

# Public Information Meeting Sagamore Avenue Area Sewer Extension

City of Portsmouth, NH

December 9, 2019

Suzanne Woodland, Deputy City Attorney  
Terry Desmarais, PE, City Engineer



# Introduction

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- **Brief Recap Of November 25, 2019 Meeting**
- **Answer Outstanding Questions**
- **Additional Items Of Concern**
- **Summarize Ongoing Work**

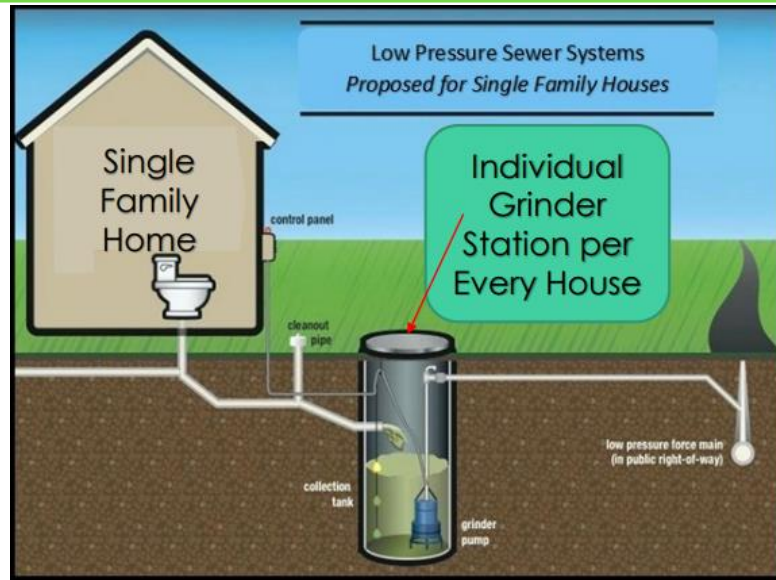


# RECAP

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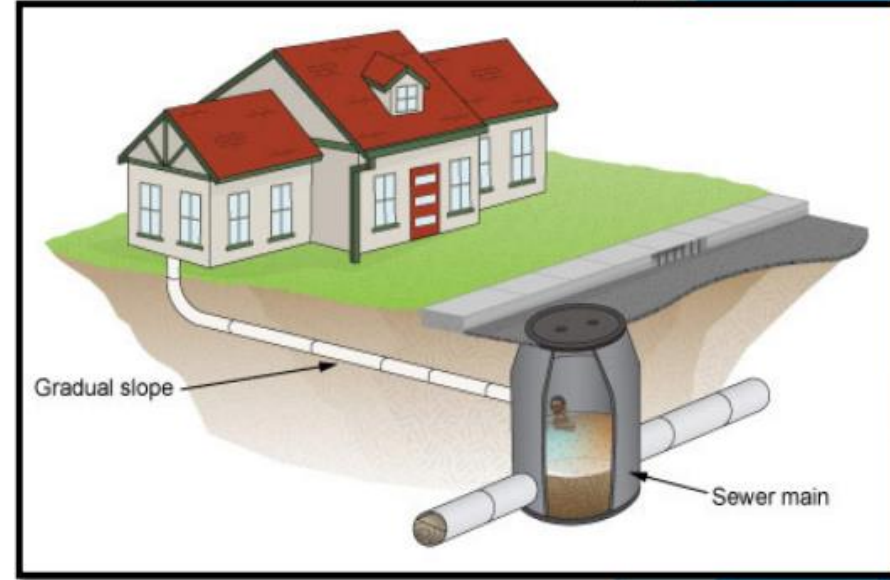


# Q: WHY CHOOSE A LOW PRESSURE SYSTEM?



## Low Pressure Sewer System

- **Advantages**
  - Lower construction costs due to shallower bury depth of pipe (Shallow ledge in project area)
  - Is not dependent on grade and topography
  - Less invasive construction
- **Disadvantages**
  - Higher property owner annual operation and maintenance costs

