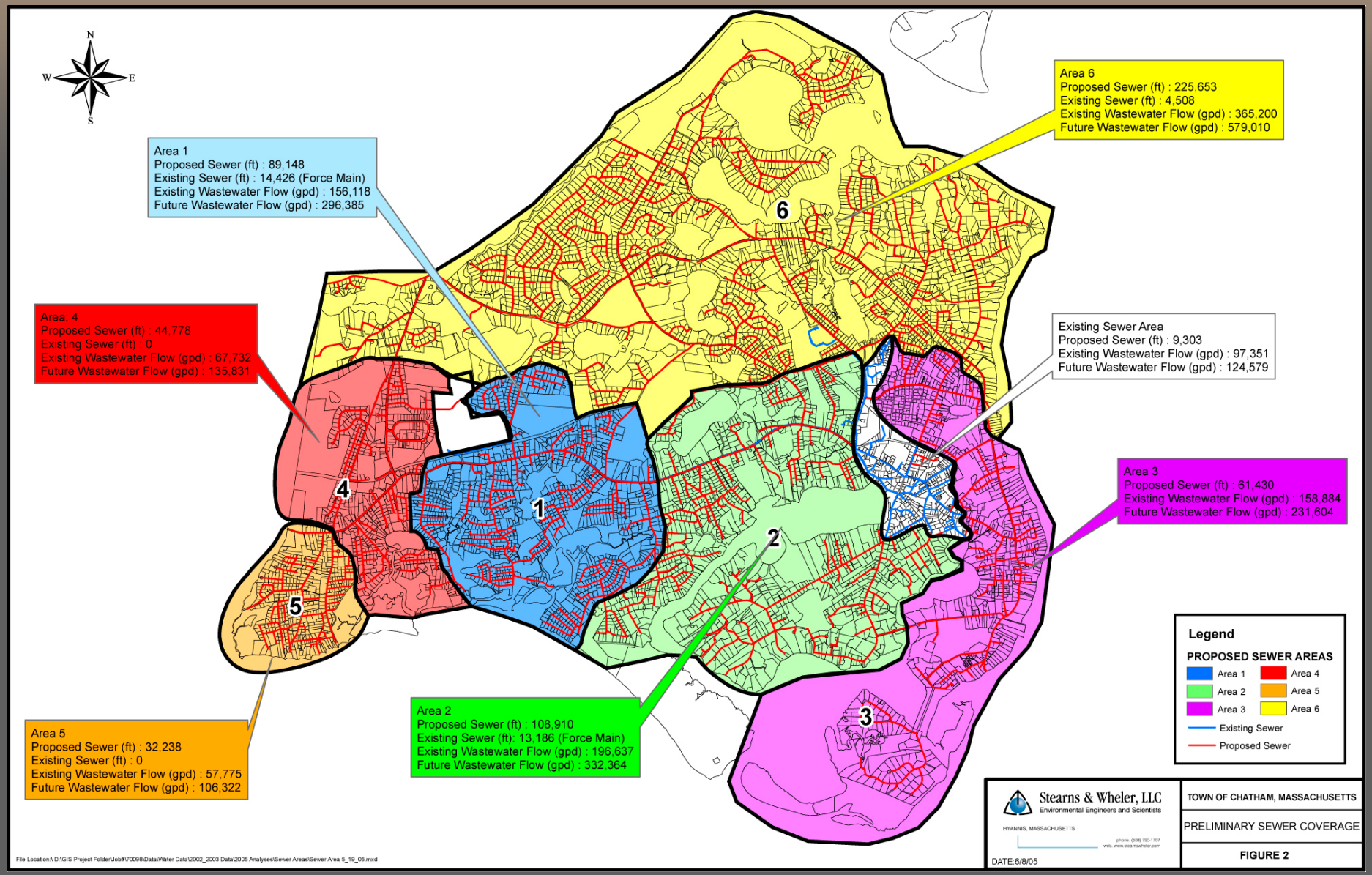
