

Memorandum

To: Town of Hamden
From: H2M architects + engineers
Date: FEBRUARY 20, 2026
Re: Wastewater Existing Flow Analysis

2.0 TECHNICAL INFORMATION

2.1 Wastewater Existing Flow Analysis

2.1.1 [Introduction](#)

Sanitary wastewater flow must be accurately defined to ensure that the infrastructure for collection, conveyance, and treatment is properly sized. Reliable flow estimates are essential for designing gravity sewers, pump stations, force mains, and treatment facilities that can accommodate both current and future hydraulic loading. Several established methods are commonly used to estimate wastewater generation within a service area, and the choice of methods typically depends on the level of existing development and the availability of water-use data.

Industry references note that commercial wastewater flows are often expressed in gallons per acre per day (gal/acre/day). These values may be derived from historical water-use records, projected flows based on anticipated zoning classifications, or comparable data from similar developments. When available, actual water-use data provides the most representative basis for estimating wastewater flows, as they reflect real consumption patterns and occupancy characteristics.

In areas that are already developed and have stable land-use conditions, existing water-use records offer a dependable foundation for projecting wastewater generation. These records allow planners and engineers to correlate water consumption with expected wastewater discharge, accounting for typical return-to-sewer ratios.

Conversely, in areas targeted for new development—or where future land-use plans, zoning designations, and build-out densities are well defined—flow projections are typically based on regulatory density loading rates and local design sewage flow criteria. These criteria may include per-capita flow rates, fixture-unit calculations, or standardized flow factors assigned to specific land-use categories. Using these planning-level assumptions helps ensure that the wastewater system is designed with sufficient capacity to support anticipated growth while maintaining regulatory compliance and operational reliability.

2.1.2 [Methodology](#)

To establish the required design flow capacity for the Whitney Avenue sewer extension, wastewater generation for all parcels within the project limits was quantified using two analytical approaches. The first method calculates existing average and peak wastewater flows based on current parcel-level conditions, including active land uses, commercial/industrial operating characteristics, and residential occupancy data. This provides an accurate representation of present hydraulic loading on the collection system.

The second method develops a maximum buildout flow projection for each parcel by applying zoning-based development potential, applicable design loading factors, and peak-hour flow multipliers. This analysis identifies the theoretical upper-bound wastewater contribution under full parcel redevelopment or intensification. Incorporating both existing and ultimate buildout scenarios ensures that the proposed sewer infrastructure is sized to meet current service demands while maintaining adequate capacity for long-term growth, regulatory compliance, and system reliability.

2.1.3 Wastewater Flow Summaries by Land Use Classification Code

The proposed sewer extension area covers a segment of Whitney Avenue beginning at the intersection with Whitney Court and continuing southward until it connects with an existing sewer manhole at the intersection of Mount Carmel Avenue. This corridor passes through a diverse mix of zoning districts, reflecting the varied land-use patterns along Whitney Avenue. These zoning types include Residential, Rural, Sub-Urban, General Urban, Natural, and Mixed Income Housing, each of which carries its own development standards and planning objectives.

In addition to local zoning classifications, the area is also governed by state use codes that establish limits on building intensity. These codes regulate factors such as the maximum percentage of a parcel that may be covered by structures and the maximum number of stories permitted for buildings on each parcel. Within the proposed sewer extension area, the applicable state use designations include T2, T3, T3.5, and T4. Together, these designations represent a spectrum ranging from low-intensity, rural-character zones (T2) to more compact, walkable, mixed-use environments (T4). Understanding this regulatory framework is essential for evaluating how the sewer extension may support future development, redevelopment, and infrastructure planning along Whitney Avenue. A key map detailing the zoning classifications is shown in Figure 1.