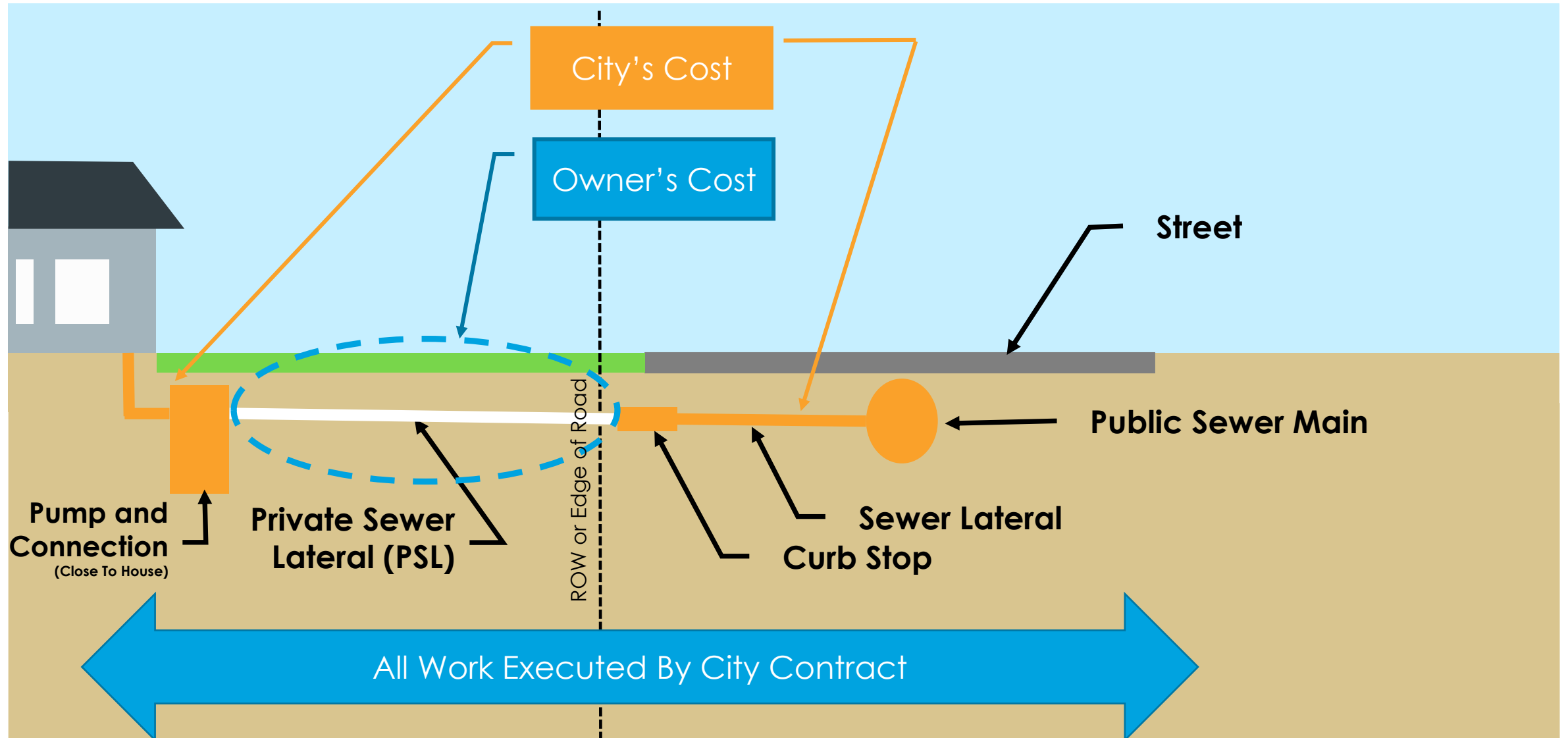


## Gravity Sewer (No Pressure)

- **Advantages**
  - Lower long term costs to the home owner
- **Disadvantages**
  - Higher construction costs
  - More invasive/destructive construction
  - Requires pump stations based on topography
  - Requires permanent easements for cross country sewer lines

