

Sewer Extensions History/Issue Overview Presented to BOS

June 23, 2015



Prepared and Presented by:
Carl Luck on behalf of the
Lunenburg Sewer Commission

Introduction: Presentation Goals

We thank the BOS for this opportunity to get all of the relevant facts to the Public in the hopes of correcting any misperceptions and alleviating residents' concerns as best we can and getting these projects back on a positive track

- Provide Fact Based Historic Perspective Regarding ongoing Betterments for BOS and Public
- Assure Town of Sewer Commission's Determination to provide Service to Subject Areas of Need and as directed by Votes at 2014 and 2015 Town Meetings
- Address or Follow up on BOS and or Public Comment Concerns

Agenda Items:

- **Introduction/Policy/Process**
- **Project History Up to Town Meeting Approval**
- **Town Warrant Article Presentation/Votes**
- **Engineering Design Phase/Bid Process**
- **Information Meeting/Key Points**
- **Follow Up Meetings, Questions/Responses**
- **Current Status/Direction/Schedule**
- **Summary/Conclusion**

Introduction: Disclaimer

- Due to late invitation to present to BOS, the Sewer Commission has not been able to meet or deliberate on the contents of this presentation
 - Need to keep to historical facts and documentation and previous discussions
 - New questions requiring Commissioners' inputs will be collected and addressed at next televised meeting at Town Hall on June 30th

Sewer Commission Mission

- Provide sewer service to areas of need as identified in the 2010 Comprehensive Wastewater Management Plan (CWMP)
- Assist residents in expanding the sewer system through Betterments or Private Extensions consistent with the CWMP and Town Meeting Vote
- Define and implement regulations, policies, procedures consistent with Lunenburg's needs and State Law
- Oversee the management of the Lunenburg Sewer System to assure reliable and cost-effective operations
- Work with the Lunenburg BOS and our neighboring Cities, Leominster and Fitchburg, to secure and maintain Inter-municipal Agreements (IMA) for wastewater disposal that are fair, reasonable and meet the needs of the community

Development Policy

- Sewer Rules and Regulation Article II-2 I:

A guiding principle of the Sewer Commission is to determine the most effective method of providing service to existing and new developments where alternate, on-site solutions are not able to meet local and state health and environmental requirements. It is not the intention or goal of the Commission to control or enable development.

Since 2006 the Sewer Commission has chosen to fully support but not initiate sewer extensions.

Introduction: Extension Policy

“Prior to the initiation of a Sewer Extension project in any Sewer Service Area as identified on the Sewer Service Area Map, and prior to submitting a Sewer Extension application to the Sewer Commission, the applicant shall notify the Sewer Commission of the Sewer Service Area affected and the Sewer Commission shall survey such landowners to determine whether a minimum of 2/3 of all affected owners support the installation of sewer service.”

This “survey” is non-binding and is intended to validate that there is sufficient interest to go to the next step of preparing for a Town Meeting warrant article and vote.

Summary of Sewer Extension Process

1. Indication of interest: normally a resident or group of residents approaches the Sewer Commission to ask for extension, either public or privately funded. Can also come from Town officials or Sewer Commission.
2. Per Policy, the Sewer Commission sends surveys to all potentially affected residents to determine if there are 2/3rd in favor of extension
 - a) Survey letter includes betterment estimate, based on available data as to the cost of the betterment
 - b) As there is no funding authorization at this time, the betterment costs are normally based on the 2010 Comprehensive Wastewater Management Plan calculations
 - c) Homeowner costs for equipment/construction are not necessarily included due to site specific issues
 - d) Connections costs fees, which are also site specific, are available on the Sewer Commission web site are also not included
3. If 2/3rd support the extension, additional information is gathered and a Warrant to approve the project and required borrowing is requested to be put on the Town Meeting Warrant
4. At Town Meeting the project and betterment costs are presented and any questions addressed; a 2/3rd approval is required to pass the article
5. If the Warrant Article passes, the Sewer Commission has the responsibility to implement the extension and manage the betterment

