

Wastewater Servicing Means & Methodology

Public Information Centre

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Outline

- Goal of wastewater servicing extensions
- Describe servicing alternatives to on-site disposal
- Responsibilities for on-site grinder pumps costs
- Analysis and Recommendation



Goal of Wastewater Servicing Extensions

Owner Benefits:

- Enables buildings additions, more water use and site improvements – fewer restrictions
- Potential lower life cycle costs than onsite disposal
- Consistent expenditures/peace of mind/convenience
- Potential higher resale value

Community Benefits:

- Enables economic development
- Protect natural environment from detrimental wastewater discharges

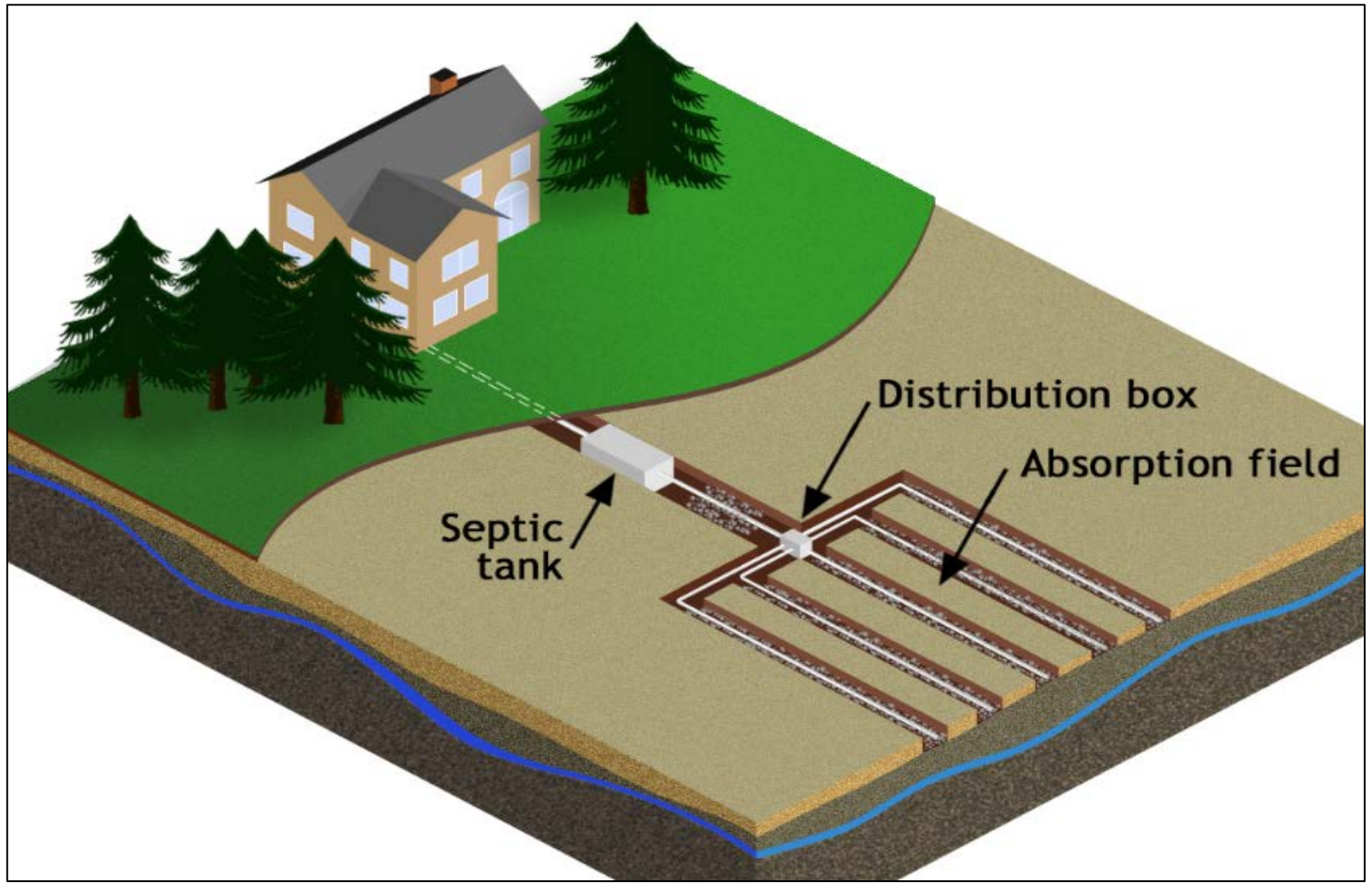


Goal of Wastewater Servicing Extensions

- Town goal to extend wastewater collection to un-serviced urban areas over time;
- Wastewater infrastructure system largely in place
 - Extensions primarily limited to local street(s)