Figure 1 - Zoning Map Whitney Avenue

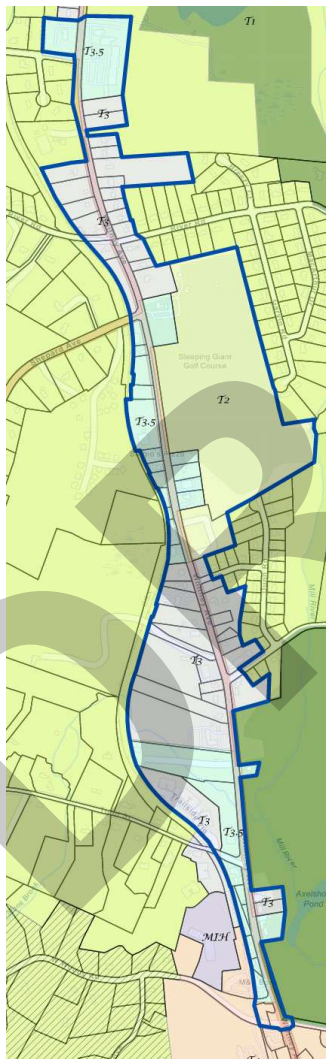
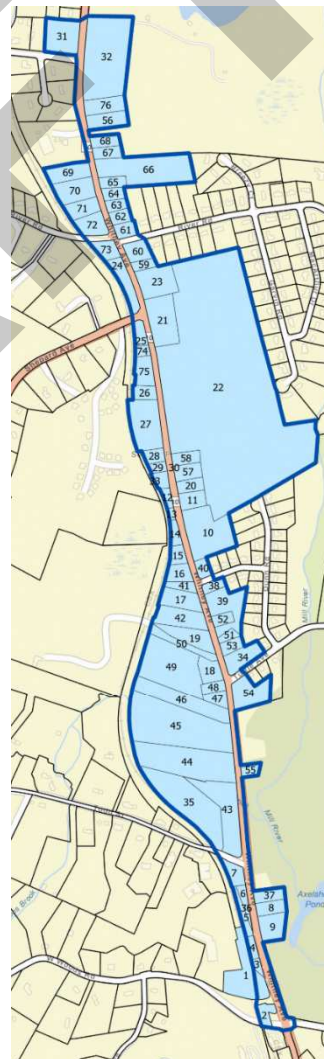


Figure 2 - Parcel Map for Whitney Avenue Sewer Expansion Service Area



Memorandum

Existing buildout flow projections for each land-use category within the proposed sewer expansion area were developed using the Connecticut Department of Public Health’s *Design Flow Table 4*, which provides standardized wastewater generation rates for a wide range of property types. Within the defined project boundary, a total of 76 individual parcels with two (2) of the parcel having a total of 38 condos were identified and evaluated for their anticipated wastewater contribution. A parcel map showing the locations of each parcel is shown in Figure 2 above.

Residential properties represent the predominant land use in the study area. Of the 76 parcels, 32 are single-family homes and an additional 2 are condo parcels. Wastewater flows for these parcels were estimated by determining the likely occupancy of each home based on the number of bedrooms, consistent with state design standards. Each bedroom was assigned a corresponding gallons-per-day (gpd) value, allowing for a parcel-specific calculation of expected residential wastewater generation.

Retail storefronts constitute the second most common land-use type, with 13 parcels dedicated to commercial retail activity. For these properties, design flows were calculated using assumed employee counts, as employee-based flow rates are the standard metric for retail establishments under the CT DPH design criteria.

In addition to residential and retail uses, several other property types contribute meaningfully to the total projected wastewater flow along this segment of Whitney Avenue. These include office buildings, full-service restaurants, takeout food establishments, churches, a dental office, and a light industrial facility. Each of these uses was assigned a design flow rate based on the appropriate CT DPH category, with adjustments made for seating capacity, staffing levels, or service characteristics where applicable.

A summary of the total estimated existing buildout wastewater flow, organized by land-use category, is provided in the table below. This breakdown illustrates the relative contribution of each property type and serves as the basis for evaluating the adequacy of the proposed sewer extension to accommodate both existing and potential future development within the project area.

Land Use	Count	Projected Flow (gpd)
Auto Repair	1	75
Church	3	838
Condo	38	11,400
Golf Course	1	51
Mixed Use	10	7,988
Office Building	5	3,038
Residential	29	13,275
Restaurant	2	3,750
Retail	13	12,194
State	2	651
Utility	1	0
Vacant	6	0
Total	111	53,260
Existing Basis of Design Flow		55,000