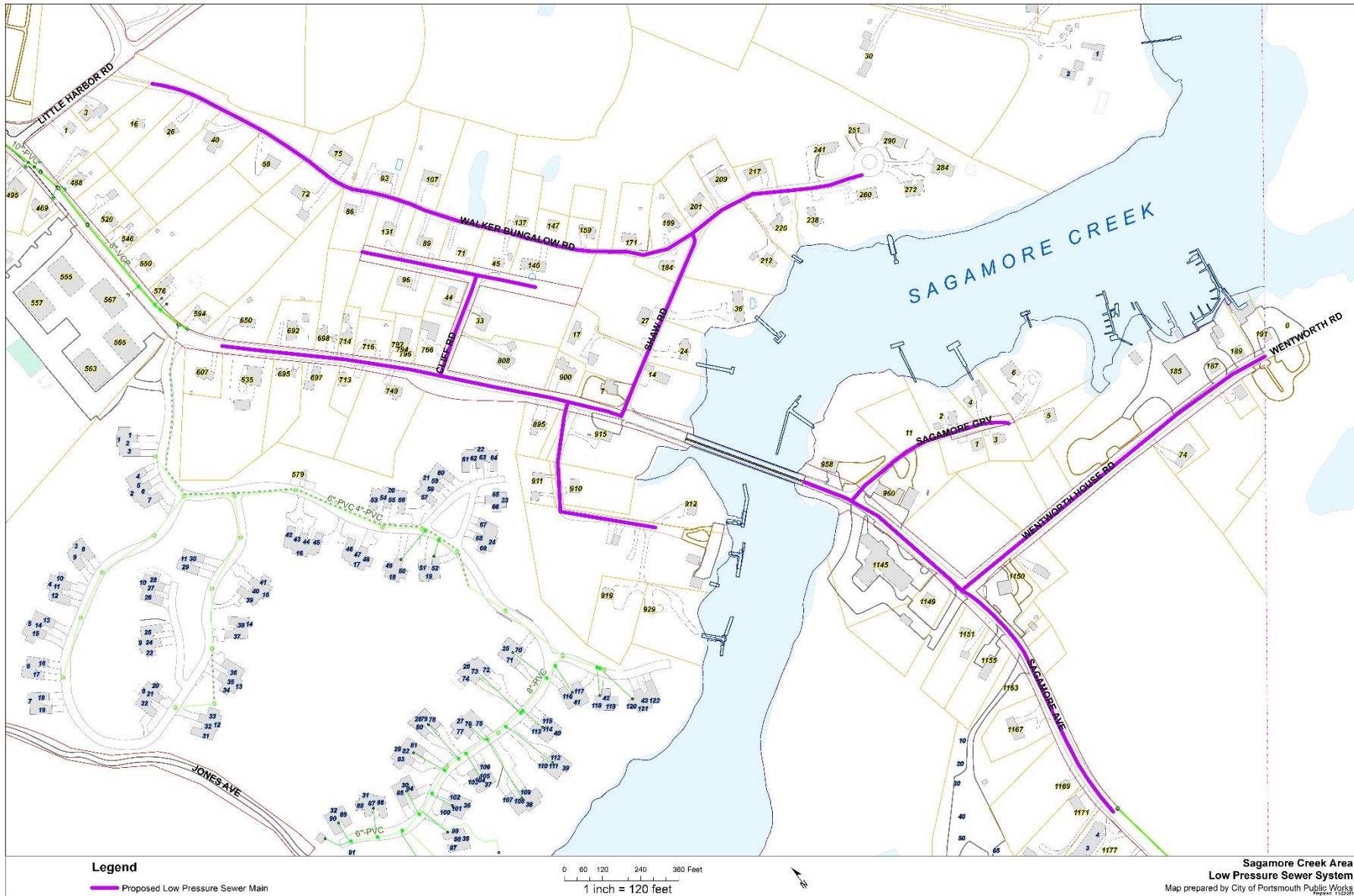


# Cost Apportionment Proposal For Future City Council Consideration





# CURRENT SAGAMORE LPSS DESIGN



## Q: WHY THE EONE PUMP?

- **Long Track Record**
- **Considered Industry Standard By Many**
- **Simple And Reliable, Least Amount Of Worry**
- **10-15 Year Pump Life Span**
- **City Has Confirmed Local Installation And Long Term Ownership Have Been Successful**

D-Series | DH071 & DR071 Grinder Pump Station



Typical  
Annual  
Electric  
Cost: \$36

<https://www.youtube.com/watch?v=VW7daUv18Rg>





# EXISTING EONE PUMP SYSTEMS IN PLACE





# Origin Of This Project

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- **Known Septic Failures**
- **Identified Impairments**
- **Preliminary Engineering Completed**
- **Incorporated Into the City's Consent Decree Second Modification As Supplemental Environmental Project**
  - **Keeps the dollars local**
  - **Delivers local environmental benefits**
  - **Links with other projects in the watershed**



# OUTSTANDING QUESTIONS

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# PROJECT BENEFITS

- **Environmental**

- Water Quality (Bacteria, Nitrogen, Emerging Contaminants)
- Coordination with other Creek projects

- **Homeowner**

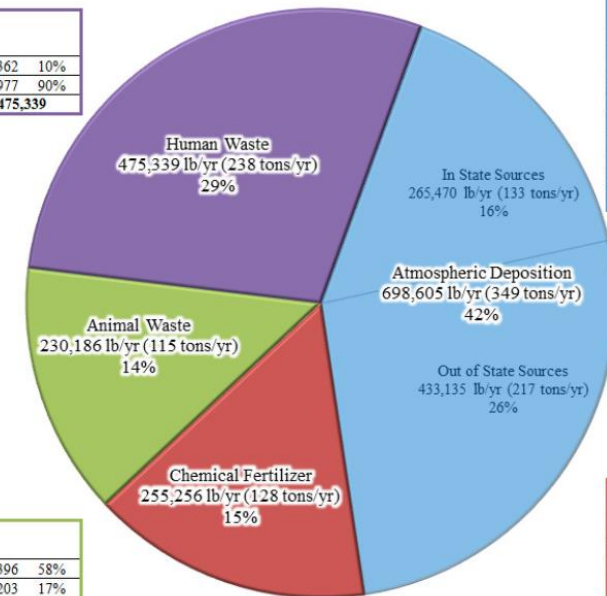
- Option for failed septic systems
- Flexibility within limits of zoning
- Marketability
- Garbage Disposal
- Aesthetics/landscaping

