

# Public Works Commission

## Sewer Issues and Recommendations

Town  
of

*Westminster*

MASSACHUSETTS



# Topics

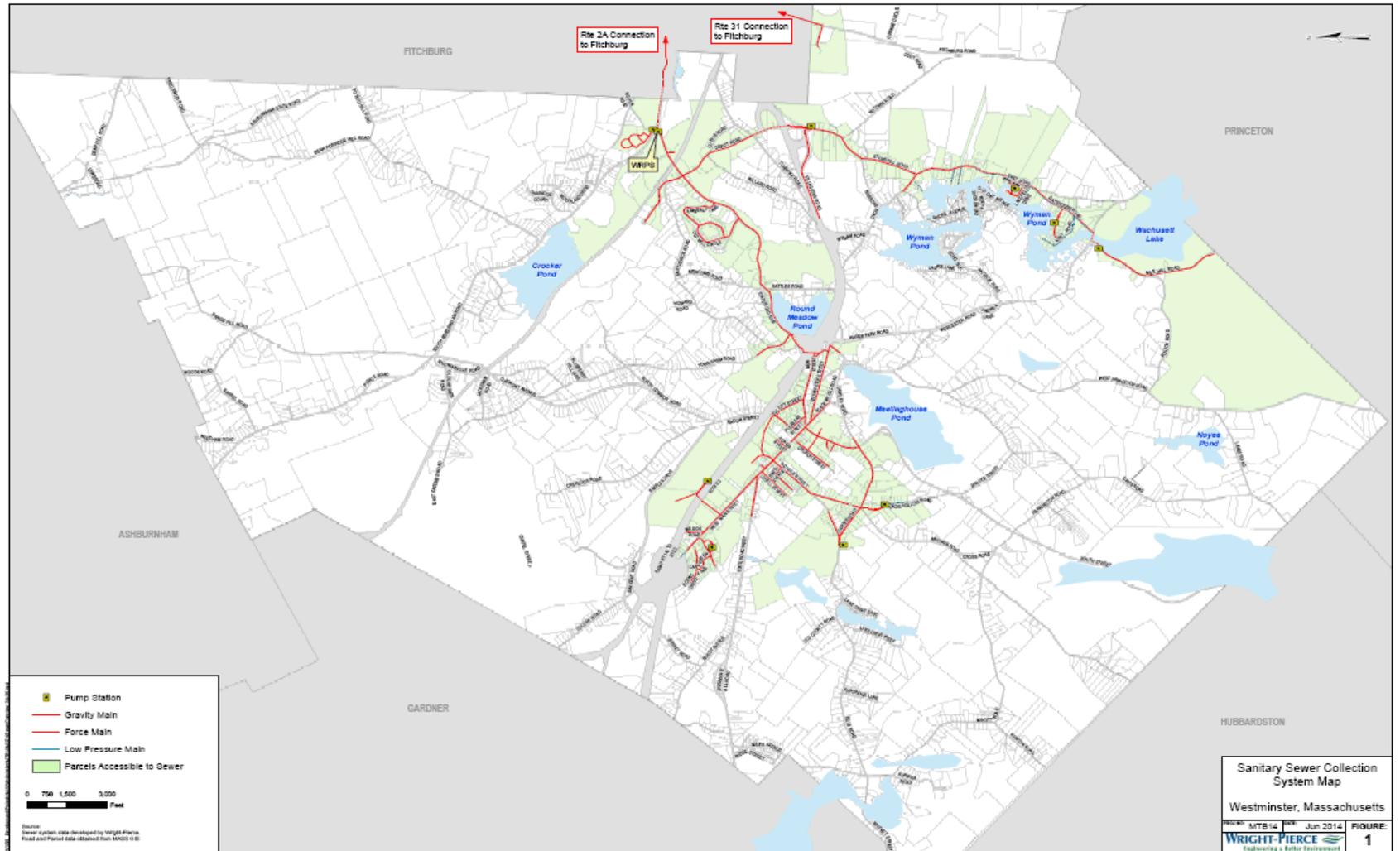
- Review of existing wastewater system
- Current system challenges
- 2007 CWMP Recommended Plan
  - Sewer extensions
- Alternatives and Recommendations
- Financing Plan
- Questions
- Alternative Project details
- Appendix