**Town of Hamden
Wastewater Existing Flow Analysis**

mapID		Parcel ID	Mailing Address	Land Acres	State Use	Number of Bedroom	Design Flow	Residence Design Flow	Auto Repair	Barber Shop	Church	Dentist / Medical	Industrial Building	Office Building	Restaurant	Retail	Takeout
									5 gpd/car	50 gpd/seat	1 gpd/seat	0.2 gpd/sf	0.1 gpd/sf	20 gpd/employee	30 gpd/seat	0.1 gpd/sf	5 gpd/meal
1	Retail	3129-008-00-0000	3490 WHITNEY AVE	2.44	T35T		2200	0						39		14191	
2	State	3129-035-00-0000	3480 WHITNEY AVE	0.55	T4		0	0									
3	Mixed Use	3129-037-00-0000	3500 WHITNEY AVE	0.3	T3.5		483	300					1059			764	
4	Retail	3129-038-00-0000	3550 WHITNEY AVE	0.36	T3.5		238	0								2373	
5	Office Building	3129-039-00-0000	3552 WHITNEY AVE	0.47	T3.5		431	0					4308				
6	Retail	3129-040-00-0000	3568 WHITNEY AVE	0.33	T3.5		50	0		1							
7	Mixed Use	3129-041-00-0000	3584 WHITNEY AVE	0.55	T3.5		2481	750				1500		42	20		
8	Retail	3129-043-00-0000	3565 WHITNEY AVE	0.62	T3		150	0								1500	
9	Retail	3129-044-00-0000	3551 WHITNEY AVE	1.06	T3.5		408	0								4076	
10	Church	3229-020-00-0000	3801 WHITNEY AVE	2023	3.16		0	0									
11	Retail	3229-021-00-0000	3825 WHITNEY AVE	0.78	T3.5		230	0								2297	
12	Auto Repair	3229-022-00-0000	3830 WHITNEY AVE	0.26	T3.5		75	0	15								
13	Retail	3229-023-00-0000	3820 WHITNEY AVE	0.12	T3.5		261	0								2604	
14	Resturant	3229-024-00-0000	3810 WHITNEY AVE	0.34	T3.5		750	0							25		
15	Retail	3229-025-00-0000	3790 WHITNEY AVE	0.44	T3.5		551	0								5510	
16	Residential	3229-026-00-0000	3780 WHITNEY AVE	0.66	T3	7	750	750									
17	Church	3229-028-00-0000	3762 WHITNEY AVE	2023	1.15		121	0			121						
18	Retail	3229-044-00-0000	3714 WHITNEY AVE	0.75	T3		600	0								6000	
19	Mixed Use	3229-047-00-0000	3732 WHITNEY AVE	1.26	T3		230	0								2300	
20	Retail	3329-018-00-0000	3835 WHITNEY AVE	0.53	T3.5		1310	0								5600	150
21	Resturant	3329-021-00-0000	3931 WHITNEY AVE ADJ	2.12	T3.5		3000	0							100		
22	Golf Course	3329-022-00-0000	3931 WHITNEY AVE	38.93	T2		51	0								509	
23	Mixed Use	3329-023-00-0000	3975 WHITNEY AVE	1.71	T3		264	0								2637	
24	Vacant	3329-054-00-0000	3960 WHITNEY AVE				0	0									
25	Mixed Use	3329-055-00-0000	3936 WHITNEY AVE	0.46	T3.5		615	0								6144	
26	Utility	3329-058-00-0000	3896 WHITNEY AVE	0.52	T3.5		0	0						0			
27	Retail	3329-060-00-0000	3876 WHITNEY AVE	2.39	T3.5		452	0								4518	
28	Mixed Use	3329-061-00-0000	3860 WHITNEY AVE	0.42	T3.5	2	1950	300							55		
29	Mixed Use	3329-062-00-0000	3848 WHITNEY AVE	0.25	T3.5		260	0						13			
30	Mixed Use	3329-069-00-0000	3846 WHITNEY AVE	0.34	T3.5	3	722	450								2718	
31	Office Building	3429-029-00-0000	4130 WHITNEY AVE	1.83	T3.5		799	0						17		4510	
32	Retail	3429-039-00-0000	4137 WHITNEY AVE	5.67	T3.5		4680	0						86		29580	
33	Vacant	3329-063-00-0000	3846 WHITNEY AVE REAR				0	0									
36	Vacant	3129--00-0000	0 WHITNEY AVENUE	0.12	T3.5		0	0									
37	Residential	3129-042-00-0000	3569 WHITNEY AVE	0.61	T3	4	525	525									
38	Residential	3229-008-00-0000	9 LAWRENCE RD	0.36	T3	3	450	450									
39	Residential	3229-009-00-0000	3757 WHITNEY AVE	1.95	T3	4	525	525									
40	Residential	3229-010-00-0000	3777 WHITNEY AVE	0.39	T3	3	450	450									
41	Residential	3229-027-00-0000	3766 WHITNEY AVE	0.41	T3	2	300	300									
42	Residential	3229-029-00-0000	3746 WHITNEY AVE	1.47	T3	6	675	675									
43	Office Building	3229-038-00-0000	3594 WHITNEY AVE	2.71	T3.5		1180	0				3900		20			
44	Residential	3229-039-00-0000	3656 WHITNEY AVE	4.63	T-3.5	8	825	825									
45	Church	3229-040-00-0000	3680 WHITNEY AVE	6.41	T3	3	717	450			267						
46	Residential	3229-041-00-0000	3686 WHITNEY AVE	2.36	T3	3	450	450									
47	Residential	3229-042-00-0000	3700 WHITNEY AVE	0.48	T3	2	300	300									
48	Residential	3229-043-00-0000	3708 WHITNEY AVE	0.4	T3	3	450	450									
49	Vacant	3229-045-00-0000	3720 WHITNEY AVE				0	0									
50	Vacant	3229-046-00-0000	3720 WHITNEY AVE REAR				0	0									
51	Residential	3229-048-00-0000	3733 WHITNEY AVE	0.26	T3	2	300	300									
52	Vacant	3229-049-00-0000	3749 WHITNEY AVE	0.36	T3		0	0									
53	Residential	3229-050-00-0000	3729 WHITNEY AVE	0.46	T3	2	300	300									
54	Mixed Use	3229-054-00-0000	3703 WHITNEY AVE	1.59	T3	1	576	150								1752	50