Traditional Septic System Schematic



Alternate Servicing Systems

1. Open Gravity Sewer System
2. Low Pressure Sanitary System
 - A. Privately owned grinder pumps
 - B. Town owned grinder pumps
3. Modified Gravity System



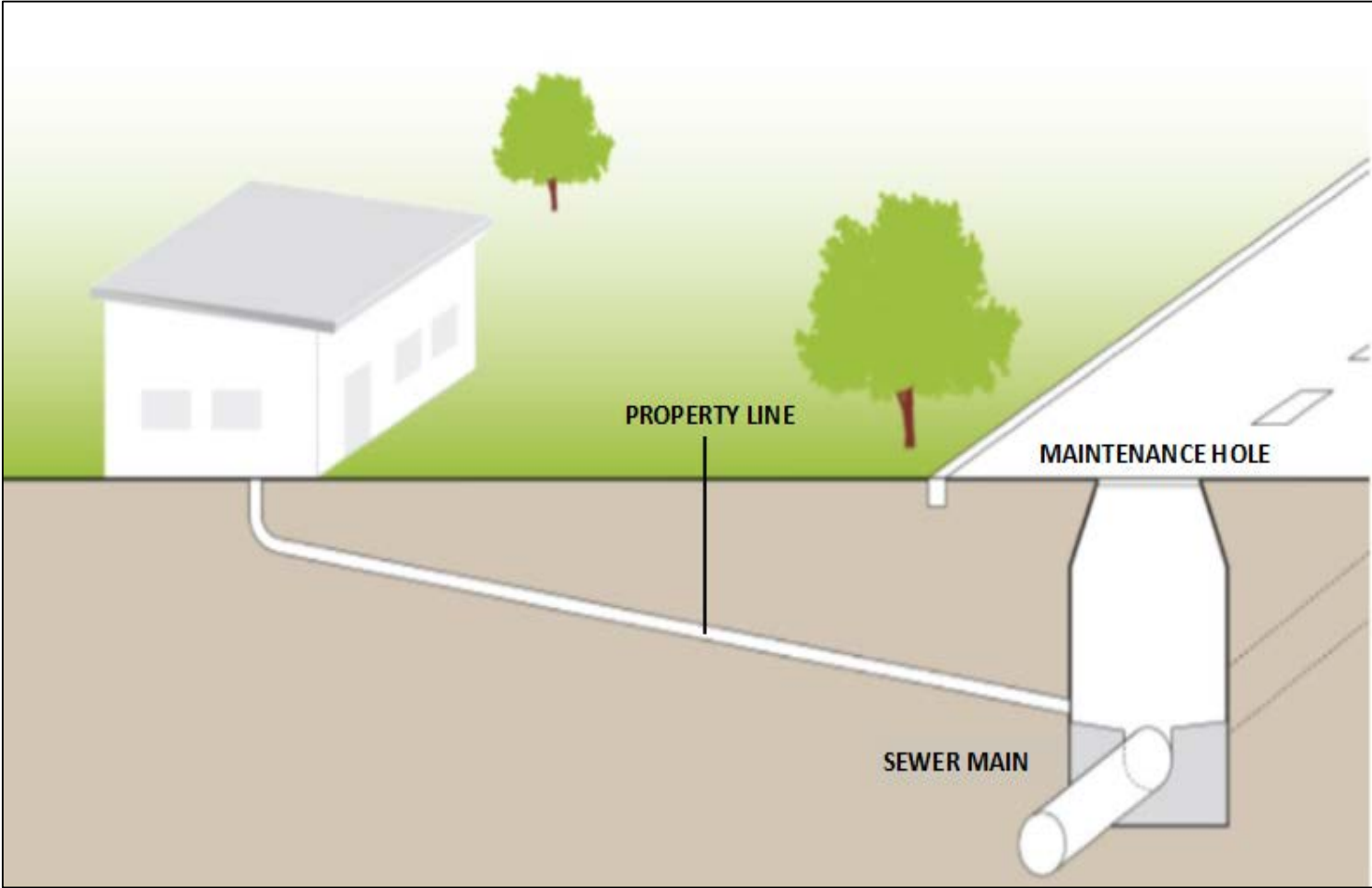
Alternative 1

Open Gravity Sewer System

- Wastewater collected from properties via free flowing sewer connection
 - On-site pumping may be necessary to property line
- Traditionally preferred method for wastewater servicing
- Central pumping stations required at low points