# Existing Wastewater system

- **Current system**

- Consists of 17 miles of sewer pipes and 7 pumping stations
- Serves 683 residential and 64 commercial/industrial accounts
  - Approximately 25% of town residential population served
- Sends wastewater to the East Fitchburg treatment plant which discharges into the Nashua River
  - Inter-Municipal Agreement (IMA) in place since 1983
  - Amended three times to increase flows and added connections
- Permitted flows (Average over 28 day measurement period)
  - 250,000 Gallons per day down RT2A
  - 70,000 Gallons per day down RT31
- Average daily flows
  - 187,000 Gallons per day (RT2A)
  - 3,230 Gallons per day (RT31)
- Peak recorded flows
  - 327,000 Gallons (RT2A)
  - 47,000 Gallons (RT31)

# Westminster Sewer System Map



# Sewer Issues

## Capacity

- **Capacity not available to add new Industrial, Commercial or Residential users**
  - Town will not be able to expand the economic tax base
  - Connect to future Senior Housing
- **Connection moratorium in place since 2003**

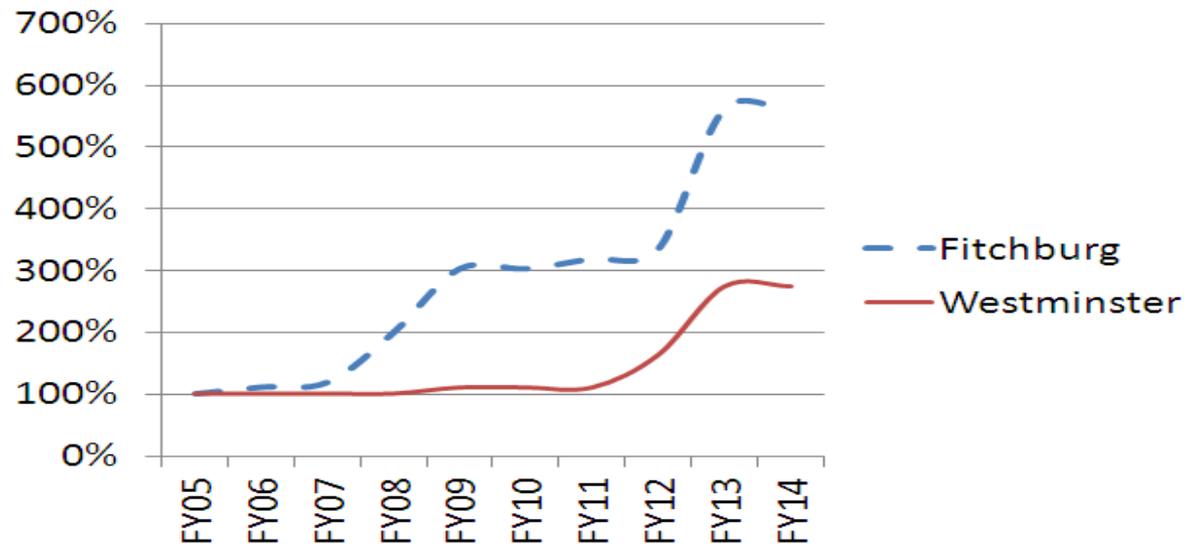
## Flows

- **Estimated approximately 144,000 gallons/day of permitted flow yet to connect to town sewer system**

# Sewer Issues

## Rates

- Westminster Sewer rates have increased 250% since 2011
- Westminster user rates were not historically increased to match Fitchburg increases
  - Fitchburg increased rates by 560% since 2005
  - Westminster increased rates by 275% since 2005



# Sewer Issues

## Sewer Enterprise Retained Earnings

Retained Earnings are been used to balance budget  
Practice has depleted budget line  
Earnings not available to support any large system maintenance or Capital projects

- Implementation of the 2007 CWMP recommendations
- I+I (inflow and infiltration) mitigation

### SEWER ENTERPRISE RETAINED EARNINGS

<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
1,193,857	803,234	575,952	506,760	386,590	430,256

# Inflow and Infiltration

What is I+I  
(Infiltration  
and Inflow)

**Infiltration** occurs when groundwater enters the sewer system piping through cracks, leaky pipe joints and/or deteriorated manholes.

