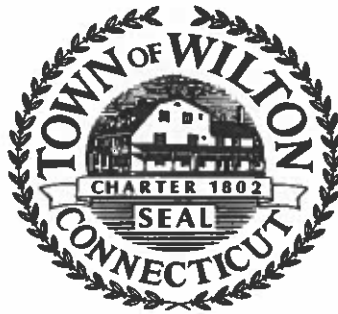


WILTON PUBLIC WORKS
DEPARTMENT

(203) 563-0152



TOWN HALL ANNEX
238 Danbury Road
Wilton, Connecticut 06897

MEMORANDUM

TO: WPCA Commission

FROM: Frank Smeriglio, PE, - Director of Public Works/Town Engineer *FS.*

DATE: January 10, 2023

RE: 19 Cannon Rd – Baywing LLC

This memo is written in regards to the review of memorandum dated December 22, 2022 and Plans dated 12/22/2022 prepared by M. Bartos of Landtech. These documents were submitted in response to our review letter dated 10/31/22.

Please note, there are a few references in M. Bartos' letter indicating, "we initially agreed". The Town and developer met on a few occasions to look at a few different potential design scenarios. However, any suggested scenarios by the Town does not constitute a final design agreement by the Town.

Based on the review of the submitted responses by M Bartos, the following are a summary of comments and/or items that require to be addressed for our continued review at this time.

Technical Sanitary Sewer Related Items

1. a. The sewer main crossing Route 7 is now proposed to be a gravity type main and the developer is proposing that the Town own's this line upon completion and acceptance. DPW has no objections.

- b. The sewer force main on Cannon road is proposed to be owned by the Town while the pump station is proposed to be privately owned. The developer is proposing to execute an agreement with a bond payment to the Town for maintenance purposes. Developer proposes to replenish the bond for continued future maintenance purposes. Based on the flow proposed flow amount, it is not recommended for the Town to own & maintain a force main while the pump station is under private ownership. However, if accepted by the WPCA - it is recommended to execute an agreement at this time to define maintenance responsibilities.

- c. Storage chambers are proposed for excess capacity in the event repairs are needed to the force main. The storage chambers provide approximately 12 hours of storage of sewage discharge. DPW has no objections.
 - d. It is recommended that an agreement defining maintenance responsibilities shall be executed at this time. Access easement area shall be defined too.
2. Revised design plans were provided. The following revisions shall be addressed at this time:
 - a. Separate generator for the pump station shall be located near the Pump Station.
 - b. Separate power source shall be provided for the pump station as part of the initial installation.
 - c. Items for the pump station including, but not limited to generator, power source and pump panel, etc. shall be provided in an above ground storage building near the Pump Station. Final location and aesthetics shall be coordinated with Zoning.
 - d. For safety purposes, the pump station area shall be fenced off. Landscaping shall be proposed to screen the pump station. Location of fence shall be coordinated with zoning.
 - e. Portable pump connections shall be relocated.
 - f. Elevation of Force main along Cannon Road shall be revised to eliminate the low point. The slope of the force main shall be pitched downward from Route 7 to pump station to eliminate the air relief valve.
 - g. The force main along Cannon Road shall have the proper separation distance from the water main.
 - h. Please note, the proposed new pump station at 19 Cannon has been lowered to receive sewer flow from potentially another future development. If the Town approves any additional flow into this pump station, the pump station at 19 Cannon Road would have to become Town-owned. The condition of the pump station would have to be evaluated and repaired by owner at 19 Cannon Road prior to turn over and any upgrades would have to be performed by the new potential developer. Agreement defining terms will have to be created at this time.
3. As-built drawings were found and slopes of the 8" pipe on Route 7 were indicated on the them. Updated calculations were provided by Landtech and its determine that the added flows from 19 Cannon Road will occupy 90% of the capacity of the 8" pipe. Please note, the Town cannot accept a 2" or 3" force main in an effort to potentially reduce flows. 4" inch force main would be the minimum allowed in a roadway with consideration to minimum flow velocity. Any future development beyond this application will likely require upgrades to the existing 8" pipe on Route 7.