Open Gravity Schematic



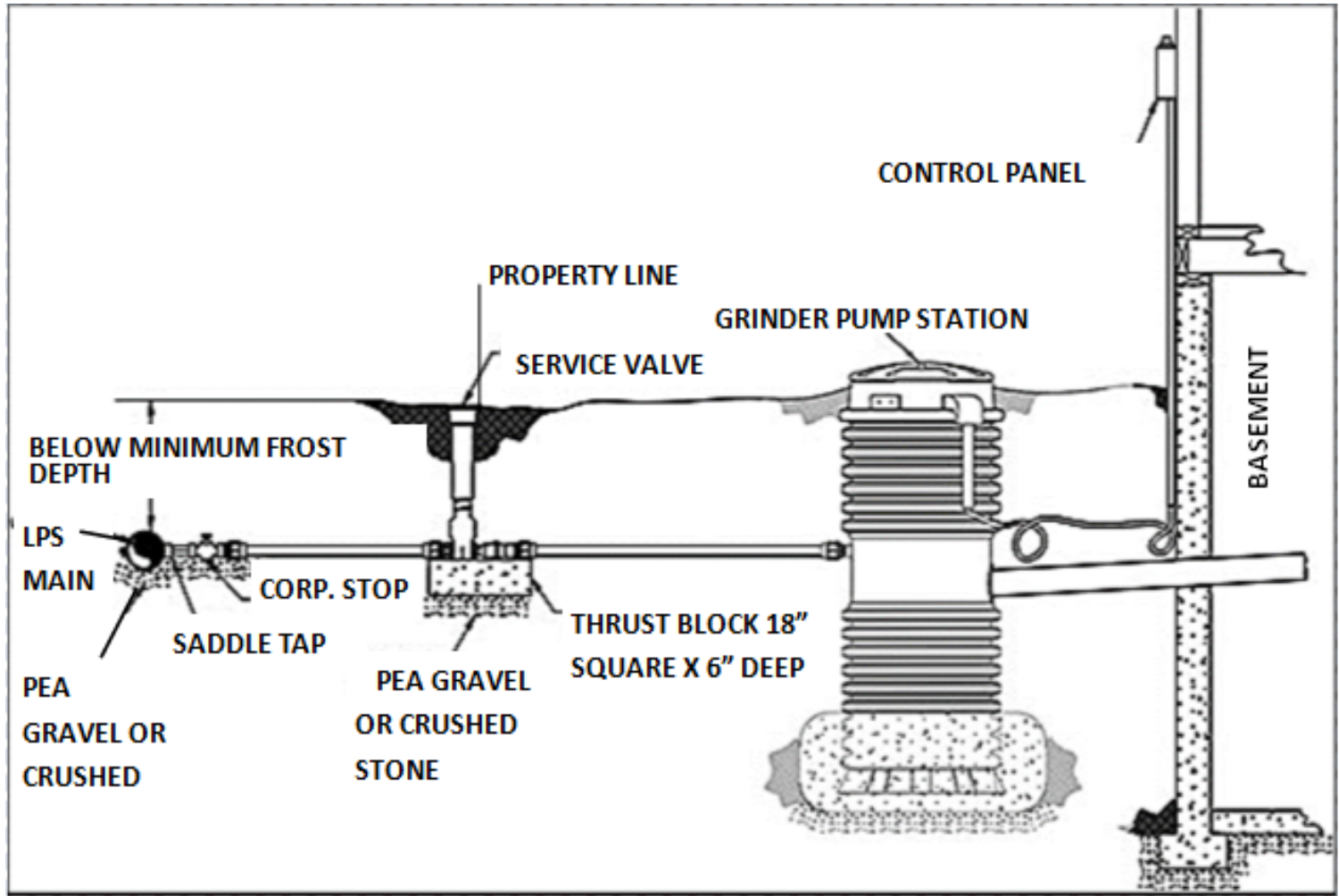
Alternative 2

Low Pressure Sanitary System

- On-site pumps which grind wastewater from property and discharge to small diameter common forcemain
- Pre-fabricated grinder pump unit that includes a small tank to store wastewater
- Alternative to open gravity where construction costs are prohibitive