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mapID		Parcel ID	Mailing Address	Land Acres	State Use	Number of Bedroom	Design Flow	Residence Design Flow	Auto Repair	Barber Shop	Church	Dentist / Medical	Industrial Building	Office Building	Restaurant	Retail	Takeout
									5 gpd/car	50 gpd/seat	1 gpd/seat	0.2 gpd/sf	0.1 gpd/sf	20 gpd/employee	30 gpd/seat	0.1 gpd/sf	5 gpd/meal
55	Mixed Use	3229-057-00-0000	3651 WHITNEY AVE	0.4	T3	2	407	300								1064	
56	Retail	3429-038-00-0000	4107 WHITNEY AVE	1.84	T-3.5		1064	0								10640	
57	Office Building	3329-019-00-0000	3845 WHITNEY AVE	0.66	T3.5	3	468	450								176	
58	Office Building	3329-020-00-0000	3851 WHITNEY AVE	0.55	T3.5		160	0						8			
59	Residential	3329-024-00-0000	3981 WHITNEY AVE	0.37	T3	3	450	450									
60	Residential	3329-025-00-0000	3997 WHITNEY AVE	0.76	T3	4	525	525									
61	Residential	3329-039-00-0000	4005 WHITNEY AVE	0.5	T3	3	450	450									
62	Residential	3329-040-00-0000	4015 WHITNEY AVE	0.44	T3	3	450	450									
63	Residential	3329-041-00-0000	4025 WHITNEY AVE	0.38	T3	4	525	525									
64	Residential	3329-042-00-0000	4035 WHITNEY AVE	0.46	T3	2	300	300									
65	Residential	3329-043-00-0000	4045 WHITNEY AVE	0.47	T3	3	450	450									
66	Residential	3329-044-00-0000	4051 WHITNEY AVE	4.08	T3	3	450	450									
67	Residential	3329-045-00-0000	4061 WHITNEY AVE	0.57	T3	3	450	450									
68	Residential	3329-046-00-0000	4081 WHITNEY AVE	0.57	T3	3	450	450									
69	Residential	3329-048-00-0000	4050 WHITNEY AVE	1.15	T3	4	525	525									
70	Residential	3329-049-00-0000	4040 WHITNEY AVE	1.32	T3	2	300	300									
71	Residential	3329-050-00-0000	4032 WHITNEY AVE	0.86	T3	3	450	450									
72	Residential	3329-051-00-0000	4016 WHITNEY AVE	0.99	T3	3	450	450									
73	Residential	3329-053-00-0000	475 RIVER RD	0.64	T3	2	300	300									
74	Residential	3329-056-00-0000	3926 WHITNEY AVE	0.25	T3.5	3	450	450									
75	State	3329-057-00-0000	3908 WHITNEY AVE	0.84	T3.5	3	651	450								2009	
34-01	Condo	3229-051-00-0006	3711 WHITNEY AVE #U1		T3	2	300	300									
34-02	Condo	3229-051-00-0011	3711 WHITNEY AVE #U2		T3	2	300	300									
34-03	Condo	3229-051-00-0008	3711 WHITNEY AVE #U3		T3	2	300	300									
34-04	Condo	3229-051-00-0003	3711 WHITNEY AVE #U4		T3	2	300	300									
34-05	Condo	3229-051-00-0002	3711 WHITNEY AVE #U5		T3	2	300	300									
34-06	Condo	3229-051-00-0007	3711 WHITNEY AVE #U6		T3	2	300	300									
34-07	Condo	3229-051-00-0004	3711 WHITNEY AVE #U7		T3	2	300	300									
34-08	Condo	3229-051-00-0010	3711 WHITNEY AVE #U8		T3	2	300	300									
34-09	Condo	3229-051-00-0005	3711 WHITNEY AVE #U9		T3	2	300	300									
34-10	Condo	3229-051-00-0009	3711 WHITNEY AVE #U10		T3	2	300	300									
35 - 101	Condo	3229-038-01-0001	35 TODD ST #U101		T3	2	300	300									
35 - 102	Condo	3229-038-01-0002	35 TODD ST #U102		T3	2	300	300									
35 - 103	Condo	3229-038-01-0003	35 TODD ST #U103		T3	2	300	300									
35 - 104	Condo	3229-038-01-0004	35 TODD ST #U104		T3	2	300	300									
35 - 105	Condo	3229-038-01-0005	35 TODD ST #U105		T3	2	300	300									
35 - 106	Condo	3229-038-01-0006	35 TODD ST #U106		T3	2	300	300									
35 - 107	Condo	3229-038-01-0007	35 TODD ST #U107		T3	2	300	300									
35 - 108	Condo	3229-038-01-0008	35 TODD ST #U108		T3	2	300	300									
35 - 201	Condo	3229-038-01-0009	35 TODD ST #U201		T3	2	300	300									
35 - 202	Condo	3229-038-01-0010	35 TODD ST #U202		T3	2	300	300									
35 - 203	Condo	3229-038-01-0011	35 TODD ST #U203		T3	2	300	300									
35 - 204	Condo	3229-038-01-0012	35 TODD ST #U204		T3	2	300	300									
35 - 205	Condo	3229-038-01-0013	35 TODD ST #U205		T3	2	300	300									
35 - 206	Condo	3229-038-01-0014	35 TODD ST #U206		T3	2	300	300									
35 - 207	Condo	3229-038-01-0015	35 TODD ST #U207		T3	2	300	300									