Figure 5: Outputs of Non-Point Source Nitrogen by Source Type and Land Use Type for the Great Bay Estuary Watershed

### Non-Point Source Nitrogen Delivered to Estuary Total Load by Source Type and Land Use Type for the Great Bay Estuary Watershed

Human Waste - TN (lb/yr)		
Septic within 200m of Waterways*	48,362	10%
Septic >200m from Waterways*	426,977	90%
<b>Total =</b>	<b>475,339</b>	

Atmospheric Deposition - TN (lb/yr)		
Agriculture	30,643	4%
Connected Impervious Area	78,371	11%
Disconnected Impervious Area	82,293	12%
Estuaries	63,072	9%
Lakes & Rivers	71,582	10%
Managed Turf	1,086	0.2%
Natural Vegetation	357,610	51%
Residential Lawns	13,947	2%
<b>Total =</b>	<b>698,605</b>	



Animal Waste - TN (lb/yr)		
Agriculture	133,396	58%
Connected Impervious Area	40,203	17%
Disconnected Impervious Area	42,246	18%
Residential Lawns	9,354	4%
Septic within 200m of Waterways*	590	0.3%
Septic >200m from Waterways*	4,397	2%
<b>Total =</b>	<b>230,186</b>	

Chemical Fertilizer - TN (lb/yr)		
Agriculture	58,562	23%
Managed Turf	19,203	8%
Residential Lawns	177,491	70%
<b>Total =</b>	<b>255,256</b>	

**Total Nitrogen Delivered = 1,659,387 lb/yr (830 tons/yr)**

\*Waterways include estuaries and 5<sup>th</sup> order or larger streams





# SAGAMORE CREEK WATERSHED PROJECTS

Peverly Hill Road  
(Potential Stormwater  
Improvements)

DOT Stormwater  
Improvements

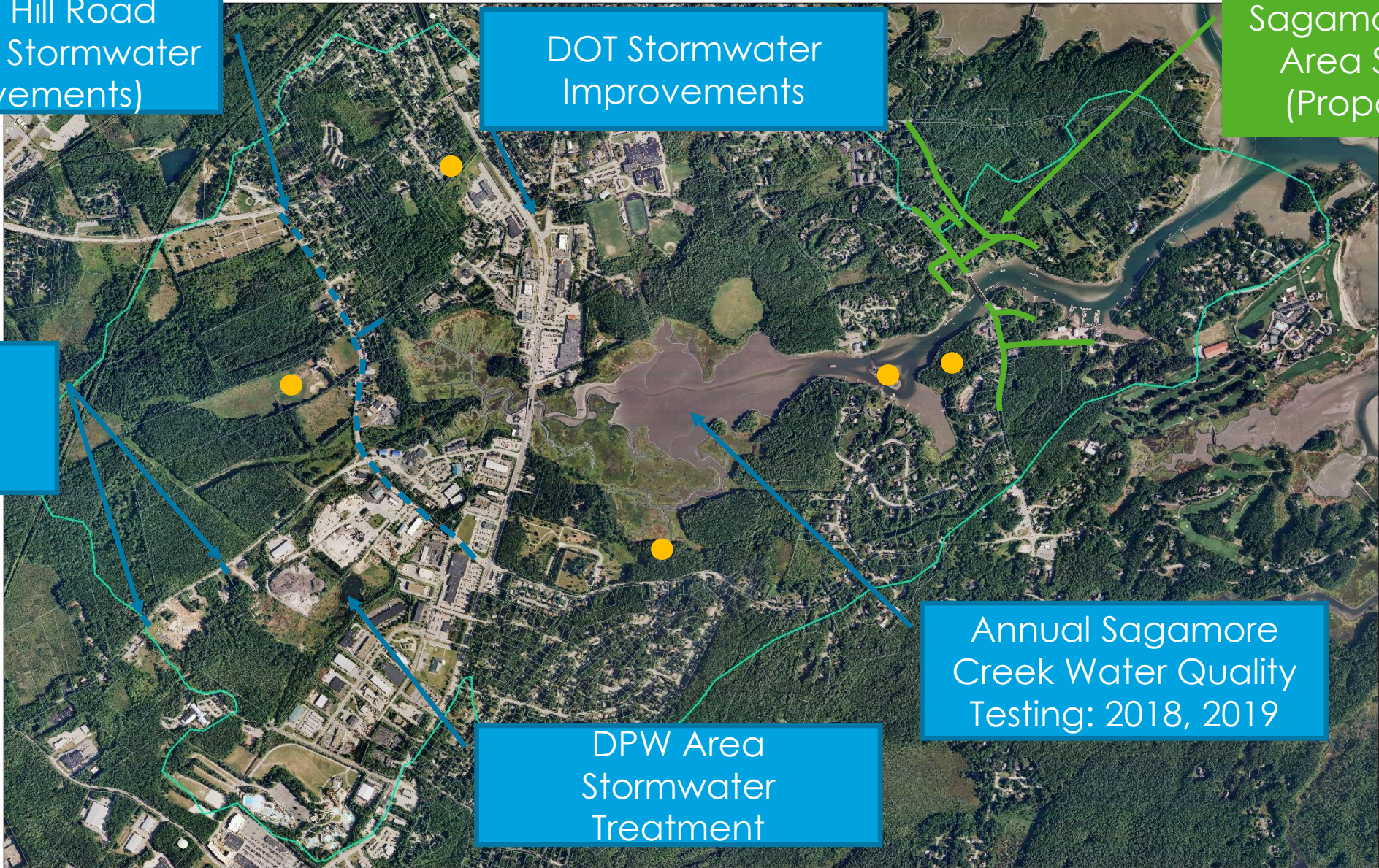
Sagamore Ave  
Area Sewer  
(Proposed)