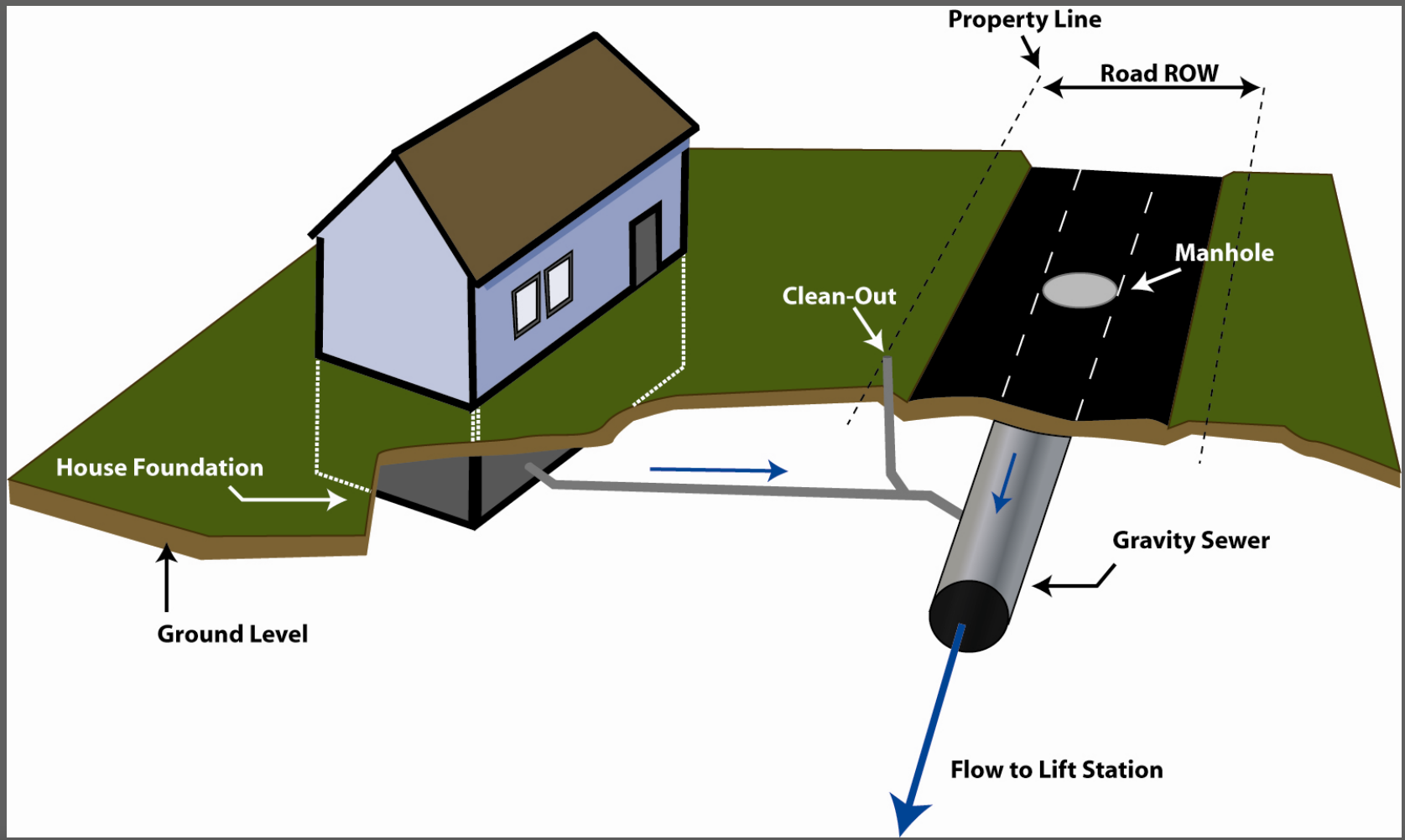
TOWN OF CHATHAM