**Inflow** is storm water that enters the wastewater system through manhole covers, drainage piping, rain leaders, basement sump pumps or foundation drains connected directly to a sanitary sewer pipe

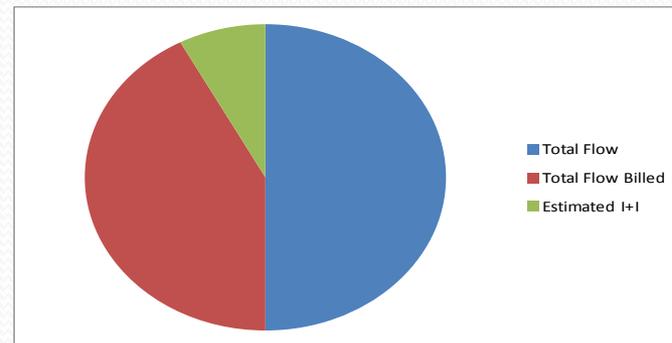
# Sewer Issues (Infiltration and Inflow)

## Infiltration and Inflow Mitigation Projects

- No funding available to complete the I+I phase 4 and 5 investigation and mitigation projects
  - Phase 4 costs (\$110K)
  - Phase 5 costs (\$140K)
- Estimated I+I impact is 15% of total flow which is low (10.1M Gallons annually)
  - Estimated I+I Costs > \$100K annually
- Phase 4 project estimates 15K gal/day can be removed from I+I (\$53K annually)
- Phase 5 project estimates not complete

## Annual Flow in Million Gallons

<b>Total Flow</b>	<b>64.7</b>
<b>Total Flow Billed</b>	<b>54.6</b>
<b>Estimated I+I</b>	<b>10.1</b>



# Sewer Issues

**Fitchburg Sewer collection charges and Sewer Extension Bond is 75% of the Enterprise budget**

FISCAL YEAR 2015 EXPENDITURES		
Sewer Collection Charges paid to Fitchburg	\$637,236	52%
Sewer Bond	\$281,708	23%
Shared Costs	\$140,661	12%
Expenses	\$84,160	7%
Personnel	\$77,360	6%

# 2007 Comprehensive Wastewater Management Plan (CWMP) Recommendations

- **Comprehensive Wastewater Management Plan**
  - Meet the Town's Wastewater Management Needs
  - Protect Environmental Resources and Minimize Impacts to the Nashua River Basin
  - Support Westminster Planning and Growth Efforts
    - Plan has been used to guide future town wastewater treatment needs
    - Plan development cost to town was approx \$375K
  - Requires an amended Wastewater Inter-Municipal Agreement with Fitchburg prior to Expanding System
  - Phase A System Improvements
    - New Pump Station, Force Main and Gravity Sewer in Fitchburg
      - Adjusted in 2009 to a Siphon Project (eliminates WRPS)
    - Meets all current recommended needs expansion areas
      - (Phase 1-5)

# 2007 Comprehensive Wastewater Management Plan (CWMP) Expansion Plan Costs

	DESCRIPTION	2007 CWMP Cost	2014 Adjusted * Cost
Phase A	Sewer System Expansions	\$3.27 M	\$4.11 M
Phase 1	Lakewood Park, Leino Park and Dawley Road	\$4.02 M	\$5.05 M
Phase 2	Lake Drive East and Edro Island	\$2.68 M	\$3.30 M
Phase 3	Bakers Grove and East Wyman	\$2.42 M	\$3.04 M
Phase 4	Bacon Street	\$2.23 M	\$2.80 M
Phase 5	Industrial Area** and Municipal Housing		
Totals		\$14,590 M	\$18,350 M

\* Source

November 2014 ENR 9912.01 Construction Cost Index

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Industrial Area costs not Town responsibility



# Alternative Sewer Expansion Projects

- The Public Works Commission reviewed eight different alternatives
  - Four alternative projects for continuing to send wastewater to the East Fitchburg Plant
    - Cost estimates ranged from \$2.25M to \$5M
  - Purchase or lease the West Fitchburg treatment plant currently not in use
    - Cost estimate up to \$15M
  - Build a treatment plant in Westminster
    - Cost estimate \$10-\$12M
  - Send wastewater to Gardner, either through Ashburnham or direct to Gardner
    - Cost estimates ranged from \$13M to \$17M

# Do Nothing is not an Alternative

Do  
Nothing

- Potential for catastrophic failure and fines
- Whitman River Station pump station and sewer pipes require upgrades
  - Costs could be up to \$3.5M
  - Users will bear full costs
- System flows currently near maximum levels permitted
  - Estimated 144,000 gallons permitted and not currently connected
- Town will never be able to expand industrial or commercial economic tax base
- Town will not be able to connect sewer to future Senior Housing
- Does not support the Town Master Plan, Town Planning Board and Economic Development Committee recommendations