Banfield  
Road  
Culverts

●  
Conservation  
Land

Annual Sagamore  
Creek Water Quality  
Testing: 2018, 2019

DPW Area  
Stormwater  
Treatment



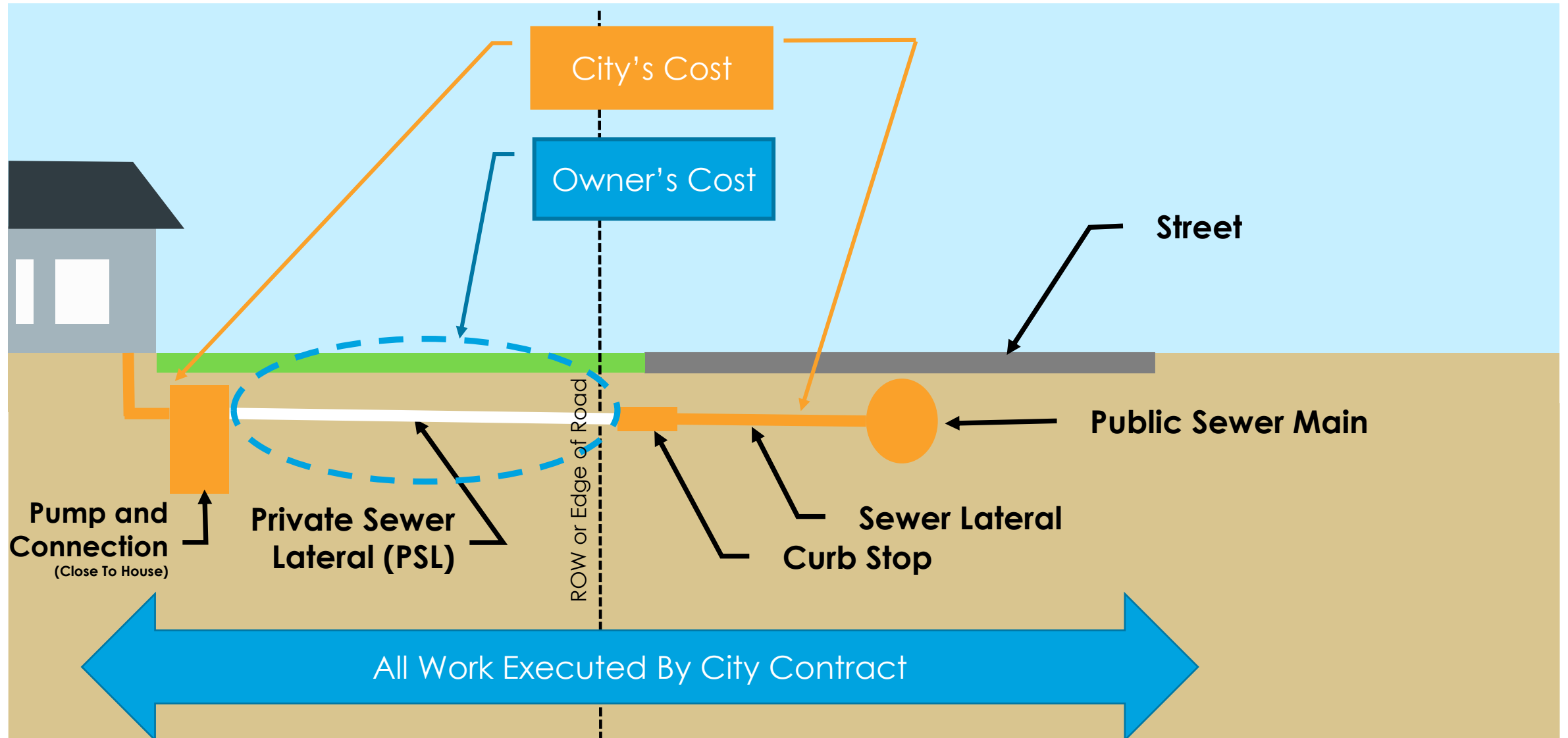
0 250 500 1,000 1,500 2,000 Feet  
1 inch = 500 feet