Project History Up to Town Meeting Approval: Lakeview

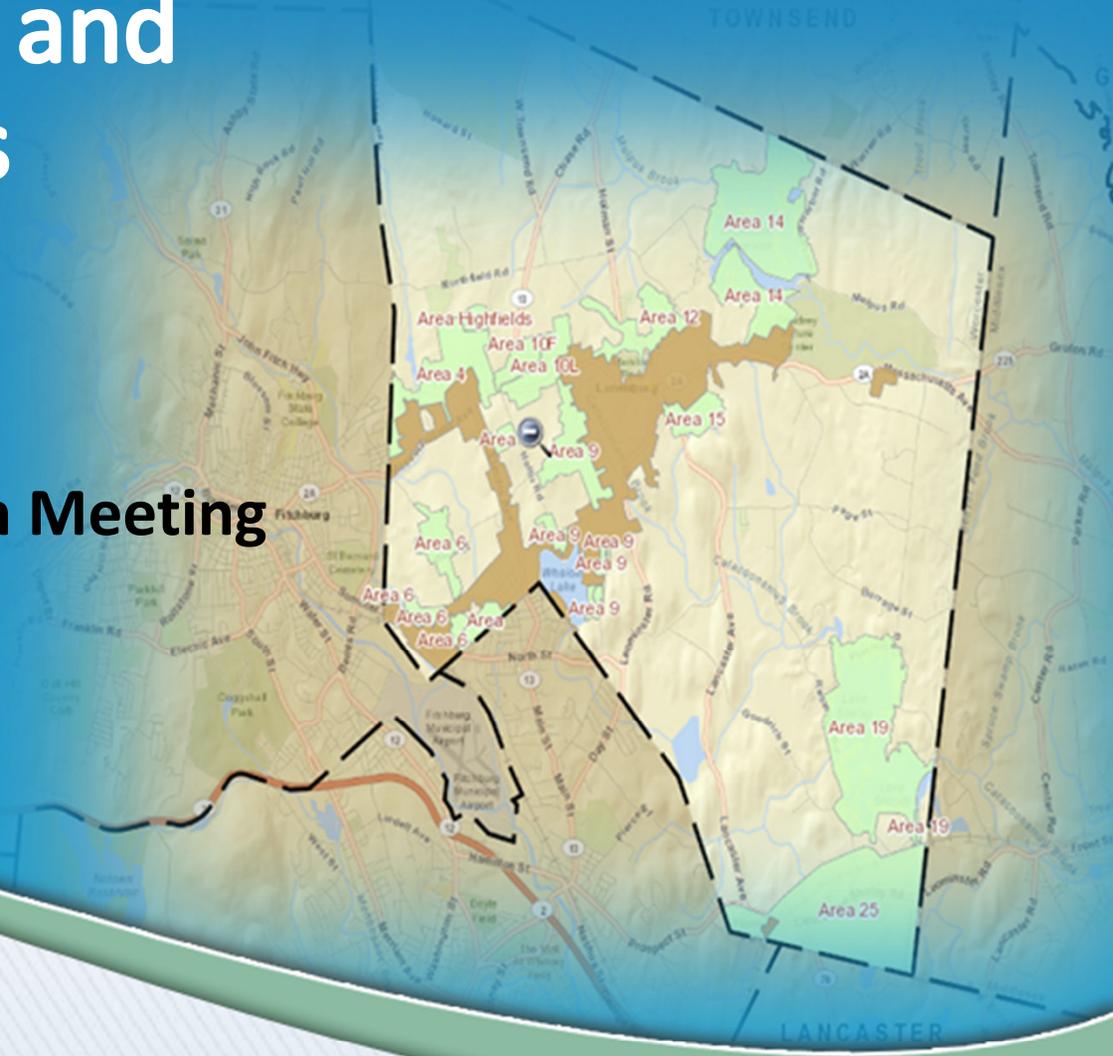
- July 2012 First indication of resident interest in extension
- April 2013: two residents requested extension
- May 2013: survey sent, betterment estimate \$15,000 plus \$10,000-12,000 pump/installation homeowner costs
- July 2013: Survey results: 29 in favor of 42 total = 69%
- 8/29/13: PEF submitted to apply for State Revolving Fund (SRF) low interest loan
- 12/30/13: Lunenburg is confirmed to be on Mass. DEP 2014 Intended Use Plan(IUP), with the requirement that funding is obtained by 6/30/14 and complete SRF application submitted to State by 10/15/14.
- Combined project presented to Finance Committee and BOS who approved Warrant Article request to take to May 2014 Town Meeting

Project History Up to Town Meeting Approval: Pratt/Rennie

- 6/11/13 Resident and Town Manager requested the Sewer Commission add this area to Lakeview/Sunset extension project
- 8/20/13 First Survey sent to residents with \$22,700 betterment estimate
 - only 23 of 41 responses; 15 in favor, 8 opposed
- 12/30/13 Request to include project into SRF loan approved
- March 2014 Second survey hand delivered with \$24,000 betterment estimate, last chance to be part of 2014 Town Meeting Betterment Warrant and SRF project
 - 29 in favor out of 39 total = 74%
- Added to presentation for Town Meeting Warrant Vote