Collection System Technology and
Betterment Considerations

Presentation to the
Board of Selectmen
December 20, 2005


N
W
E
S
Area 1
Proposed Sewer (ft) : 89,148
Existing Sewer (ft) : 14,426 (Force Main)
Existing Wastewater Flow (gpd) : 156,118
Future Wastewater Flow (gpd) : 296,385
Area 6
Proposed Sewer (ft) : 225,653
Existing Sewer (ft) : 4,508
Existing Wastewater Flow (gpd) : 365,200
Future Wastewater Flow (gpd) : 579,010
Area: 4
Proposed Sewer (ft) : 44,778
Existing Sewer (ft) : 0
Existing Wastewater Flow (gpd) : 67,732
Future Wastewater Flow (gpd) : 135,831
Existing Sewer Area
Proposed Sewer (ft) : 9,303
Existing Wastewater Flow (gpd) : 97,351
Future Wastewater Flow (gpd) : 124,579
Area 3
Proposed Sewer (ft) : 61,430
Existing Wastewater Flow (gpd) : 158,884
Future Wastewater Flow (gpd) : 231,604
Area 2
Proposed Sewer (ft) : 108,910
Existing Sewer (ft): 13,186 (Force Main)
Existing Wastewater Flow (gpd) : 196,637
Future Wastewater Flow (gpd) : 332,364
Area 5
Proposed Sewer (ft) : 32,238
Existing Sewer (ft) : 0
Existing Wastewater Flow (gpd) : 57,775
Future Wastewater Flow (gpd) : 106,322
1
2
3
4
5
6
Legend
PROPOSED SEWER AREAS
Area 1
Area 2
Area 3
Area 4
Area 5
Area 6
Existing Sewer
Proposed Sewer
Stearns & Wheler, LLC
Environmental Engineers and Scientists
HYANNIS, MASSACHUSETTS
TOWN OF CHATHAM, MASSACHUSETTS
PRELIMINARY SEWER COVERAGE
FIGURE 2
DATE:6/8/05
File Location:\ D:\GIS Project Folder\Job#\70098\Data\Water Data\2002_2003 Data\2005 Analyses\Sewer Areas\Sewer Area 5_19_05.mxd

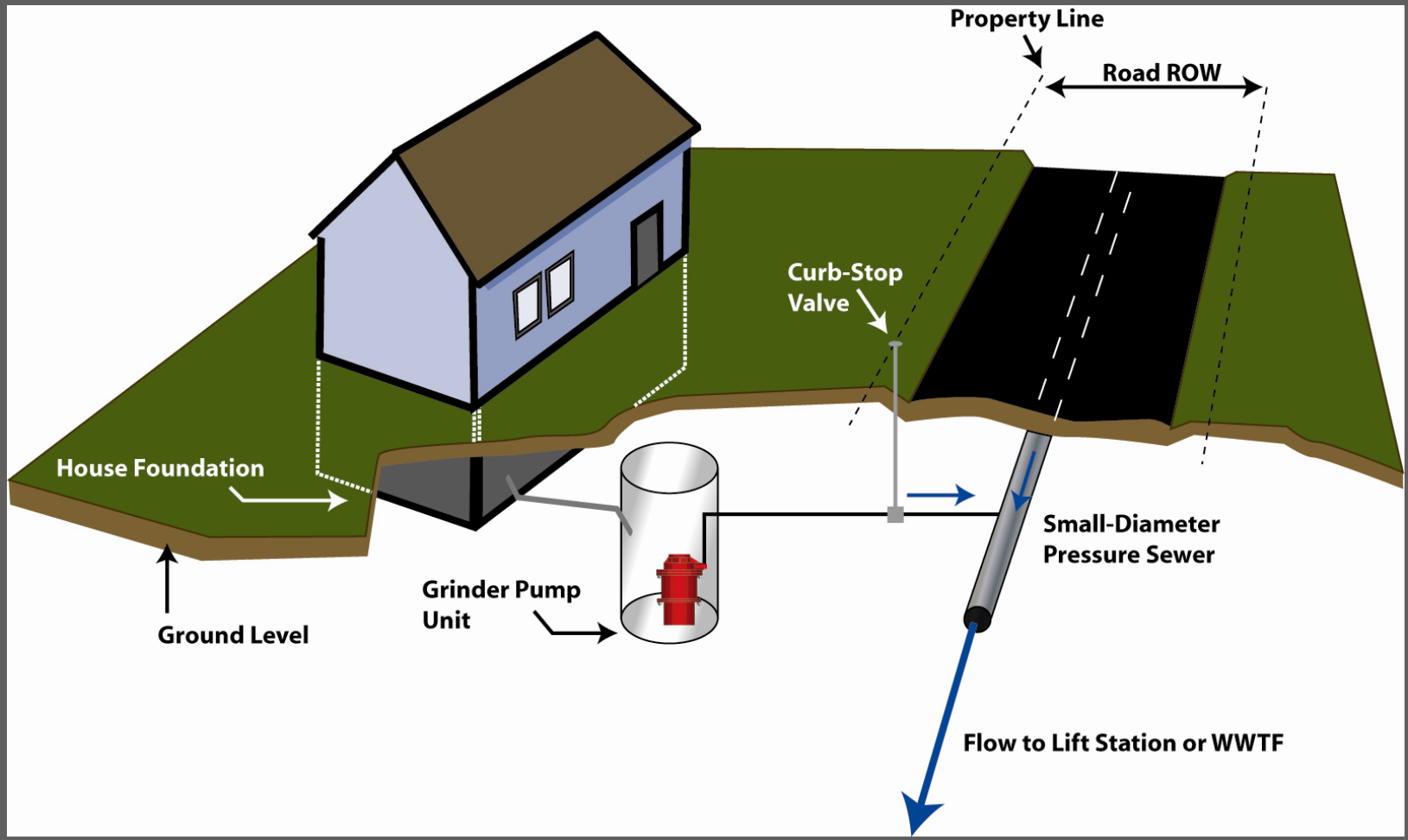
Gravity Collection Systems with Lift Stations