4. Please refer to Wright Pierce letter dated January 6, 2023 for further information on the above.

General Sanitary Sewer Related items

5. Please note: The project will be subject to Sewer Capital Assessment as determined by the WPCA. The Assessment would be levied after the project is completed.
6. Please note, calculations are based on 70-unit apartment building with 102 bedrooms. Any changes to the room count will require approval from WPCA.
7. Please note, no footing drains shall tie into the sanitary sewer system.
8. Please note, all proposed sewer lines shall be air tested prior to sign off of certificate of occupancy.
9. Please note, the project will be subject to the final design review by the WPCA staff. Based on Wright Pierce's review at this time, the developer shall address "Design Comments" listed on their letter dated January 6, 2023 as part of construction plans (if approved).
10. Based on the list of items above, these comments shall be considered preliminary and additional items may be required depending on responses to the above.

If you have any questions, please do not hesitate to call.

January 6, 2023

Frank Smeriglio, PE
Director of Public works / Town Engineer
238 Danbury Road
Wilton, CT 06897

SUBJECT: Wilton WPCA – Sewer Capacity Review
Multi-Family Development at 19 Cannon Road
December 22, 2022 Submittal

Dear Frank,

Per your request, we reviewed the memo dated December 22, 2022 from Landtech, addressed to R. Andrews, B. Carey, T. Holister, Esq. regarding “19 Cannon Road Sanitary Sewer Pipe Capacity Town Engineer Review” which includes drawings titled “Feasibility Plan for A Residential Development Proposed Conditions” labeled “For Review dated 12/22/2022” . The Landtech memo responds to comments made by WP as part of previous reviews.

This letter outlines observations we have made on the design placed into two categories. First, we have listed items we believe the applicant needs to accommodate as a condition of the Town of Wilton accepting this sewer connection under “Changes Needed for Approval to Connect”. The remainder of the comments are listed under “Design Comments” and are provided for the designer to incorporate in advance of a full technical review.

Changes Needed for Approval to Connect

The following is a list of items the Town of Wilton should consider requiring of the applicant before agreeing to accept the sewer connect at 19 Cannon Drive, as currently designed. The comments presented herein are what we would suggest to the Town if they were building their own pump station:

1. Building Structure

The applicant proposes to have the Town own the Pump Station. If the Town allows another Developer to connect to the sewer system, it needs to be constructed with the idea in mind that it can and will eventually be separate from the remainder of the property owner’s facilities on site. Both the generator and control panels should be installed within a small building structure. The building should be coordinated with the aesthetics of the development, i.e. small shed-like structure.

2. Pump Station Building / Generator

There should be a generator installed that provides emergency power to only the pump station and the equipment needed to operate the station.

3. Portable Pump Connections

The portable pump connections are oriented towards the parking lot. If there are vehicles utilizing the parking spots along the pump station it will hinder access to the portable pump connections, likely needed during an emergency condition. Please review and revise the pump connections (suction and discharge) based on where a portable pump, truck, or other maintenance equipment could be located while under emergency operations, when required.

4. Force Main Profile

The force main should be installed at a constant pitch upwards toward the discharge into the gravity sewer. Installation of the force main with a constant pitch upward should eliminate the low spot under the existing storm drain near station 2+00 which could become a clogging concern. The upward slope will also eliminate the need to install the air release valve and structure which removes another long-term maintenance requirement.

5. Water and Sewer Separation Distances

The Connecticut Department of Public Health Drink Water Section's "Water Main Design and Construction Guidelines" document requires that water and sewer force main have a minimum 10-foot separation distance. The revised plan appears to show less than this separation for its entire length. The force main route on Cannon Road should be adjusted accordingly and/or provide other means of protecting the water main (i.e., encasement).

6. Capacity in 8-inch Sewer

The most recent analysis performed by Landtech finds that there is capacity in the existing pipe segments, that were evaluated, to accommodate the proposed flow. We agree that the Landtech analysis is accurate and sufficient to document that there is available capacity for the connection. However, at the flow rate from the proposed station, this development would leave only approximately 0.08 cfs left for future development. In other words, approximately 90% of the pipe capacity will have been utilized once this development is operational. Any future development beyond this application will likely required upgrades to the existing 8-inch pipe on Route 7.