## In-Line Storage System

What is an In-Line Storage System

In-line sewer storage is a system that consists of a 4' X 8' precast concrete box culvert with a length of approximately 850 ft. The system allows for approx. 204K gallons of storage and equalization of peak wastewater flows. The Town of Belmont, MA is doing something similar. This has also been done in Lewiston, Maine

# Public Works Commission Sewer Recommendation

Continue to  
send  
wastewater to  
East Fitchburg  
plant

- **Fund the construction of an In-line storage system along RT2A to store and control wastewater flows during peak periods**
- Project to include the Whitman River pump station upgrade and I+I mitigation
- Most cost-effective alternative
  - Total Cost for project is estimated to be \$2.5M
  - Engineering is complete for in-line storage except updates and MA DOT permitting
  - Engineering is not complete for PS upgrades and I/I work
  - Project approved for USDA funding
- Allows for phases 1,2 and 5 sewer extensions
  - No accurate projection on future town growth
- Supports the Economic Development Committee needs and recommendations from Master Plan Committee
  - Allows for commercial and industrial development to increase economic tax base
- Does not effect current IMA with Fitchburg

# Public Works Commission Sewer Recommendation

## Funding and Assumptions

- **Town applied for USDA and Mass Grant Funding**
  - USDA grant provides for up to 25% cost reimbursement and up to a 40 year bond @ 3.25% for the \$2.5M
    - Can be turned into conventional bond at less years
- **Funding Awarded**
  - Town has been awarded a 18.8% USDA grant (\$471K) on the \$2.5M project and will issue a 2.75% bond over 40 years with fixed principal payments
    - Town responsible for \$2.029M of project
  - No Mass Works Infrastructure Grant funding
- **Cost Allocation**
  - Sewer expansion benefits all town taxpayers by providing for future economic tax base expansion
    - \$2.25M of project 85%
  - I+I mitigation effects only the user base
    - \$250K of project 15%

# Public Works Commission Sewer Recommendation

## Costs

- **Sewer Expansion Project Costs**
- **All Residential Property Owners**
  - Annual average Real Estate tax increase is \$25.38 (\$2.12/Month)
- **Residential property owners with sewer services**
  - Additional average annual sewer service increase
    - \$21.65 annually (\$1.80/Month)
  - Total average annual increase (Real Estate tax and Sewer services)
    - \$47.03 or \$3.92/Month

# Public Works Commission Sewer Recommendation

## Timelines

- **Timelines**
  - Special Town Meeting scheduled for September 2015
    - If approved, debt exclusion goes to ballot vote
  - Assuming ballot vote approval
    - Complete design, permitting, solicit bids and award contract in spring of 2016
  - Construction to begin in summer 2016
  - Project complete at end of 2016 (Time to complete in-line storage. PS & I/I work will be longer duration)

# Questions

## Questions provided by taxpayers

- Will the \$2.5M In-Line storage project accommodate the wastewater flow needs of Ranor, the Westminster Business Park and the future Senior Housing?
  - Yes, all of these will be accommodated
- Weren't you considering an option that would eliminate the Whitman River pump station?
  - Yes, that was the \$5M siphon under the Whitman River and Gravity wastewater project recommended in the 2007 CWMP
  - This supported all current flows and expansion phases in the CWMP

# Questions provided by taxpayers

- If the town decides to pay down the 40 YR bond and fund the more traditional 20 YR bond in the future what would that impact be to the taxpayers and users?
  - User costs would be approx \$34.02/yr vs. the \$21.65/yr
    - Total user costs with property taxes would be \$73.90/yr vs. the \$47.03/yr
  - Taxpayer property tax costs would be approx \$39.88/yr vs. the \$25.38/yr
  - Town Bond interest savings
    - \$1.14M interest for the 40 YR Bond (2.75%)
    - \$692K interest for the 20 YR Bond (3.25%)



# Detailed Sewer System Alternatives

## East Fitchburg Sewer Alternative #1

Continue to send  
wastewater to  
East Fitchburg  
Plant for  
treatment

- **Construct a Siphon and Gravity Sewer in Westminster and Fitchburg**
- Eliminate Whitman River Station pump station
- Allows for current flows permitted but unconnected
- Allows for all phases of CWMP
- Does impact current IMA with Fitchburg
- Costs approximately \$5M
- System requires full implementation of CWMP or added maintenance is required
- Engineering is complete except updates
  - Mass DOT access permits required