Lakeview Avenue and Pratt Street Areas Sewer Extension Project

Summary of Annual Town Meeting
Presentation
May 3, 2014

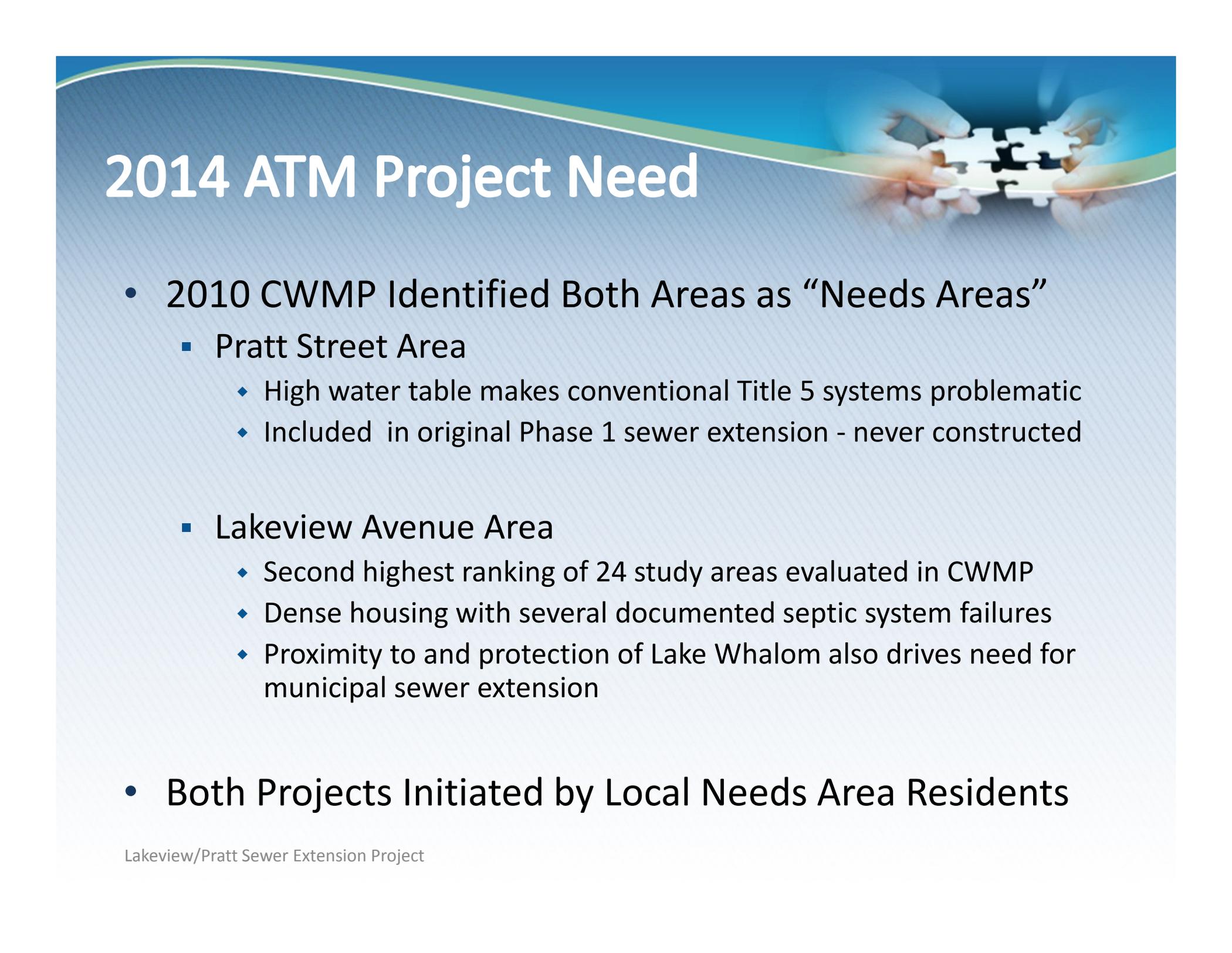


Presented by:

Lunenburg Sewer Commission

Kevin M. Olson, PE, Wright-Pierce





2014 ATM Project Need

- 2010 CWMP Identified Both Areas as “Needs Areas”
 - Pratt Street Area
 - ◆ High water table makes conventional Title 5 systems problematic
 - ◆ Included in original Phase 1 sewer extension - never constructed
 - Lakeview Avenue Area
 - ◆ Second highest ranking of 24 study areas evaluated in CWMP
 - ◆ Dense housing with several documented septic system failures
 - ◆ Proximity to and protection of Lake Whalom also drives need for municipal sewer extension
- Both Projects Initiated by Local Needs Area Residents

2014 ATM Project Details

- 80 Properties Total to be Connected to Sewer Extensions
- Pratt Street Area – 38 Total Properties
 - 28 on Pratt Street (gravity connections)
 - 10 on Rennie Street 2 gravity connections to Pratt Street;
8 grinder pumps with pressure connections
- Lakeview Avenue Area – 42 Total Properties
 - All Properties Serviced by Grinder Pumps w/Pressure Connections
- 50 Total Individual Grinder Pumps
- Length of New Sewer Piping Systems
 - 2,000 Linear Feet of 8-Inch Diameter Gravity Sewer on Pratt Street
 - 5,170 Linear Feet of Pressure Sewer (1.5 - 3 inch diameter) on all Other Streets



2014 ATM Estimated Project Costs

- Estimated Construction Cost \$ 1.21 M
- Administrative, Engineering, Land, Easement, Legal and Police Details \$ 0.69 M
- Contingencies (~14%) \$ 0.30 M
- Total Project Cost Estimate \$ 2.20 M
- Does Not Include Private Property Costs
- Estimated SRF Loan Eligible Cost \$1.6 M - \$1.8 M

2014 ATM Estimated Betterment Costs

- 100 Percent Betterment Assessment
- Estimated Total Project Cost - \$ 2.2M
- 80 Total Properties Served by Town Sewer
- Estimated Cost per Parcel - \$27,500