7. Ownership and Maintenance Agreements

The responses from Landtech include descriptions of ownership and maintenance arrangements that should be documented and agreed upon by both parties as part of the approval to ensure that the responsibilities are clear to both parties. We suggest that the condition of the pump station be evaluated prior to turn over, and that anything needing to be updated for condition, reliability, etc. be handled in the transfer of property.

The items above should be addressed and incorporated in a submission for the WPCA prior to accepting the sewer connection to the Wilton collection system, only. A final technical review will be done as part of the building permit process.

Design Comments

The following are comments being provided in advance of a full technical review but are not relevant to the current request for approval to connect. These items should be considered preliminary and shall be submitted prior to the final technical review of the development and construction plans for the sewer connection.

1. Elevations are shown for the potential future extension to the adjacent property that may be serviced by the proposed station in the future. The plan note mentions that some of the information was taken from the 2011 plans for the development for that parcel. For documentation purposes, if there were any additional design assumptions made as part of the design of this proposed station, provide a summary of the design concept behind the elevations and location of the future pipes and their impact to the pump station.
2. Proposed station should provide a flow meter, not just run time meters, for record keeping purposes.
3. The pump selection has not yet been reviewed and should be reviewed during the final technical review.
4. The proposed station will likely not generate significant pressures or head conditions; however, Wright-Pierce typically requires a minimum of class 52 DIP for force main applications. The thickness of the force main should be reviewed during final design based on the design system head, potential water hammer or surge concerns and the pipe pressure ratings.
5. There is no size listed on the piping for the cleanout assembly for the force main. It is assumed it will be the full size of the main; please clarify.
6. Please review and revise the trapped drain from the valve vault to the wet well. We have a few concerns with this installation:
 - a. With the requested change to the piping elevations, the vault will likely get deeper as well. Please indicate the elevation of the vault floor (as opposed to minimum depths).
 - b. The elevation of the drain connection to the wet well is below the elevation back to the holding tank, therefore the valve vault or the drain's trap could potentially be filling with sewage during emergency conditions.
 - c. Is this drain needed? It is assumed that this drain is intended for any rainwater leakage from the hatch or groundwater leakage into the chamber. Could these simply be pumped out on a regular basis, instead of connecting the structures?

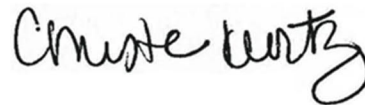
Based on the list of items above, these comments shall be considered preliminary and additional items may be required.

We are prepared to meet to further discuss the concerns outlined above, or to answer any questions you or your staff may have.

Sincerely,
WRIGHT-PIERCE



Joe Hausmann, PE
Lead Project Engineer
joe.hausmann@wright-pierce.com



Christine Kurtz, PE
Project Manager
christine.kurtz@wright-pierce.com



EXISTING
8" GRAVITY
SEWER

NEW
MANHOLE

NEW
MANHOLE

8" GRAVITY
SEWER

4" FORCE MAIN

HOLDING TANKS

PUMP STATION

FUTURE MANHOLE

FUTURE MANHOLE

FUTURE 8"
GRAVITY SEWER

POSSIBLE
BUILDING

19 Cannon Rd
PARKING

PARKING

1" = 75'

Google

MEMORANDUM

To: R. Andrews, B. Carey, T. Hollister, Esq.
 From: M. Bartos
 Date: December 22, 2022
 Subject: 19 Cannon Road Sanitary Sewer Pipe Capacity
 Town Engineer Review

We met with Frank Smeriglio, PE (Wilton DPW) and Christine Kurtz, PE (Wright-Pierce) on 12/01/22 to discuss the technical aspects of the development. As a result of this meeting, we have revised our evaluation of the capacity of the Wilton sanitary sewer and the design of the physical sewer extension requested.

This memo presents updated responses to letters prepared by them in letters dated 10/31/22 and 10/28/2022.

This memo is accompanied by a schematic site plan showing the locations of a possible building at 19 Cannon Road, the location of the supporting sanitary sewer facilities, a profile of the requested sanitary sewer extension, and construction notes and details related to the requested sewer extension.