Private Low Pressure Sanitary System Schematic



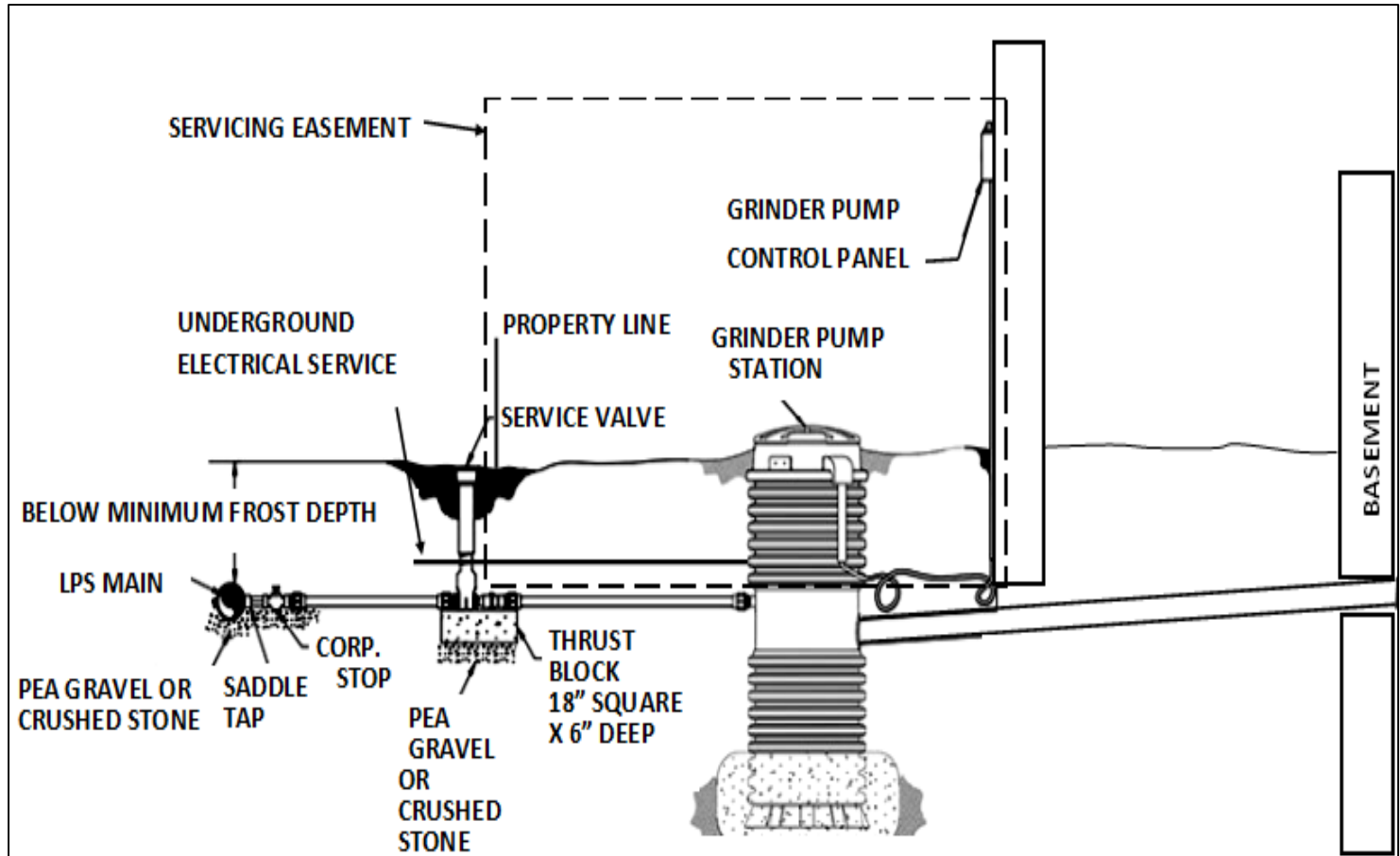
Alternative 2

Low Pressure Sanitary System

- Key concern is on-going private side O&M costs for grinder pumps (i.e., electrical, maintenance)
- Town model has been for private ownership and operation of grinder pumps
- Town-owned grinder pumps will include additional capital costs for electrical, legal and O&M