Gravity System Considerations

- Maximize the gravity system coverage
- Town-owned lift stations typically located on Town properties (Private properties may need to be purchased, or easements obtained, to site the lift stations)
- Standardize lift-station design for ease of maintenance and operation
- Property easements may be needed for gravity lines to pass through private properties (to be identified after preliminary design)

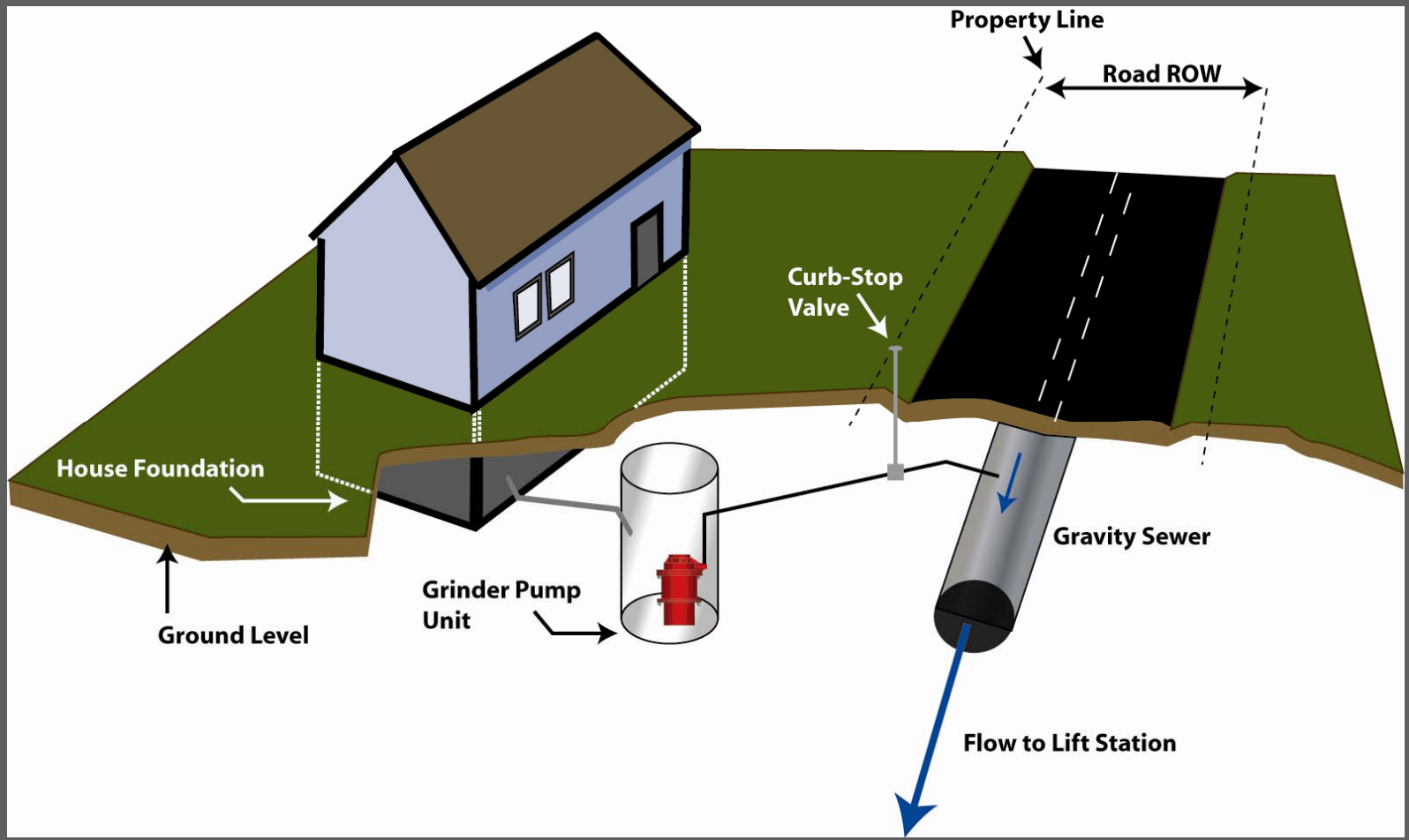
Pressure Collection Systems with Grinder Pumps