The primary revisions to the development are these:

1. Wilton DPW has located and provided additional as-built drawings of the 8" sewer in Route 7. This information has allowed us to confirm our capacity calculations.
2. The development now provides for a future sanitary sewer extension extending from a future manhole east of the railroad tracks to the pump station at 19 Cannon Road to be constructed and paid for by future development owners, then turned over to the Town of Wilton. Flow from future developments east of the railroad tracks would be conveyed by gravity to the pump station at 19 Cannon Road.
3. The Town of Wilton would assume ownership of the pump station and holding tanks upon completion of any future connection from east of the railroad tracks. Once all permits, legal agreements and easements are obtained, the following steps would be involved. All costs associated would be borne by the owners connecting from east of the railroad tracks.
 - a. Construct the two future manholes and 8" pipes connecting them to the pump station.
 - b. Open the valve in the first holding tank to allow wastewater to flow between the holding tanks and the pump station wet well.
 - c. Re-set the float controls in the wet well to accommodate the amount of wastewater to be received from future development east of the railroad tracks.
 - d. Change the responsibility for providing power to the pump station from the owner of 19 Cannon Road to the Town of Wilton.

Wilton DPW Letter

Following are Wilton DPW (Frank Smeriglio, PE) comments in **bold** followed by our response comment in *italics*.

Technical Sanitary Sewer Related Items

1. A pump station is proposed on private property with a proposed private force main on Cannon Road (Town road) and on Danbury Road (State road -Route 7) to discharge into the existing sewer system.
 - a. Provide preliminary authorization from State DOT to allow a private force main across Route 7. Developer shall evaluate utilizing a gravity sewer line crossing

Route 7 and conduct test pits to locate existing utilities to ensure that a gravity sewer line can be constructed.

We do not propose to construct a force main across Route 7. We propose to cross Route 7 with an 8" gravity sewer to the greatest extent possible. The intended design, subject to revision based on additional information related to underground utilities in Route 7, will be similar to the one approved for Cannondale Village in 2011.

- b. **The sewer force main on Cannon Road and on Route 7 shall be private. After the force main is built, State Regulations (Call Before You Dig) requires that the force main is marked out by the owner within 3 days when a future potential contractor is proposing to work in the area on Cannon Road and on Danbury Road (Route 7). Provide measures on how you plan to register with CBYD Clearing House and how you plan to be in compliance by marking out the force main within the allotted timeframe to prevent damage to the private force main.**

We propose that the sewer within the Cannon Road and Route 7 rights-of-way not be private, but rather be town-owned. The pump station, holding tanks and appurtenances on private property would remain the responsibility of the property owner. To mitigate against potential future costs related to maintenance and repair of the sewer within public rights-of-way, we propose the establishment of a bond to be used by the Town of Wilton and subsequently replenished by the Owner of 19 Cannon Road. In this way, the CBYD issue is not complicated by private ownership within public right-of-way, and there is no significant cost to the Town of Wilton.

- c. **Provide measures on how the property owner will maintain flow discharge in the event the proposed force main is potentially damaged as part of an independent contractor's work on Cannon Road and on Route 7.**

We have revised the development design to include emergency storage tanks near the pump station. Should the force main be damaged and the pump station be subsequently turned off, the tanks would provide for the storage of at least 12 hours of wastewater until repairs can be completed and the pumps turned back on. Tanks would be emptied by opening a valve and draining the tanks to the pump station.

- d. **Provide a draft agreement for our review for the maintenance of the force main on Cannon Road.**

We propose to provide this agreement as an approval condition, at which time all conditions and factors to be included within such an agreement will be known.

2. **Provide design plans of the pump station at 19 Cannon. Provide design plans of the force main including proposed restoration on Cannon Road and on Route 7. GIS layout with one line is not sufficient for our review. This information is needed to review and to evaluate the potential of combining two potential proposed force mains into one.**

Preliminary design plans for the force main, pump station, holding tanks and future extension of the sewer across the railroad tracks accompany this memo. The issue of combining two force mains into one is resolved as part of the revised concept for future expansion described below.