## East Fitchburg Sewer Alternative #2

Continue to send  
wastewater to  
East Fitchburg  
Plant for  
treatment

- **Upgrade Whitman River P.S., force main and gravity sewer pipes to handle existing P.S. capacity problem only**
  - Provides NO expansion of the sewer system
  - Allows for existing flows and current permitted but unconnected flows only
  - Does not allow for CWMP phases
  - Does not impact current IMA with Fitchburg
  - Costs approximately \$3.5M
    - User base would be responsible for entire cost
  - Engineering is not complete

## East Fitchburg Sewer Alternative #3

Continue to  
send wastewater  
to East  
Fitchburg Plant  
for treatment

- **Construct an in-line storage system along RT2A to store and control wastewater flows during peak periods**
  - Upgrade Whitman River Station pump station
  - Allows for current flows permitted but unconnected
  - Allows for Phase 1,2 and 5 of CWMP
  - Does not impact current IMA with Fitchburg
  - Costs approximately \$2.25M
  - Engineering is complete except updates
    - Mass DOT access permits required

## East Fitchburg Sewer Alternative #4

Continue to send  
wastewater to  
East Fitchburg  
Plant for  
treatment

- **Flow diversion using RT31 capacity**
- Install piping down Turnpike road or Rowtier Drive
- Cost estimated at \$4.9M
- No Engineering has been done
  - Unsure of RT31 pipe sizes and capacity
  - Unsure how much of CWMP can be accommodated
- Does impact current IMA with Fitchburg
- Easements in Fitchburg and Westminster required

# West Fitchburg Treatment Plant Alternative

Send wastewater to unused West Fitchburg Plant for treatment

- **Town to lease or purchase and operate the West Fitchburg Treatment Plant**
  - Pipe replacement from Whitman River to Fitchburg estimated at \$5M
  - No Engineering has been done
    - Plant not designed to treat residential waste
    - Estimates of \$10M+ in plant redesign and upgrade costs
  - Does allow for all phases of CWMP
  - Does impact current IMA with Fitchburg
  - Unsure if current Fitchburg NPDES discharge permits into Nashua River would be renewed/transferred to Town

# Westminster Disposal Treatment Plant Alternative

Westminster  
wastewater  
treatment plant

- **Town to construct and operate a subsurface disposal treatment plant in Westminster**
  - EPA will not allow discharge into Whitman River
  - Town currently does not own suitable property for a plant and disposal
  - Cost estimated at \$10–12M to construct
  - Annual operating costs for similar sized plants are \$1M
  - No Engineering has been done
  - Does allow for all phases of CWMP
  - No need for IMA with Fitchburg
  - Minimum of 5 years for DEP permits

## Gardner Treatment Plant Alternative #1

Divert  
wastewater  
flows and use  
Gardner  
Treatment Plant

- **Town to install piping and necessary pump stations to divert flows to the Gardner Treatment Plant through Ashburnham**
  - No engineering has been done
  - Initial cost estimates (Pipes and pump stations)
    - \$6.2M for piping to connect at Oakmont driveway
    - \$2.6M for upgrades in Ashburnham
    - \$8.9M for upgrades in Gardner
  - Gardner currently doing a facility study of treatment plant (Our flows not included)
  - Does allow for all phases of CWMP
  - Would require an IMA with Gardner and Ash
  - Potential routes for piping will run through some wetlands areas

## Gardner Treatment Plant Alternative #2

Divert  
wastewater  
flows and use  
Gardner  
Treatment Plant

- **Town to install piping and necessary pump stations to divert flows to the Gardner Treatment Plant from Westminster directly to Gardner**
  - No engineering has been done
  - Initial cost estimates (Pipes and pump stations)
    - \$8.4M for connection down State Road West
      - Requires added \$5.5M in upgrades in Gardner
    - \$6.6M for connection down Betty Spring Road
      - Requires added \$6.2M in upgrades in Gardner
- Gardner currently doing a facilities study of treatment plant (Our flows not included)
  - Does allow for all phases of CWMP
  - Would require an IMA with Gardner
  - Potential routes for piping will run through some wetlands areas



# Appendix

# In-Line vs. Siphon Project Facts

- **In-line storage project:**
  - The estimated life is 30 + years.
  - Save on initial cost as the Town may not be willing to spend now for the siphon
  - The inline storage project does require recurring costs associated with the pumping station, i.e. electrical, annual maintenance and pump replacement (say every 10 years)
    - Annual Pump Cost Estimates (Electricity and Maint) \$18K
    - Pump replacement cost (\$50K every 10–15 years)
  - The inline storage project does not solve all of the CWMP's recommendation for future sewer expansion;
  - The inline storage project is a “different” way of solving the capacity issue.
- **Siphon project:**
  - The estimated life is 50 + years;
  - It solves all CWMP capacity issues for sewer planning
  - Eliminates the pumping station maintenance cost
  - Flushing maintenance costs not known at this time
  - The initial cost, \$5M, may be difficult to pass at town meeting