Existing Conditions  
Map prepared by City of Portsmouth Public Works  
Project 2024



# Cost Apportionment Proposal For Future City Council Consideration



# Total Project Cost Comparison

Item	LPSS Cost (\$)	Gravity Cost (\$)
City Costs		
Sagamore North	\$3,650,000	\$5,730,000
Sagamore South	\$1,850,000	\$4,000,000
Total City (Sewer Users)	\$5,500,000*	\$9,730,000
Property Owner Costs**		
Service Lateral	\$510,000	\$560,000
Ledge	\$90,000	\$210,000
Total Private	\$600,000	\$770,000
Total Private Per Connection	~\$6,600**	~\$8,500**

\*Additional \$1.1 Million Over Previous \$4.4 Million Estimate Accounts For Cost Of EOne Pump Purchase And Installation

\*\*Private Costs Range Based On Each Property





# Simplified Cost Comparison – LPSS vs Gravity

## Cost Items

### Capital Costs

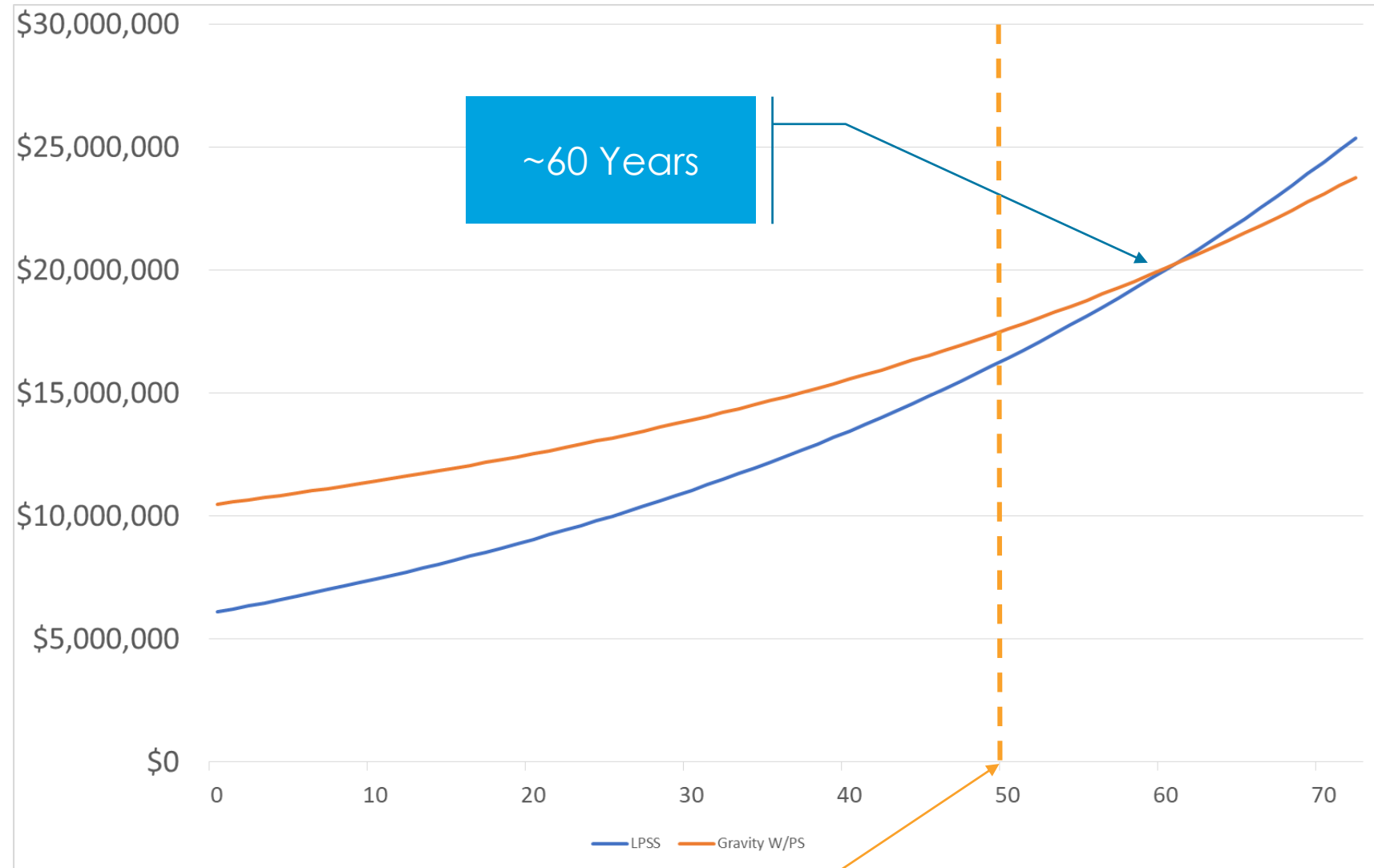
- Pipe, Pump Stations, Land
- Installation
- Restoration