3. **Design Engineer shall obtain actual slopes of the existing 8" pipes on Route 7 to**

determine actual pipe capacity. Various slopes may be flatter than 0.005.

This has been completed using additional as-built drawings provided by Wilton DPW.

4. Please refer to items 1 through 6 of the Wright Pierce letter dated October 28, 2022.
See below.

General Sanitary Sewer Related items

5. Please note: The project will be subject to Sewer Capital Assessment as required by the WPCA. The assessment would be levied after the project is completed.
Noted.
6. Please note, any potential clogs in the lateral, force main and/or sewer main connection points shall be the responsibility of the property owner to unclog.
See response to 1b above.
7. Please note, upon review of the development plans, property owner shall be responsible for maintenance of the force main from the property to gravity sewer line and the pump station on private property.
See response to 1b above. We agree that the owner is responsible for maintenance and repair of the pump station, holding tanks and other sewer facilities on the property.
8. Please note, all proposed sewer lines shall be air tested prior to sign off of certificate of occupancy.
Noted.
9. Please note, the project will be subject to the final technical review by the WPCA.
Noted.

Wright-Pierce Letter

Following are the Wright-Pierce comments in **bold** followed by our response comment in *italics*. The comments are from the summary at the end of the Wright-Pierce letter and are explained in more detail within that letter.

Summary of Action Items and Review:

- **Item 1 – Insufficient Allowance for Infiltration and Inflow.** Applicant to review and accept estimated allowance in this letter or provide alternate method to account for Infiltration and Inflow in the capacity analysis.

Wright-Pierce refers to TR-16 values for I&I as between 250 and 500 gpd/in-mi and then goes on to recommend consideration of values up to 2000 gpd/in-mi. Wright-Pierce calculates that this adds 0.01 cfs to the existing flow. We agree and have revised the capacity calculations accordingly.

- **Item 2 – Confirmation of Pumping Station Capacity.** Applicant should reconsider the proposed pump station's design flow rate and reduce the requested pumping capacity to convey the proposed flow from the development.

We initially agreed and proposed a 2" force main rather than 4", but subsequent discussion has led to a different design concept for the development. The new concept retains the originally proposed 4" force man in Cannon Road, leading to a gravity line crossing Route 7. Revised calculations of the capacity of the 8" line in Route 7 allows

increased discharge resulting from the use of a 4" force main.

We also agree to use a minimum pipe velocity of 3 ft/sec, which would mean a discharge rate of 120 gallons per minute, as compared to 80 gpm originally used. The capacity analysis also considers the possibility that Cannondale Village or some other development may at some point in the future also connect to the Wilton sanitary at the same location on Wilton Road. The analysis shows that the sewer system has the capacity to accept the discharge from such future developments.

- **Item 3 – As-built Pipe Minimum Slope.** Applicant shall survey the pipe inverts to determine actual slopes and revise the analysis utilizing the surveyed information.

Using additional as-built drawings provided by Wilton DPW, we have verified that the flattest pipe in the system is at a slope of 0.50% and have revised our capacity calculations accordingly. There is adequate capacity in the sewer system to accommodate the proposed development at 19 Cannon Road plus future development to the east.

- **Item 4 – Existing Assisted Living Facility Connection Flows.** Applicant will revise the capacity analysis to provide and ensure the existing approved capacity of 0.40 cfs from the assisted living facility.

This facility is fully constructed and operational. The facility has confirmed to us that the facility is fully or nearly fully occupied, which means that its actual flow was probably captured and measured by our flow test. We have, nevertheless, used the 0.40 cfs value in our revised capacity analysis. The revised capacity calculations appear as part of this memo.

- **Item 5 – Proposed Pump Station Assumptions.** In conjunction with the comment from Item #2 above, applicant's designer shall also evaluate changing the size of the force main to both provide cleansing velocities and reduce the flow rates.

We originally agreed, but subsequent discussion led to a different design for the development. See Item 2 above.

- **Item 6 – Capacity for Additional Future Development.** Wilton should consider any additional development that would connect to this sewer section to provide for growth and identified reserve capacity for sewer in accordance with Wilton's Plan for Conservation and Development.