## 2007 CWMP Recommendation vs. Siphon Project

- 2007 CWMP recommended town expand system (\$4.11M at 2014 costs)
  - Upgrade Whitman River Pump Station
  - Replace Force Main and Gravity piping
- 2009 project review showed a Siphon project would be a better alternative though more costly (\$5M at 2014 costs)
  - Eliminates headaches associated with Whitman River Pump Station
    - Issues where to relocate pump station
    - Pump Station maintenance costs exceeded total project cost over life expectancy
  - Eliminates need for easements to replace Force Main
  - Eliminates need to relocate Water Mains
  - Eliminates need to cut down mature trees in front of Monty Tech to replace Force Main
  - Eliminates complications at Whitman River Bridge
    - Hanging of larger Force Main pipe
    - Existing utility bay is full and would need upgrade

## In-Line vs. Siphon Project Facts

- Both projects address capacity issues of current system
  - Does not effect Fitchburg IMA until town decides to construct phase 1
    - IMA good through 2019
  - In-Line Project (2007 CWMP Cost estimates)
    - Town will need to spend \$7M for phases 1+2
  - Siphon Project (2007 CWMP Cost estimates)
    - Town will need to spend \$11.5M for phases 1-4
  - Phase 5 is not the Town's responsibility

- **What other issues is the Public Works Commission reviewing?**
  - Preparing to negotiate an updated IMA (Inter-Municipal Agreement) with Fitchburg in future years
    - Westminster rate is \$7.30 per 100 cubic ft.
    - Lunenburg rate is \$8.95 per 100 cubic ft. (\$1.65 or 23% more)
  - Continue the 2009 program to investigate inflow and infiltration
    - Inflow is direct connections to sewer systems from drains, sump pumps or other sources that allows water into the system undetected
    - Infiltration is groundwater infiltration into the sewer pipes and manhole system
    - Both add unnecessary cost to wastewater disposal and the users
  - Continue to review Wright-Pierce Water and Sewer Rate Study recommendations to fund the Capital Improvement Plan for the Enterprise Funds
    - Get the Enterprise Fund to a sustainable financial condition

# Sewer History

- **1975 Wastewater Collection and Disposal Study by SEA Consultants**
  - Two areas requiring immediate need were the Center of Town and Wyman Pond
  - Alternatives investigated (Local and Regional)
    - Treatment in Westminster dismissed prohibiting any discharge into Whitman River above the West Fitchburg Treatment plant
    - In-town sub-surface disposal – No Westminster property found suitable
    - Recommended connection into Fitchburg Sewer system as best economic alternative
      - Would provide a immediate pollution relief to the center of the Town
      - The Wyman Pond area would need to wait until future revenues were available.
- **Original sewer system constructed in 1982**
  - Connection to Fitchburg sewer system
  - Lines installed from Wachusett Mountain, Gatehouse Road, East Road, Narrows Road, Mile Hill Road, Stone Hill Road, Depot Road and RT 2A
  - Pump Stations installed at Whitman River and Narrows Road to convey wastewater
- **Addition sewer lines constructed in 1984**
  - Interceptor Lines installed along RT 2A/State Road East
  - Provided service to Town Center and a limited number of users on east side of Wyman Pond
- **Small extensions built between 1989 and 1998**
  - Funding provided by SimplexGrinnell (Simplex Drive) and Pine Tree Power (RT 31)
- **1998 to Present**
  - Service expanded to Town Center (Main ST + RT2 A), Wyman Pond, Ellis Road, Frog Hollow Road, and Scenic Drive
- **2003 Moratorium**
  - Whitman River Pump station exceeded capacity during peak flows
- **2007 Comprehensive Wastewater Management Plan (SEA Consultants)**
  - Recommended need to extend sewer service to Leino Park, Lakewood Park, Dawley Road, Lake Drive East, Edro Isle, Bakers Grove, Bacon Street and State Road East Industrial Park
  - Whitman River Pump Station replacement and piping to Fitchburg upgrades recommended