Town Warrant Article Presentation/Votes: 2014 Pratt/Lakeview Areas

ARTICLE 25. VOTED UNANIMOUSLY to appropriate \$2,200,000.00 for the purpose of financing the design, permitting and construction of sewer collection systems as described in the Comprehensive Wastewater Management Plan, prepared by Wright Pierce Engineering Consultants, dated March, 2010, and the Clean Water State Revolving Fund 2014 Project Evaluation Form, submitted in August 2013, in (1) the areas of Sunset Ave., Harris Ave., Lakeview Ave, Pine Grove Rd., with connection to the sewer main on Prospect St., and (2) the areas of Pratt St., West St., and Rennie St., with connection to the sewer main on Whalom Rd., including the acquisition of land or interests in land relating thereto, legal and survey costs, and including without limitation all costs thereof as defined in Section 1 of Chapter 29C of the General Laws; and that the Board of Selectmen is authorized to acquire any necessary easements or other interests in land by gift, purchase or eminent domain; and to fund this appropriation, to authorize the Town Treasurer with the approval of the Board of Selectmen to borrow up to \$2,200,000.00 and to issue bonds and notes therefor under Chapter 44 and/or Chapter 29C of the General Laws and that the Town Treasurer with the approval of the Board of Selectmen is authorized to borrow all or a portion of said amount from the Water Pollution Abatement Trust established pursuant to said Chapter 29C; and in connection therewith the Town Treasurer and the Board of Selectmen are authorized to enter into a financing agreement and/or security agreement with the Trust and otherwise to contract with the Trust and the Department of Environmental Protection with respect to such financing and for any federal or state aid available for the project or for the financing thereof and to take any and all other action, deemed necessary or advisable for such purposes; that such bonds or notes shall be general obligations of the Town, provided, however, that it is the intent of the Town that the principal and interest on such bonds or notes shall be paid, without further appropriation by the Town to the extent permitted by law, from funds received by the Town through betterment and/or privilege fees imposed on abutters who benefit from the project. [Submitted by the Sewer Commission] Board of Selectmen recommends approval, 4-0. Finance Committee recommends approval, 6-0.

Project History Up to Town Meeting Approval: Pleasant View Ave.

- January 2015 Sewer Commission was approached by a resident requesting an extension
- February 2015 Survey sent to residents with estimated betterment cost of \$25,000
- March 2015 Survey results: 9 in favor out of 11 residences
 - 82% in favor
- April 2015 Received written OK from State to add to SRF loan via change notice if passed at TM

Pleasant View Town Meeting Project Summary

- 2010 CWMP Identified Pleasant View Ave as a “Needs Area”
- Town’s Sewer Extension Policy requires a 2/3 Approval
 - 81% of residents support this project
- Gravity Sewer System – approx. 550 ft of 8-inch pipe
- Project work to be included with existing Pratt St/Lakeview Ave Areas Sewer Extension project
- Schedule:

Engineering Design	July – Aug 2015
Construction	Fall 2015 or Spring 2016
Sewer Connections	Spring or Summer 2016

Estimated Project Costs

- Project proposed to be included in SRF funding for existing Pratt St/Lakeview Ave Areas Sewer Extension project
- Total Project Cost Estimate \$ 300,000
- 100 Percent Betterment Assessment
- 11 Total Properties Served by Town Sewer
- Estimated Betterment per Parcel \$ 27,300
- Does Not Include Private Property Costs of ~\$5,000 for gravity connection

Town Warrant Article Votes: 2015

Pleasant View Ave.

- Unanimously approved \$300,000 Betterment
- Current estimate based on assessment of 12 units is \$25,000 consistent with Survey Letter

Engineering Design Phase/Bid Process: Lakeview Major Findings/Results

- No real issues or major deviations from design approach presented at Town Meeting
- Residents were very cooperative in providing easements in areas where there were no Town roads, no takings by eminent domain were required
 - Significantly reduced legal cost contingencies
- One resident just outside planned area, but in the Sewer Service Area, requested to be included and was added to design/bid package

Engineering Design Phase/Bid Process: Pratt Major Findings/Results

- It was determined during design phase and posted on our web (9/11/14) that it was not possible to have a gravity system on Pratt that would tie directly into Whalom St. main
- It was decided to use low pressure for all connections as it was the least expensive option.
 - Note: most of Rennie St. was already known to required low pressure technology
- One resident just outside planned area, but in the Sewer Service Area, requested to be included and was added to design/bid package

Engineering Design Phase/Bid Process: Pleasant View Ave. Plan

- Design work can not start until the start of the new Fiscal Year when funding becomes available
- Plan is to add this effort to the ongoing Pratt/Lakeview design
- Once design is complete, the Pratt/Lakeview contractor will be asked for a price quote based on issuing a change order to current contract
- If price quote is not considered competitive, a formal public bid package will be issued

Information Meeting: May 26, 2015

- The meeting was well advertised and resulted in over 50 residents attending
- Presentations by the Sewer Commission and Engineers included current status, plans and updated cost estimates
- Probably the first time many Pratt residents heard that gravity was no longer a viable approach and homeowner costs would be higher
- Lakeview area residents who were not at, or aware of the Town meeting presentation, saw a significant increase in the estimated betterment
- Betterment estimates presented were at or below what was passed at Town Meeting