We have already provided for Cannondale Village, should that development or a comparable development come to fruition. Future development to the east would not require an increase in the pumping rate, so the capacity of the 8" pipe in Route 7 would not be reduced.

Revised Pipe Capacity Calculation:

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2}$$

Typical range for Manning “n” ≤ 0.015 for DIP, ACP, RCP, ABS, PVC, VCP

For 8” pipe, using n=0.015

$$A = \pi(4/12)^2 = 0.35 \text{ ft}^2$$

$$WP = \pi(8/12) = 2.09 \text{ ft}$$

$$R^{2/3} = (A/WP)^{2/3} = (0.35/2.09)^{2/3} = 0.303$$

$$S = 0.50\% \text{ min. } S^{1/2} = 0.0707$$

$$Q = 1.49/0.015 (0.35) (0.303) (0.0707) = 0.75 \text{ cfs}$$

Existing Flow in 8” Route 7 sewer:

By agreement, Q=0.40 cfs (180 gpm) to replace measured flow (115.3 gpm or 0.26 cfs).

Assume I&I=0.01 cfs

$$\text{Total existing flow} = 0.40 + 0.01 = 0.41 \text{ cfs}$$

Proposed Flows from 19 Cannon Road:

$$38 \text{ 1-Bedroom units} \times 150/\text{gpd} / \text{BR} = 5,700/\text{gpd}$$

$$32 \text{ 2-Bedroom units} \times 150/\text{gpd} / \text{BR} = 9,600/\text{gpd}$$

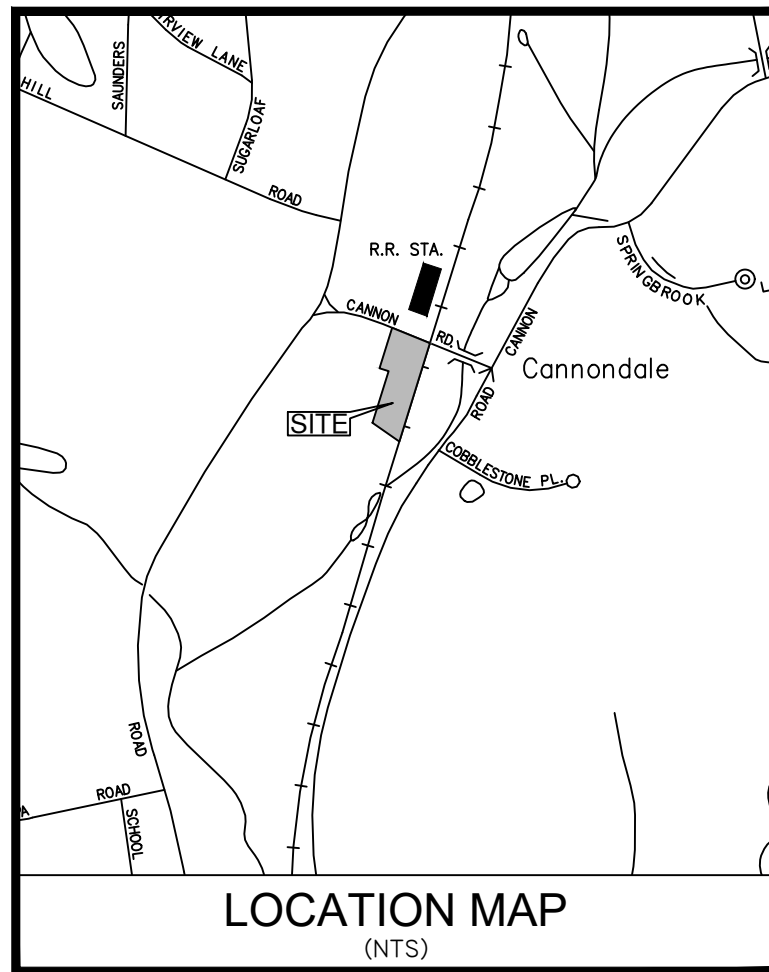
$$\text{Sum} = 15,300/\text{gpd}$$

$$\text{For force main } V = 3 \text{ fps, } 4'' \text{ dia, } Q = AV = \pi(1/6)^2 (3) = 0.26 \text{ cfs}$$