Town-Owned Low Pressure System Schematic



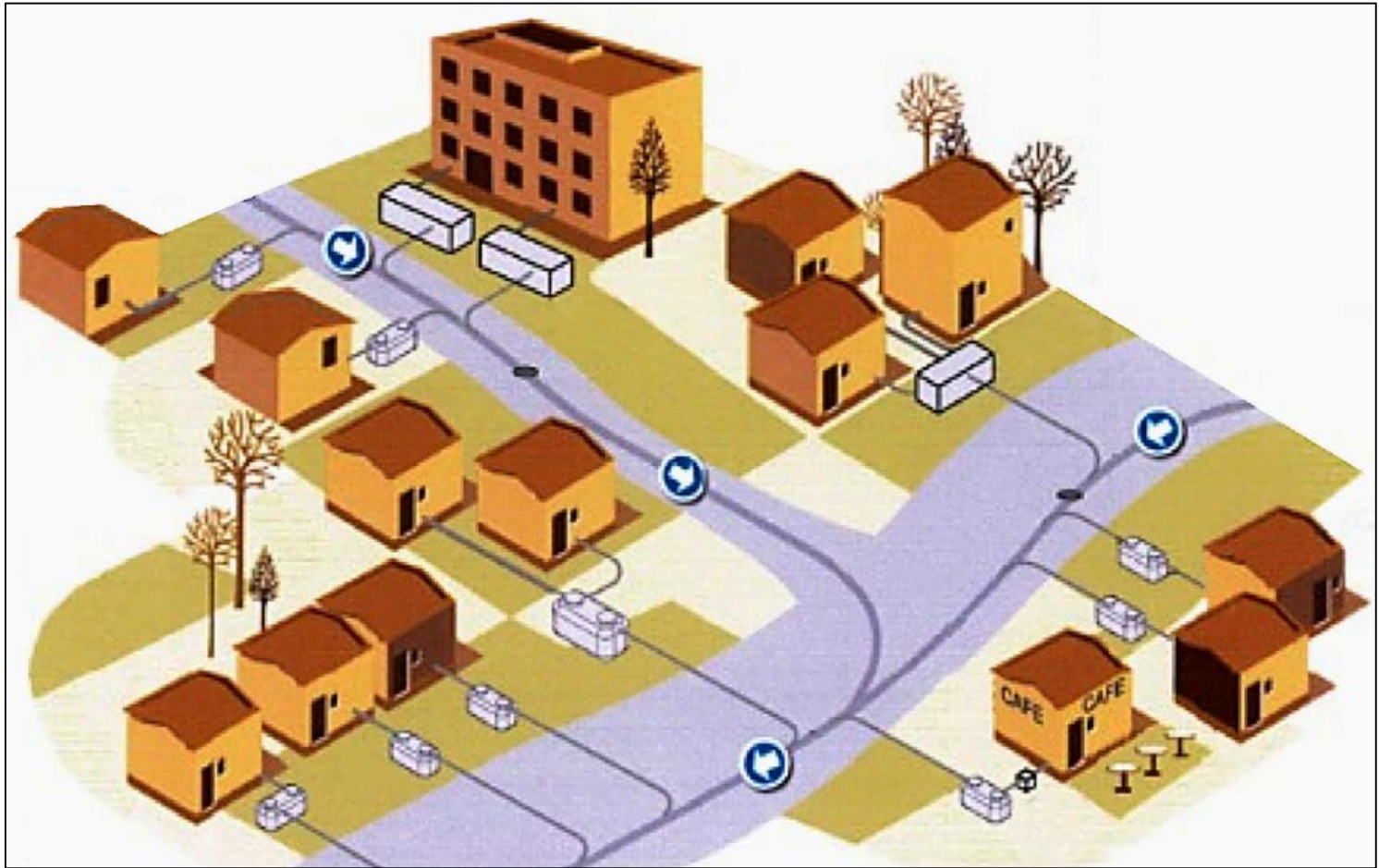
Alternative 3

Modified Gravity System

- Solids and grease removed prior to discharge to municipal system
- Same small diameter piping as LPS but typically deeper than LPS systems to maintain gravity flow
- Requires routine pump out of settling tank



Modified Gravity System Schematic



Advantages and Disadvantages

Alt 1 - Open Gravity Sewer System

Advantages

- Reliable and robust system
- Lowest O&M costs for Town and property owners

Disadvantages

- Highest construction cost where significant depth, rock removal, or centralized pumping necessary