Follow Up Meetings, Questions/Responses

- What options do residents who want to stop the project have?
 - Based on Town legal counsel input, a letter was sent to all effected residents advising them that due to Town Meeting vote, costs have already been incurred and contractual obligations made, as such the Town should not stop progress and suggests that the residents consult with their legal counsel
- Beyond the Betterment, what are the other costs to the homeowner to connect
 - Residents are not required to connect to sewer or incur other costs beyond the Betterment
 - A detail spreadsheet has been created and made available (see following slide)

ESTIMATED COSTS TO CONNECT -- PRATT/LAKEVIEW SEWER EXTENSION

PROJECT

	3 bedroom example									
ESTIMATED BETTERMENT per unit	\$23,000.00	can be apportioned over 20 years onto your yearly tax bill								
		which will not be assessed until tax bill sent out December 2016 earliest								
CONNECTION COSTS (based on a 3 bedroom home)										
Connection fee	\$2,250.00	\							\$550/br above 3br minimum	
I/I-Sewer bank	\$660.00		payable to Town of Lunenburg -upon application for Permit to Connect						\$220/br add'l	
Reserve capacity fee	\$617.10	/							\$205.70/br add'l	
Contractor costs (per Wright Pierce estimate 5/26/15) - many condition-dependent factors-best to contact your own contractor for estimate										
	5/26/15 Information Mtg.	Actual Lancaster Homeowner Cost Example								
Sewer service/pump installation	\$3,000-5000	2500								
decommission septic system	\$1,000.00	included in pump installation cost above for Lancaster Ave. actual cost example								
grinder pump	\$4,000.00	4500								
electrician costs - wiring	\$2,000.00	500								
Contractor sub-total	\$10-12,000	\$7,500								
Pratt/Lakeview	\$34,027-38,527	of which approx. \$10,500-15,000 is only required if/when you choose to connect to sewer								

Follow Up Meetings, Questions/Responses (cont.)

- Both residents that requested to be added have now asked to be excluded
 - Although not included in TM vote, they were included in the design and construction bid/commitment
 - Sewer Commission needs to obtain legal council before making any decisions on these requests
- What are the sewer usage fees
 - To correct the misinformation from the audience that the cost would be 3X what they pay for water, the following table was created and made available

Quarterly Bill Comparison: Water versus Sewer

Volume (cu ft)	Volume (gal)	Average (g /d)	Water Bill	Sewer Bill	
600	4,488	49	\$ 60.00	\$ 97.20	Minimum Charge
840	6,283	69	\$ 68.64	\$ 97.20	Sewer Minimum
1,000	7,480	82	\$ 74.40	\$ 115.00	
1,240	9,275	102	\$ 83.04	\$ 142.60	Average Q1 2015 useage
2,000	14,960	164	\$ 110.40	\$ 230.00	
3,000	22,440	246	\$ 146.40	\$ 345.00	
4,000	29,920	328	\$ 188.40	\$ 460.00	
5,000	37,400	410	\$ 230.40	\$ 575.00	

Note:

1. Sewer bills are based on water into residence

Meters can be installed to eliminate sewer charge for lawn irrigation use

Pool filling can also be eliminated from sewer charge with permit

2. Average resident Sewer Bill for Q1 2015 was 1,240 cu. Ft. or \$142.60 (734 residences of 749 total customers)

Over 1/3 of residents pay minimum charge of \$97.20 per quarter

Follow Up Meetings, Questions/Responses (cont.)

- What will interest rate of Betterment loan be over the 20 year payment period?
 - The SRF loan (~80% of total) is fixed at 2%
 - The Town Manager is confident that the Town loans will also be able to be kept at 2% by combining with loans for the new school
- Could Pratt St. use gravity instead
 - Our engineers have revisited the cost trade off and estimated the betterment would be roughly \$3,000 more for each of the projected 80 residents (see following Engineering analysis/presentation)
 - If the additional cost was only applied to the ~30 residences that would benefit, it would add about \$8,000, more what would be saved

Pratt Street Gravity Sewer Question

- Timeline
 - In 2010, CWMP listed Pratt Street as gravity sewer
 - In 2014, it was determined based on topographical survey that gravity sewer was not feasible to connect to the existing sewer stub on Whalom Road
 - Low pressure sewers (LPS) were designed and bid in March 2015
 - In June 2015, residents asked why Pratt St was not gravity
 - ◆ W-P reviewed and though it is feasible, the need to replace existing sewers on Whalom Road or add a common pumping station comes at substantial cost
- Reasons why Low Pressure Sewer was designed
 - Lowest cost alternative
 - Easy to construct as LPS is shallower than gravity sewer

Pratt Street Gravity Sewer Question

- Reasons to remain with Low Pressure Sewers (LPS)
 - Gravity sewer is more expensive than LPS
 - Would need to relay existing 18-inch pipe in Whalom Road or install new common pump station (PS)
 - Gravity sewer would be deeper than LPS (longer to construct and more rock to remove)
 - A change to gravity sewer at this stage impacts construction schedule and construction sequence
 - More impacts to traffic

Additional Gravity Sewer Costs

Item	Additional Costs for Gravity Sewer
Pipes	\$120,000
Service Connections	\$27,000
Pavement	\$22,000
Sewer Bypass Pumping	\$30,000
Other	\$7,000
Contingencies	\$23,000
Engineering Services	\$14,000
Police Details	\$7,000
Total	\$250,000
Betterment Increase	~\$3,100

Follow Up Meetings, Questions/Responses (cont.)