# Siphon Project Funding Scenarios

- **Siphon Project (\$5M, no I+I Costs)**
  - **USDA Loan (40 Yrs, 18.8% Grant, Fixed Principal Payments, 85% Taxpayer and 15% Users, 2.75%)**
    - Taxpayer Cost
      - \$55.59 per year (\$4.63/Month)
    - Sewer User Cost
      - \$47.43 per year (\$3.95/Month)
      - Total with property tax \$103.02/year (\$8.59/Month)
  - **Town Loan (20 Yrs, Assume Grant, Fixed Principal Payments, 85% Taxpayer and 15% Users, 3.25%)**
    - Taxpayer Cost
      - \$79.60 per year (\$6.63/Month)
    - Sewer User Cost
      - \$67.91 per year (\$5.66/Month)
      - Total with property tax \$147.51/year (\$12.19/Month)

# 2007 CWMP Estimated Flow Tables

**Table 2.2**  
**Adjusted Sewer Expansion Details – Phases 1-4**

	<b>Phase 1</b>	<b>Phase 2</b>	<b>Phase 3</b>	<b>Phase 4</b>	<b>Total</b>
Total Number of Lots (Current and Potential)	212	148	120	73	553
Initial Residential Flow (gpd)	33,840	22,500	18,900	11,340	86,580
Future Residential Flow (gpd)	4,320	4,140	2,520	1,440	12,420
Initial Non-Residential Flow (gpd)	0	0	0	600	600
Future Additional Non-Residential Flow	0	0	1,000	0	1,000
Additional Flow due to I/I (gpd)	1,260	0	1,620	1,650	4,530
Initial Flow Including I/I (gpd)	35,100	22,500	20,520	13,590	91,710
<b>Total Flow Including I/I (gpd)</b>	<b>39,420</b>	<b>26,640</b>	<b>24,040</b>	<b>15,030</b>	<b>105,130</b>

**Table 2.3**  
**Adjusted Sewer Expansion Details – Phases 5**

	<b>Area (acres)</b>	<b>Parcels</b>	<b>Future Flow (gpd)</b>
State Road East Industrial Area	336	6	68,675
Eastern Westminster Area	12.5	1	3,750
Municipal Housing Parcel (109-10)	16.9	1	16,920
Additional Flow due to I/I			1,750
<b>Total Flow Including I/I (gpd)</b>	<b>365.4</b>	<b>8</b>	<b>91,095</b>

# Questions provided by taxpayers

- Is there risk with the proposed recommendation?
  - Yes, the in-line project may be a short or long term solution. Unexpected rapid growth and associated sewer demand could cause the capacity to be exceeded sooner than expected, requiring implementation of the Siphon Project or some newer technology.
- What is I+I (Infiltration and Inflow)
  - **Infiltration** occurs when groundwater enters the sewer system piping through cracks, leaky pipe joints and/or deteriorated manholes. **Inflow** is storm water that enters the wastewater system through manhole covers, drainage piping, rain leaders, basement sump pumps or foundation drains connected directly to a sanitary sewer pipe.

**TABLE 3-1**  
**TOWN OF WESTMINSTER, MA**  
**WHITMAN RIVER PUMP STATION UPGRADES**  
**W-P PROJECT NO. 11272B**  
**BOX CULVERT STORAGE COST ESTIMATE - 100%**  
**1st UPDATE on 10/11/2013, 2nd UPDATE on April 2014**  
**AUGUST 2011 ENR 9088, APRIL 2014 ENR 9749**

PROJECT COMPONENT		COST
CONSTRUCTION - CONTRACT		\$1,487,000
CONSTRUCTION CONTINGENCY	20%	\$297,000
TECHNICAL SERVICES - Design, Bid, C/A and RPR	20%	\$297,000
MATERIALS TESTING		\$10,000
LAND ACQUISITION/ EASEMENTS	2.0%	\$30,000
LEGAL/ ADMINISTRATIVE	1.0%	\$15,000
FINANCING	2.0%	\$30,000
<b>ENGINEER'S ESTIMATE OF PROJECT COST</b>		<b>\$2,166,000</b>
SAY:		<b>\$2,200,000</b>

TOWN OF WESTMINSTER, MA  
 WHITMAN RIVER SIPHON AND SANITARY SEWER UPGRADES  
 W-P PROJECT NO. 11272A  
 PROJECT COST ESTIMATE - ALTERNATE NO. 2  
 PHASES CUTOFF IS UPSTREAM OF MONTY TECH FLOW METER  
 September 2008 ENR 8557, September 2009 ENR 8795