### LPSS Pump Operational Costs

- Electricity
- Pump Replacement (1x/15yr)
- Annual O&M

### Pump Stations (2) Operational Costs

- Electricity
- Parts & Pump Replacement (1x/15yr)
- Generator Fuel & Maintenance
- Operations & Maintenance Labor

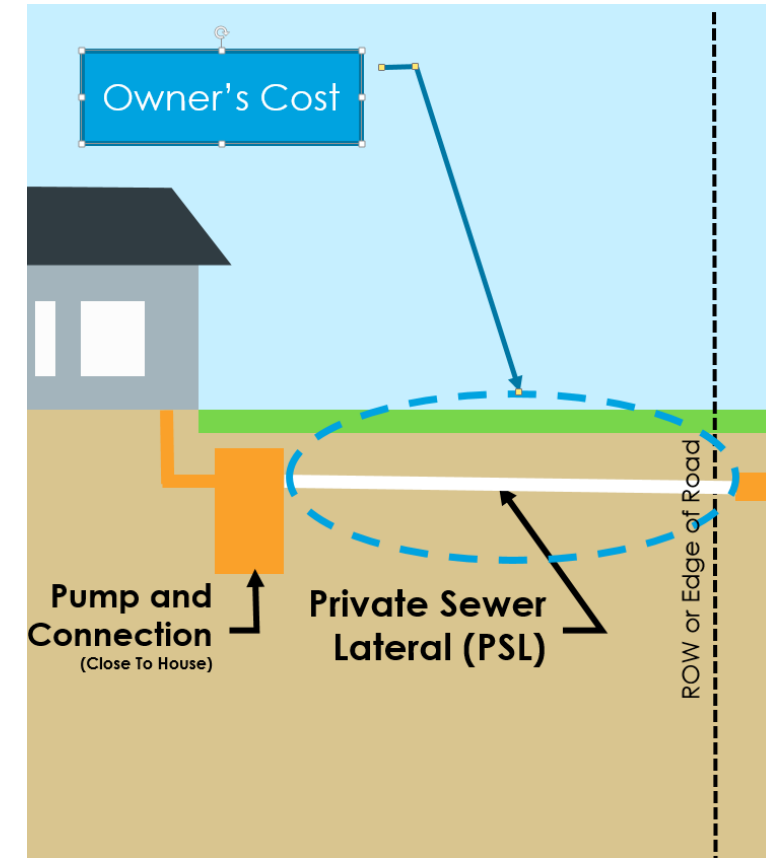


Major Gravity System Improvements (Not Included)