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									5 gpd/car	50 gpd/seat	1 gpd/seat	0.2 gpd/sf	0.1 gpd/sf	20 gpd/employee	30 gpd/seat	0.1 gpd/sf	5 gpd/meal
35 - 208	Condo	3229-038-01-0016	35 TODD ST #U208		T3	2	300	300									
35 - 209	Condo	3229-038-01-0017	35 TODD ST #U209		T3	2	300	300									
35 - 210	Condo	3229-038-01-0018	35 TODD ST #U210		T3	2	300	300									
35 - 211	Condo	3229-038-01-0019	35 TODD ST #U211		T3	2	300	300									
35 - 212	Condo	3229-038-01-0020	35 TODD ST #U212		T3	2	300	300									
35 - 301	Condo	3229-038-01-0021	35 TODD ST #U301		T3	2	300	300									
35 - 302	Condo	3229-038-01-0022	35 TODD ST #U302		T3	2	300	300									
35 - 303	Condo	3229-038-01-0023	35 TODD ST #U303		T3	2	300	300									
35 - 304	Condo	3229-038-01-0024	35 TODD ST #U304		T3	2	300	300									
35 - 305	Condo	3229-038-01-0025	35 TODD ST #U305		T3	2	300	300									
35 - 306	Condo	3229-038-01-0026	35 TODD ST #U306		T3	2	300	300									
35 - 307	Condo	3229-038-01-0027	35 TODD ST #U307		T3	2	300	300									
35 - 308	Condo	3229-038-01-0028	35 TODD ST #U308		T3	2	300	300									