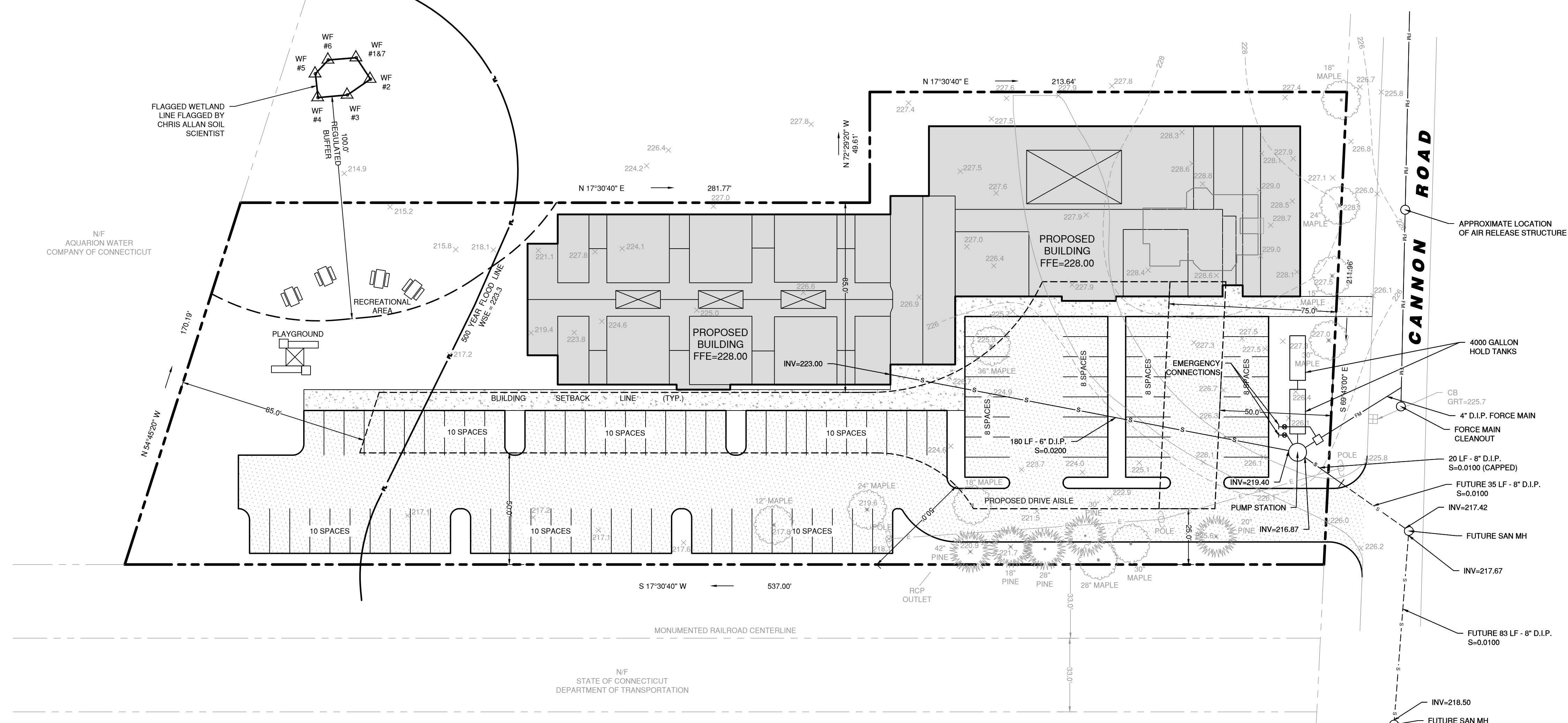
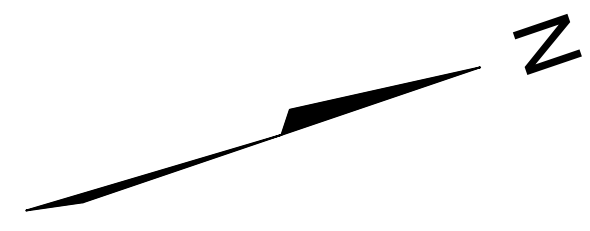
Proposed total flow in 8” Route 7 sewer:

$$\text{Existing} = 0.41 \text{ cfs} + \text{Proposed } 0.26 \text{ cfs} = 0.67 \text{ cfs}$$

Pipe capacity = 0.75 cfs, so remaining capacity = 0.08 cfs (36 gpm).