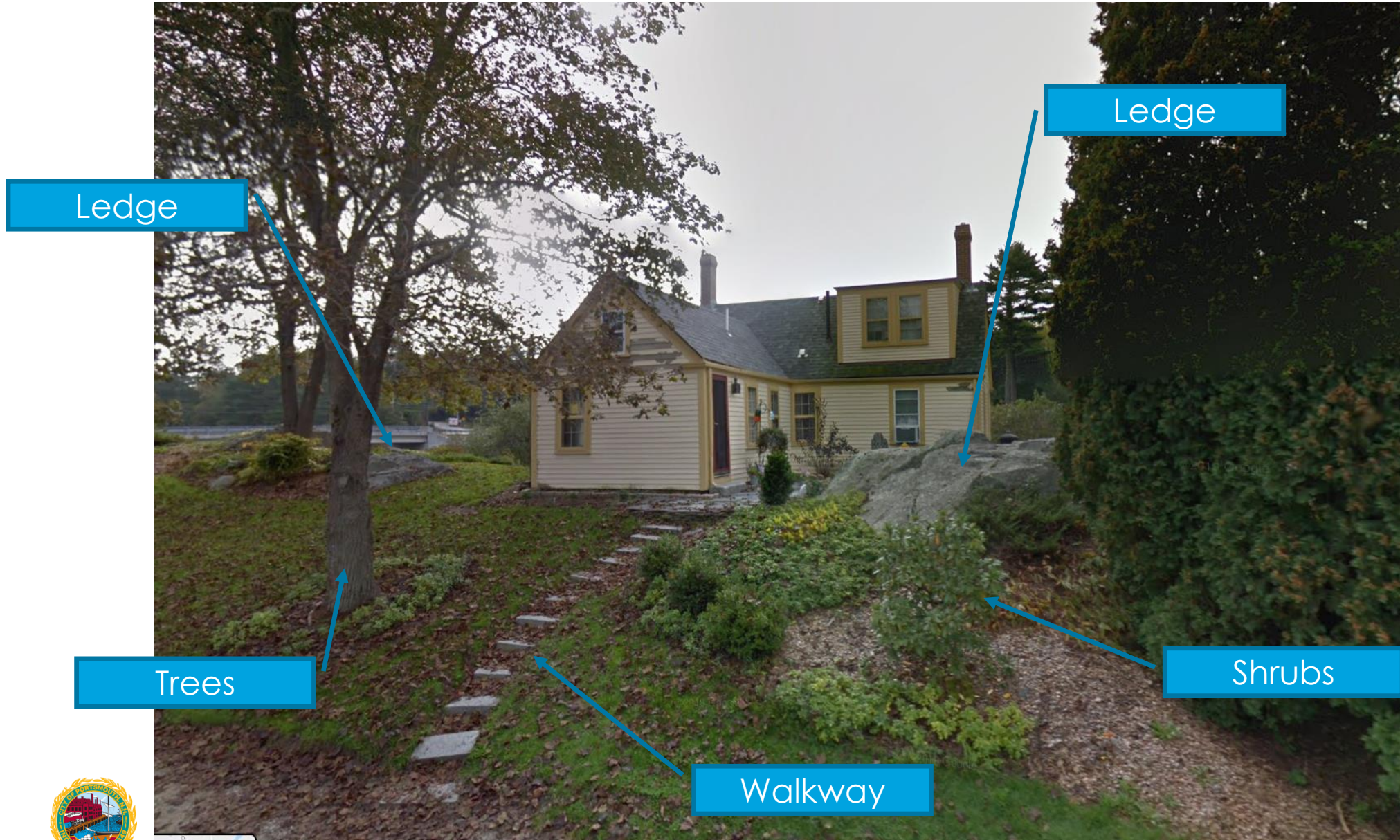


# Private Sewer Service Lateral – Cost Drivers

- Length of Service Lateral From Road To Pump
- Depth of Ledge Excavation (If Any)
- Private Property Restoration
  - Hardscape (walkways, irrigation, driveways, walls, etc.)
  - Landscape (shrubs, flower beds, lawn, etc.)



# Example Of Private Service Lateral Cost Drivers





# Annual Cost Of Ownership Comparison – Septic vs LPSS

Item	Septic*	LPSS
Septic Tank Pumping (\$400 Every 3 Years)	\$140	N/A
Septic System Replacement (\$30,000 Every 20 Years)	\$1,500	N/A
Electricity	N/A	\$36
Repair and Service (\$640 Every 8 Years)	N/A	\$80
Sewer Bill	N/A	\$860
Pump Replacement (\$2,700 Every 15 Years)	N/A*	\$180
<b>Total</b>	<b>\$1,640</b>	<b>\$1,156</b>

\*Assumes conventional gravity type septic system without a pump in the septic tank



# ADDITIONAL ITEMS OF CONCERN

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# **Q: HOW WILL THE CITY ADDRESS POTENTIAL RADON GAS AFTER BLASTING?**

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- **Ledge In The Area Is A Potential Existing Radon Source**
- **Some Properties May Already Have Levels Of Radon That Exceed The Recommended Levels**
- **The Contractor Will Be Required to Include Radon Testing As Part Of The Pre-Blast Survey**





# Q: WHO PAID FOR OTHER PUMPING STATIONS IN THE CITY?

- **Developers**
- **Federal And State Funding in 1970's and 1980's**
- **Sewer Enterprise Fund**



# Q: WHAT FAILED AT CURRIERS COVE LOW PRESSURE SEWER?

- **Private Low Pressure Sewer System Constructed By Developer**
- **The Sewer Service Lateral Failed (Cracked) Where It Passed Beneath A 6-ft High Retaining Wall**



# ONGOING --- WORK





# Field Work For Design

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- **Wetland Flagging**
- **Additional Land Survey**
- **Soil And Ledge Borings**
- **On-site Building Survey**



# Updated Schedule\*

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- **Design and Permitting Ongoing**
  - With Available Data
- **Schedule Discussion with New Council Regarding Proposal**
  - Early 2020
- **Develop Construction Documents for Bidding**
  - 6 to 9 Months
- **Bidding And Award**
  - 3 Months
- **Construction**
  - 2 Construction Seasons (16 months)



\*Typical Schedule Shown, Consent Decree Deadlines May Alter Schedule

# Future City Council Decisions

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- **Decision On Cost Apportionment Proposal**
- **Related Items Contingent On Cost Apportionment**
  - **Commercial Verses Residential Properties**
  - **What Happens At Sale Of Property**
  - **How to Handle Properties That Do Not Connect Until Later**
  - **If the Cost to Abandon Existing Septic Will be Private or City**
  - **Who Pays for Replacement of Pump at End of Life (15 Year Mark)**
  - **Who Pays for Maintenance of Pumping System**
  - **Additional Funding Authorization**





# THANK YOU

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