Advantages and Disadvantages

Alt 2A - LPS with Private Owned Grinder Pumps

Advantages

- Lower capital costs than open gravity system

Disadvantages

- Property owner has ongoing O&M costs
- Higher risk of backups from pump or power failure
- Limited phasing and expansion capacity



Advantages and Disadvantages

Alt 2B - LPS with Town Owned Grinder Pumps

Advantages

- Lower capital costs than open gravity system
- No O&M costs for property owner - like Alt 1

Disadvantages

- Higher construction costs than Alt 2A due to electrical and legal (\$3,000 - \$3,500 / lot)
- Highest Town paid O&M costs
 - Transfer of costs to all other WW users



Advantages and Disadvantages Alt 3 - Modified Gravity System

Advantages

- Reliable system
- Lower property owner O&M costs than Alt 2A
- Lower construction cost than Alt 1

Disadvantages

- Higher construction cost than Alt 2
- Higher property owner O&M costs than Alt 1
- Limited expansion flexibility



Summary of Costs Borne by Property Owner

| Wastewater Servicing Alternative | Type of Expense ¹ | Approximate Cost ⁵ |
|--|---|-------------------------------|
| 1. Open Gravity System | Private Connection Costs | \$5,000 |
| | Capital Cost of System (Shared Cost) | Varies by Project |
| 2A. Low Pressure Sanitary System – Privately Owned | Grinder Pump & Private Connection Costs | \$10,000 |
| | Annual O&M Costs ² | \$150 - \$200 |
| | Capital Cost of System (Shared Cost) | Varies by Project |
| 2B. Low Pressure Sanitary System – Publicly Owned | Private Connection Costs | \$4,000 |
| | Capital Cost of System (Shared Cost) ³ | Varies by Project |
| 3. Modified Gravity System | Private Connection Costs Using Existing Tank ⁴ | \$5,000 |
| | Private Connection Costs Including New Tank | \$10,000 |
| | Tank Pump Out (4 year interval) | \$400 |
| | Capital Cost of System (Shared Cost) | Varies by Project |

- Note:
1. A bi-monthly wastewater user bill will also be issued.
 2. Annualized to include electrical and expected repairs, but not replacement.
 3. Includes cost of grinder pump and associated works.
 4. Assumes existing septic tank can be retrofitted.
 5. Costs are rough estimates only. Final costs will be property specific.



Alternative Servicing System Analysis

- Evaluation should consider public and private life-cycle costs over at least 20 years
- Selection of installation method based on lowest life cycle cost unless specific constraints
 - Protection of natural environment features
 - Owner preference to pay a higher capital cost to avoid on-going O&M costs
- Servicing alternative very much project dependent



Responsibilities for On-site Grinder Pump Costs

Points for Consideration

- Higher O&M costs for on-site grinder pumps (GP's) are offset by lower initial capital construction cost
- Construction cost of LPS system with Town owned GP's is higher given electrical and legal costs
- Additional Town O&M costs to maintain on-site GP's transferred to the other wastewater users
- Approx. 180 existing LPS system users who may expect similar arrangement



Responsibilities for On-site Grinder Pump Costs Analysis

- Propose GP's are to be privately owned due to:
 - Lower capital costs to be cost shared
 - Lower coordination efforts and costs
 - Respects current LPS users
- Potential options to assist owners of GP's:
 - Lump sum compensation
 - Billing credit



Responsibilities for On-site Grinder Pump Costs Lump Sum Compensation

- Defer the property owner's up-front capital cost of installation and O&M
- Lower administrative burden than billing credit
- Lacks flexibility to address changes in electrical costs, compensation beyond 20 years, etc.
- Difficult to pro-rate existing users
- Benefit to current owner only



Responsibilities for On-site Grinder Pump Costs Billing Credit

- Flexibility to reflect changes in electrical costs
- May be tied to the wastewater production rate to reflect lower costs for water conservers
- Not a large initial financial outlay
- Directly benefits the user and not a past owner
- Easily expanded to include existing LPS system users
- Ongoing administration burden



Analysis Summary / Recommendation

- Servicing methodology to be determined by the overall lowest 20-yr life cycle costs including public and private cost responsibilities
- Town should not directly own or operate on-site grinder pumps
- O&M costs for a GP's should not be subsidized by general wastewater user-rate payer
 - lowest combined public and private life cycle cost selected LPS as preferred alternative



Thank you.