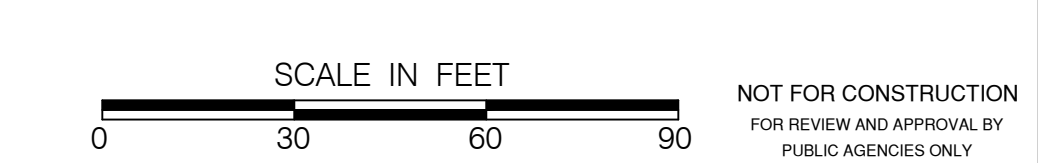


GENERAL NOTES
 1. LOT LINE & TOPOGRAPHIC INFORMATION FOR 19 CANNON ROAD TAKEN FROM ZONING MAP OF PROPERTY PREPARED BY DENNIS A. DEILUS LAND SURVEYORS DATED SEPTEMBER 22, 2021.



LEGEND	
EXISTING SYMBOLS:	PROPOSED SYMBOLS:
● Iron Pin (Found)	● (YD) Storm Yard Drain
□ Monument (Found)	● (MH) Storm Drain Manhole
○ Manhole	■ (CB) Catch Basin
□ *CB* Catch Basin	○ (SSMH) Sanitary Sewer Manhole
⊥ Utility Pole	○ Perc Test Hole Location & Number
⊥ Light Pole	P-1
WG Water Gate	◆ Deep Test Hole Location & Number
⊕ Gas Valve	DTH-1
⊕ Gas Meter	⊕ Proposed Well
⊕ Existing Well	
EXISTING LINETYPES:	PROPOSED LINETYPES:
— Property Line	— S — Sanitary Sewer
— S — Sanitary Sewer Line	— E — Electric Service
— E — U/G Elec. Line	— W — Water Service
— W — Water Line	— T — U/G Telephone Service
— O/H — Overhead Utilities	— E/T — Electric/Telephone Service
— T — U/G Tele. Line	▬▬▬ Primary Septic
— E/T — U/G Electric/Telephone Line	▬▬▬ Reserve Septic
▬▬▬ Wood/Chain Link Fence	▬▬▬ Retaining Wall
▬▬▬ Stone Ret. Wall	— [20] — Contour
— [20] — Contour	⊕ [20.1] × Spot Elevation
— WF#3 — Wetland Limit	— Silt Fence (GSF)
× 20.1 Spot Elevation	▬▬▬ Wood/Chain Link Fence
— Watercourse Limit	▬▬▬ Construction Fence
— Drainage Line	▬▬▬ Vegetative Buffer
— Town/City Line	— WF#3 — Wetland Limit (Flagged)
— 25 Year Flood Line	
— 100 Year Flood Line	
— FL — FEMA Flood Zone Line	
— Floodway Boundary	
— MHW — Mean High Water	
— MLW — Mean Low Water	
— C.J.L. — Coastal Jurisdiction Line	

For Review
 12/22/2022 1:01:11 PM



LANDTECH
 518 Riverside Avenue • Westport, Connecticut 06880 • 203-454-2110 • info@landtechconsult.com

PROJECT LOCATION:
 19 CANNON ROAD
 WILTON, CT

TITLE:
 FEASIBILITY PLAN FOR A RESIDENTIAL DEVELOPMENT
 PROPOSED CONDITIONS

PREPARED FOR:
 BAYWING, LLC

PROJECT NO.: 21074-01
 SCALE: 1" = 30'
 DATE: 4/20/2022
 DRAWN BY: SM
 CHECKED BY: MB

REVISION DATE: _____
 ISSUE: _____

C-1