PROJECT COMPONENT	PHASE 1	PHASE 2	TOTAL
Siphon		\$ 350,000	\$ 350,000
Sewer Work			
In Westminster		\$ 492,000	\$ 492,000
In Fitchburg	\$ 1,306,000		\$ 1,306,000
Flow meter	\$ 57,000		\$ 57,000
Radio Telemetry	\$ 53,000		\$ 53,000
Miscellaneous (Dewatering, Bypass flow, etc)	\$ 65,000	\$ 65,000	\$ 130,000
<b>Subtotal for General Contractor</b>	<b>\$ 1,428,000</b>	<b>\$ 907,000</b>	<b>\$ 2,335,000</b>
General Contractor OH&P and General Conditions (15%)	\$ 214,000	\$ 136,000	\$ 350,000
Subtotal for Subcontractors	\$ 53,000	\$ -	\$ 53,000
General Contractor Markup on Subcontractors (5%)	\$ 3,000	\$ -	\$ 3,000
Bonds and Insurances (2%)	\$ 34,000	\$ 21,000	\$ 55,000
<b>Subtotal</b>	<b>\$ 1,732,000</b>	<b>\$ 1,064,000</b>	<b>\$ 2,796,000</b>
Project Design Contingency (13%)	\$ 225,000	\$ 138,000	\$ 363,000
Project Inflation to Midpoint of Construction (12% /15%) (includes 10% increase in ENR Index)	\$ 208,000	\$ 149,000	\$ 357,000
<b>Construction Total</b>	<b>\$ 2,170,000</b>	<b>\$ 1,350,000</b>	<b>\$ 3,520,000</b>
Construction Contingency (10%)	\$ 217,000	\$ 135,000	\$ 352,000
Technical Services - Design and Bidding	\$ 101,000	\$ 85,000	\$ 186,000
Technical Services - Construction Administration (15%)	\$ 326,000	\$ 203,000	\$ 529,000
Material Testing	\$ 7,500	\$ 7,500	\$ 15,000
Land Acquisition / Easements	\$ 50,000		\$ 50,000
Financing (2%)	\$ 44,000	\$ 27,000	\$ 71,000
Legal and Administration (2%)	\$ 44,000	\$ 27,000	\$ 71,000
Police Detail	\$ 40,000	\$ 70,000	\$ 110,000
<b>Subtotal</b>	<b>\$ 3,000,000</b>	<b>\$ 1,905,000</b>	<b>\$ 4,905,000</b>
<b>TOTAL CAPITAL COSTS</b>	<b>\$ 3,000,000</b>	<b>\$ 1,905,000</b>	<b>\$ 4,905,000</b>
Percent of Total Project Cost	61%	39%	

# Cost Estimates GDR Piping and pump stations

Westminster, MA  
 Cost Estimates for Routing Sewer to Gardner  
 12846A

Town asked W-P to investigate option of sending ALL of the Town's Sewer to Gardner, MA. There were four proposed options.

Option	Description	Total Length (LF)	New Sewer in Westminster (LF)	New Sewer in Ashburnham (LF)	New Sewer in Gardner (LF)	No. New Pump Stations or Upgrades	Unknowns	Color
1	Via Route 2A at Minot Road	51,500	31,500	0	20,000	1	Pipe Sizes in Gardner	orange
2	Via Betty Spring Road at Old Colonial Drive	49,400	24,400	0	25,000	1	Pipe Sizes in Gardner	purple
3	Via Ashburnham via Westminster Road at PS	65,200	22,700	10,500	32,000	4	Pipe Sizes in Gardner & Ashburnham	pink

## Preliminary Cost Estimate

Unit Price Sewer/FM (LF)  
 \$250

One Scenario - only replacing sewers in Westminster and Ashburnham.

Option	Westminster Pipe Replacement	Ashburnham Pipe Replacement	New Pump Stations or Upgrades	Total Cost
1	\$7,875,000	\$0	\$500,000	\$8,375,000
2	\$6,100,000	\$0	\$500,000	\$6,600,000
3	\$5,675,000	\$2,625,000	\$500,000	\$8,800,000

Worst Case Scenario - replacing sewers in Westminster, Ashburnham, and Gardner.

Option	Westminster Pipe Replacement	New Pump Stations or Upgrades	Total Cost
1	\$12,875,000	\$500,000	\$13,375,000
2	\$12,350,000	\$500,000	\$12,850,000
3	\$16,300,000	\$1,400,000	\$17,700,000

## Notes:

1. Assumed \$500,000 for replacing Whitman River Pump Station.
2. Assumed \$300,000 for replacing any other pump station in Ashburnham or Gardner.