- Will residents have options on grinder pump suppliers
 - The goal is to specify the pump requirements so that there are at least two suppliers to choose from
 - The Sewer Commission has already opened up a dialogue with one supplier to pursue an agreement to get a reduced price and/or locked in for at least 1-2 yrs, increased warranty or other value added conditions for the residents

Follow Up Meetings, Questions/Responses (cont.)

- Is paving the affected roads in the Betterment estimate, how much is it and why isn't it covered by the Town
 - The plan includes a complete overlay paving of all trench work of the Town owned roads only
 - This is estimated to add approximately \$2,700 to the Betterment

Follow Up Meetings, Questions/Responses (cont.)

- How did the estimate at the time of Town Meeting go from \$27,500 to current estimate of \$23,000?
 - Primarily due to reduction in contingencies
 - ◆ With award of construction bid reduced to 5%
 - ◆ Legal fee cost/contingency significantly reduced due to cooperation of residents for easements and lack of title issues

Follow Up Meetings, Questions/Responses (cont.)

- It was questioned if the Sewer Commission actually got the 2/3rd “in favor” response in Pratt area
 - Following is the tracking sheet with the list of residents affected, who responded and what they voted
 - No response is considered a no vote in the calculation
 - Each vote is backed up by a signed survey form
 - The tracking sheet is available at the DPW
 - ◆ We have been advised against posting it to the web site

Pratt/Rennie Survey Results

- Copies are available at DPW

Follow Up Meetings, Questions/Responses (cont.)

- We were informed of several litigation initiatives to stop, modify or delay the projects
 - A petition has been initiated and circulated by three residents of the Lakeview area to get support for a class action suit against the Town
 - A resident of Pleasant View informed us that he had retained counsel, objective is unclear
 - We have been presented with a list of Pratt area residences indicating a majority of “No's” and told the intent is to fight the project including going to court
 - ◆ The form is a list of addresses with yes, no, vacant, undecided next to them. No signatures or resident initials
 - ◆ The list has no statement as to what the question actually was

Potential Open Meeting Law Violation

- At the June 9th Sewer Commission meeting held at the DPW there was not enough room for all those who wanted to attend to fit
- We were asked to move the meeting to a venue that would accommodate everyone
- The Chairman felt that there was not enough time to find a place and move to it while maintaining the full appointment schedule so continued the meeting
 - There were no hearings scheduled regarding the Sewer Extension
 - Two appointments requested by Betterment residents
 - There were four hearings scheduled for Grease Trap Policy Issues
- I acknowledge that this was a mistake and that the portion of the meeting addressing Betterment concerns should have been terminated and reschedule to an appropriate location
- We have contacted the Attorney General about this and at this time are not aware of any action that should or needs to be taken.
- Lesson learned!

Current Status/Direction

- Continue to address questions and concerns of residents
 - While containing engineering and legal costs which would negatively affect the final betterment cost
- Move forward with construction in all areas to fulfill Town Vote for extensions, shovels in the ground on or about July 7th
- Hold to schedule and quoted costs to avoid potential for contractor cost increases
- Provide more detailed presentation of gravity vs. low pressure costs for Pratt St. at June 30 Sewer Commission Meeting
- Invite E One grinder pump representative to June 30 meeting to educate residents on this technology, equipment and answer questions

Current Schedule in Review : Pratt/Lakeview

ENGINEERS		CONSTRUCTION PROGRESS CHART															
CONTRACTOR CJP & Sons Const.		PROJECT Pratt Street and Lakeview Ave Sewers				CONTRACT DESCRIPTION Contract 2015-1				SUBMITTED FOR REVIEW		DATE		BARS: SCHEDULED ACTUAL PM CURVES: SCHEDULED			
ACCOUNT NO.		LOCATION Lunenburg								REVIEWED		DATE					
DESCRIPTION OF WORK	WT.	PRICE	SCHED ACTUAL	July				AUGUST			SEPTEMBER				OCTOBER		
				7/6-7/10	7/13-17	20-24	27-31	3-7	10-14	17-21	24-28	8/31-4	7-11	14-18	21-24	28-30	1-9
Pratt Street	C-2	\$ 147,600	SCHED ACTUAL														
Pratt Street	C-3	\$ 145,000	SCHED ACTUAL														
Rennie Street	C-4	\$ 55,000	SCHED ACTUAL														
Cross Road	C-5	\$ 126,000	SCHED ACTUAL														
Cross Road	C-6	\$ 152,000	SCHED ACTUAL														
Pine Grove Road	C-7	\$ 82,000	SCHED ACTUAL														
Pine Grove Road	C-8	\$ 88,000	SCHED ACTUAL														
Lakeview Avenue	C-9	\$ 78,000	SCHED ACTUAL														
Harris Avenue	C-10	\$ 74,000	SCHED ACTUAL														
Sunset Avenue	C-11	\$ 39,802.20	SCHED ACTUAL														
Misc. Cleanup		\$ 20,000	SCHED ACTUAL														
Overlay Spring 2016			SCHED ACTUAL														
			SCHED ACTUAL														
			SCHED ACTUAL														
		\$ 1,283,007.7	SCHED ACTUAL														