Pressure System Considerations

- Town owns and maintains pressure sewer in road ROW up to the property line
- Grinder pumps are owned and maintained by individual property owners
  - Town specifies acceptable equipment that can be used
  - Installed by property owner's contractor as part of service connection installation
  - Powered by individual property owner
- Outlet connection is provided for an electric generator

Gravity Collection System with Grinder Pumps and Lift Stations



QUESTIONS ON COLLECTION SYSTEM TECHNOLOGY CONSIDERATIONS

Collection System Betterment Considerations

Typical Cost Distribution

- Capital costs for WWTF are typically paid by the tax rate (Town General Fund)
- A percentage of capital costs for the Collection System is typically distributed through betterments
- O&M costs of the Town-owned WWTF and collection system are typically paid by user fees

Optional Methods for Determining Betterments

- Fixed Uniform Rate Method – typically based on a length or area basis (for example: cost per linear foot of frontage)

- Uniform Unit Method – typically defining a "sewer unit" and applying that to a property (for example: a single family home could equal 1 sewer unit.)

Optional Methods for Determining Betterments (cont.)

- Fixed Rate Examples:
  - Property road frontage
  - Property area
  - Length of sewer running by property
- Uniform Unit Examples:
  - Property design flow
  - Number of bedrooms
  - Equivalent Dwelling Units or Sewer Unit

Examples

- Chatham:
  - Water betterments currently assessed based on linear feet of water main passing property (with adjustment for corner lots)
- Provincetown, MA:
  - Based on title 5 design flow
- Ipswich, MA:
  - Assessed on a $ per lineal foot of frontage

Examples (cont.)

- Bellingham, MA:
  - Assessed on a $ per equivalent dwelling unit (EDU) basis.
- Chelmsford, MA:
  - Single family home = one sewer unit
  - Commercial, Industrial and vacant properties converted into “single family equivalents” based on gallons of water use.
- Hopkinton, MA:
  - Actually has both, fixed sewer unit and fixed uniform rate:
    - Sewer unit
    - Combination of area and frontage

Betterment Assessment Methodology Based on Sewer Units and Design Flow

- The Sewer-Unit Betterment Cost will be based on a single family residence
- Non-residential properties will be assessed a betterment cost based on the ratio of their Title 5 design flow compared to a design flow of 330 gpd. Examples:
  - A 40 seat restaurant would receive 424% of an Sewer-Unit Betterment Cost (calculated based on 35 gpd per seat and 40 seats)
  - A 200 seat church would receive 182% of an Sewer-Unit Betterment Cost (calculated based on 3 gpd per seat and 200 seats)

Betterment Assessment Methodology Based on Sewer Units and Design Flow (cont.)

- The betterment cost for a Sewer Unit is found by dividing the total collection system capital cost by the total number of Sewer Units being served by the collection system expansion contract
- Betterment payments to the Town can be:
  - Spread over 20 years at an interest rate that is based on the borrowing rate; or
  - The total betterment cost could be paid to the Town at the time it is initially billed to the property

Betterment Assessment Methodology Based on Sewer Units and Design Flow (cont.)

- A betterment will be assessed based on the future land use (build-out conditions) of the property as required by Massachusetts General Law
- Betterments on undeveloped properties will be deferred until they are developed

FUTURE POLICY DECISION NEEDED BY THE BOARD OF SELECTMEN

- Percentage of the collection system costs that will be paid by property owners through betterments

QUESTIONS AND DISCUSSION