Cost Challenge/Opportunities Follow-up

- Closely Manage Construction and Other Costs
 - Avoid change orders, engineering and legal fees
 - Spend as little of contingency allocation as possible
- Identify if any State and Federal Grants are applicable
- Identify opportunities, if any, for low interest long term loans for Homeowner costs
 - The Board of Health may have an low interest loan program available.
- Look for other creative ways to help spread out homeowner up front costs
- Critically look at betterment assessment methods to reduce per unit cost
 - With proper rationale, defer part of total cost to be covered by future Privilege Fees as was done on Phase 1/2 Betterment
 - Pull out costs for 3 inch future expansion pipe on Pratt St.
- Open discussion with residents, DPW and Selectmen on road paving
 - Continue on path, eliminate overlay, share cost with Town, other?

Summary/Conclusion: Financial

- Lakeview/Sunset Area
 - Survey Estimated Betterment Cost: \$15,000
 - Survey Homeowner Costs: \$12,000
 - Survey results: 69% in favor
- Pratt/Rennie
 - Survey Estimated Betterment Cost: \$22,700-24,000
 - Survey results: 74% in favor
- Pratt/Lakeview Combined Betterment
 - Betterment Approved at Town Meeting Vote: \$27,500
 - 5/26/15 Betterment Estimate: \$23,000
 - Current Homeowner Cost Range: \$7,500-12,000
 - Total cost range if 3 bd connected today: \$34,000 - \$38,500

Note: Homeowner costs do not include fees: Connection, I/I, Capacity etc.

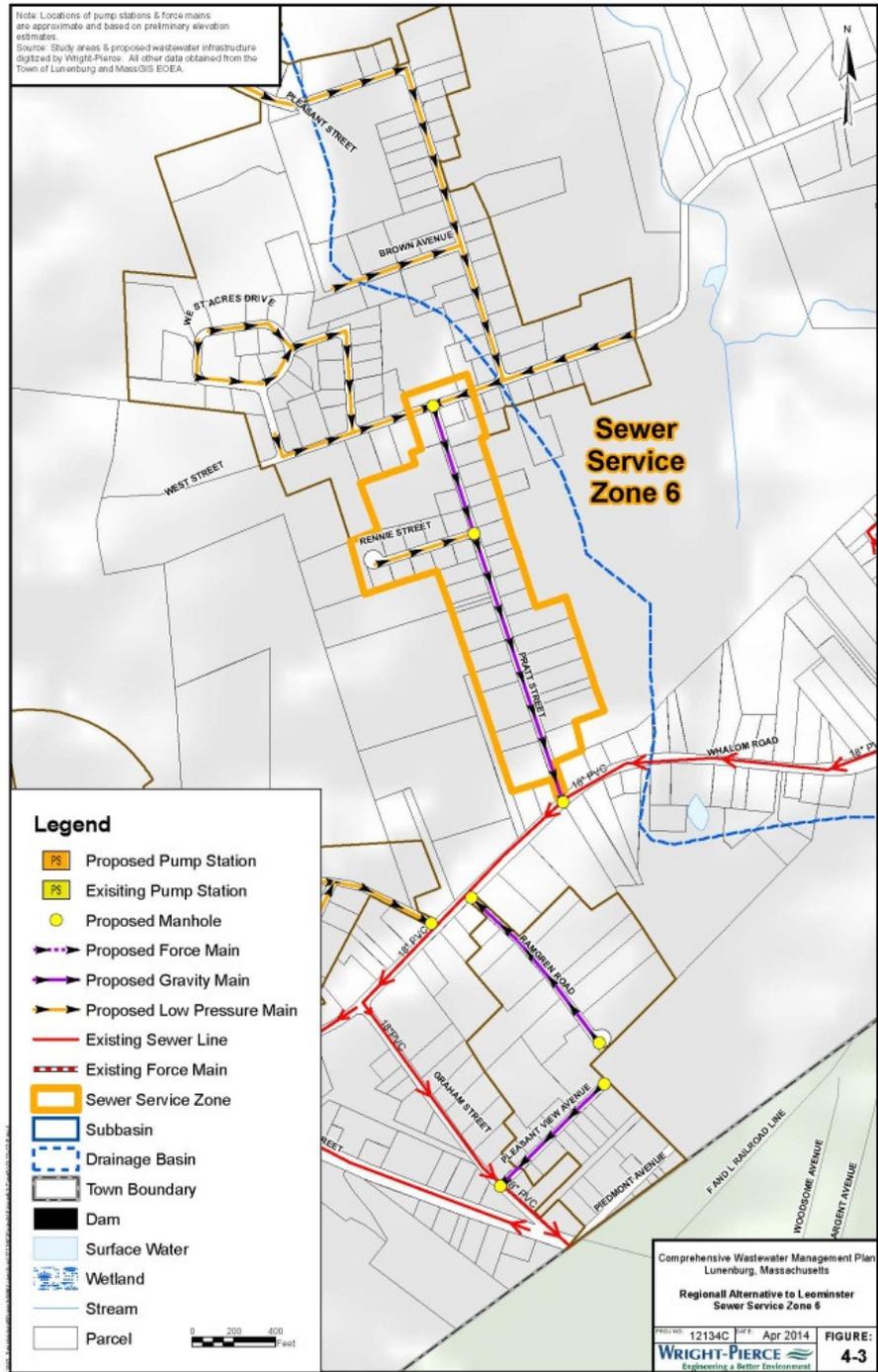
Approx. \$3,500 for three bedroom single family home

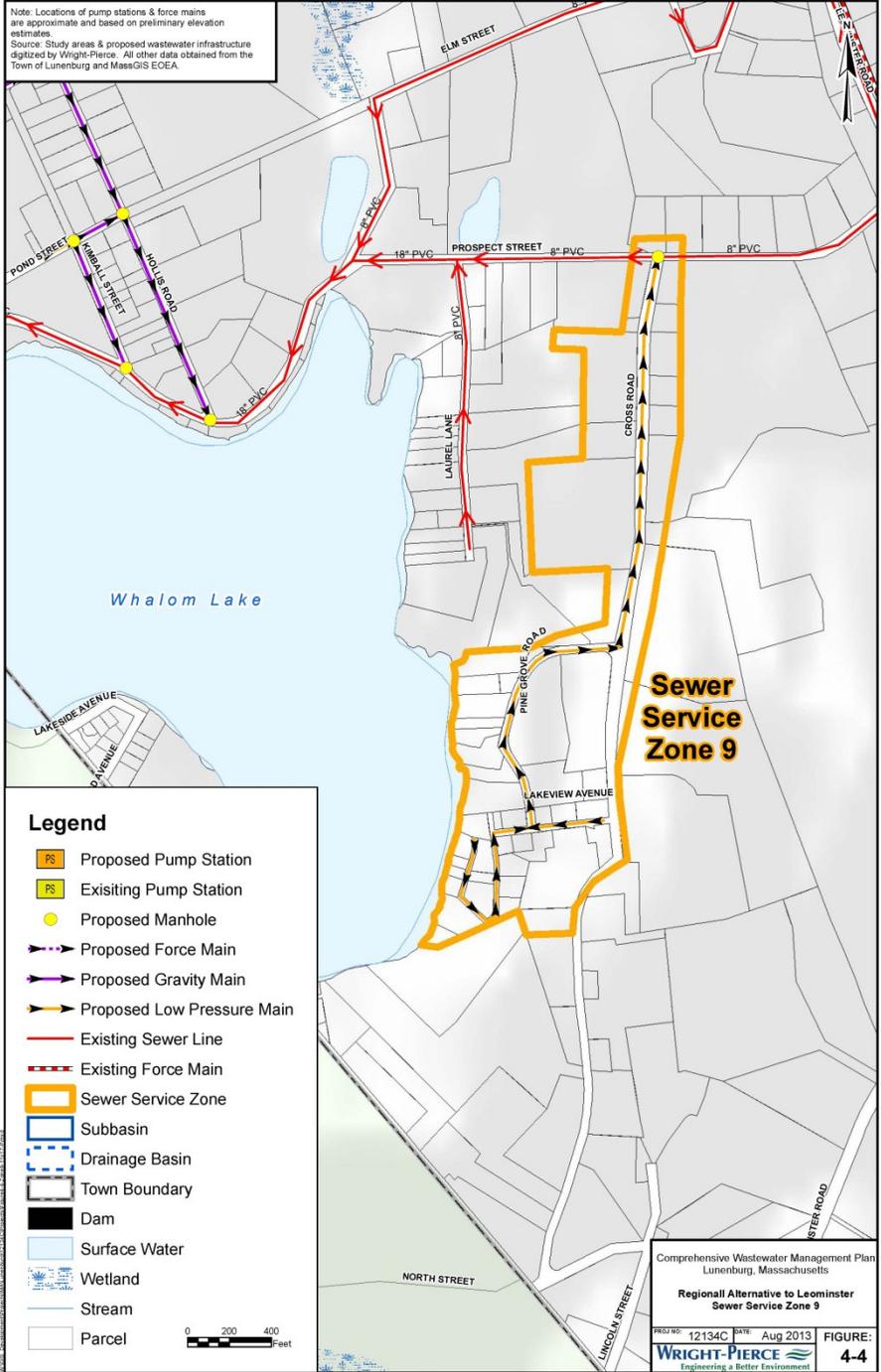
Summary/Conclusion:

- It is very unfortunate that these extensions have become so contentious and upset so many people
- Hopefully when all the facts are known and the uncertainty in total cost is further reduced, the people who want this service will be satisfied
- The Sewer Commission remains committed to implementing the direction given by the Town
- We again thank the BOS for this opportunity and everyone for their time, input and most of all, understanding

Appendix: Supporting Documents

- **NOT PRESENTED**





Lakeview/Pratt Sewer Extensions Overview, Slide 47