Town of North Reading

Draft Environmental Impact Report
Project Meeting #3
February 4, 2016

Presented by: Paul Brinkman

WRIGHT-PIERCE
Engineering a Better Environment

Invite List

- Secretary Matthew A. Beaton; Executive Office of Energy and Environmental Affairs
- Department of Environmental Protection; Commissioner's Office
- MassDEP/Northeast Regional Office; MEPA Coordinator
- Mass DOT - District #4 Office; MEPA Coordinator
- Massachusetts Historical Commission
- Merrimack Valley Planning Commission
- Metropolitan Area Planning Council
- Town of North Reading Board of Selectmen
- Michael Gilleberto; Town Administrator Town of North Reading
- Town of North Reading Community Planning Department
- Town of North Reading Conservation Commission
- Town of North Reading Health Department
- Town of Reading Board of Selectmen
- Robert W. LeLacheur, Jr., Town Manager Town of Reading
- Town of Wilmington Planning Department
- Town of Wilmington Health Department
- Town of Wilmington Conservation Commission
- Town of Wilmington Board of Selectmen
- Town of Reading Planning Department
- Town of Reading Conservation Commission
- Town of Reading Health Department
- Town of Andover Board of Selectmen
- Reginald S. Stapczynski; Town Manager Town of Andover
- Town of Andover Planning Board
- Town of Andover Conservation Commission
- Town of Andover Board of Health
- Natural Heritage and Endangered Species Program; Commonwealth of Massachusetts
- DCR; MEPA Coordinator
- Department of Public Health ; Director of Environmental Health
- Pamela Heidell; Massachusetts Water Resource Authority; MEPA Coordinator
- Energy Facilities Siting Board; MEPA Coordinator
- Division of Energy Resources; MEPA Coordinator
- Ipswich River Watershed Association, Wayne Castonguay, Executive Director
- Martins Pond Association

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MEPA Process/Outline

- ENF
- EIR Preparation and Filing Process
  - Draft EIR
  - Submission of Draft EIR and Public Comment Period
  - Issuance of Secretary's Certificates
  - Response to Comments
  - Final EIR

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Draft EIR

- Table of Contents
- Secretary's Certificates
- Summary
- Project Description
- Existing Environment
- **Alternatives to the Project**
- **Assessment of Impacts**
- **Permitting Requirements**
- **Mitigation Measures**
- Appendices

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North Reading MEPA Process Framework

Tasks	Water & Wastewater	Tentative Date
Existing Conditions	Meeting #1	Completed
Needs and Identify Alternatives	Meeting #2	Completed
Impact Analysis and Recommended Plan	Meeting #3	February 2016

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Schedule

- Final DEIR Public Participation Meeting: February 4, 2016
- Submit DEIR to MEPA: February
- DEIR Public Comment Period: 30 days
- MEPA Letter: 7 days
- Complete FEIR: TBD

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Agenda - DEIR

- Project Background
- Water Alternatives Analysis
  - Selected Alternative Summary
- Wastewater Alternatives Analysis
  - Selected Alternative Summary
- Recommended Plan
  - Water and Wastewater Plan
  - Cost & Financial Plan
  - Implementation Schedule
  - Permitting
- Environmental Impacts
  - GHGs, Stormwater
  - Mitigation

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Project Background – Water & Stormwater

- North Reading Water Supplies
  - Wells through Water Registrations
    - Registered Use (0.96 MGD)
  - Surface Supply from Andover (Merrimack River)
    - IBTA (1.50 MGD)
- Can't meet all needs through either source (2.6 MGD)
- Ipswich River
  - Stressed Basin - "Over Allocated"
  - Stormwater

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Project Background - Wastewater

- Primarily served through on-site disposal systems
- Water Quality Impairments from inadequate systems
- Known system rehabilitation/pumping rates
- Difficulty in areas of upgrades due to limited parcel area and soils
- Evaluated limited alternatives through CWMP process

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Goals Water

- Provide long-term, sustainable option(s) for water supply
- Reduce water system complexity
- Allow community to provide services to maintain existing and future commercial/industrial base
- Manage capital and O&M costs
- Mitigate stress on the Ipswich River

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Goals Wastewater

- Improve surface and ground water quality
- Provide long-term sustainable option(s) for wastewater treatment and disposal
- Allow community to provide services to maintain existing and future commercial/industrial base
- Address water quality impairments

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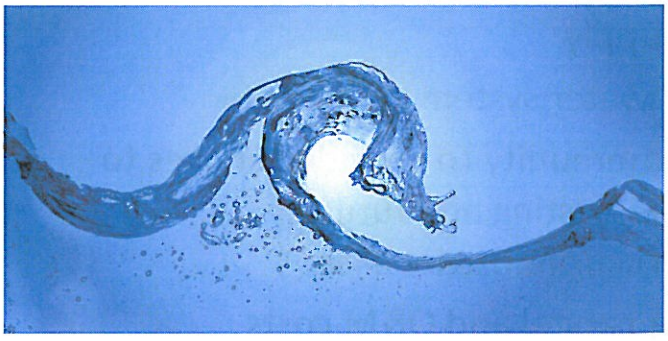
Water Alternatives



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Existing Water Supply Systems

- Local Sources
  - Lakeside Boulevard WTP (Lakeside Wells and Rt 125)
  - West Village WTP (Railroad Bed Wellfield)
  - Central Street Wellfield
- Andover Interconnections
- Needs
  - ADD: 1.6
  - MDD: 2.58

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Water Alternatives Screened

- Conservation
  - Viable alternative to be incorporated throughout
- No Build
  - Optimize local sources
    - Unreliable, declining raw water quality , Ipswich River basin
  - Maintain Andover connection
    - Future water supply insufficient
- New supply sources
  - In town – Surface/Ground Water Supplies
    - No viable surface water supplies, Ipswich River
  - Out of town –
    - No neighboring communities have capacity to serve North Reading with their local supplies
    - Connection through Reading /Wilmington to MWRA

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Final Selected Alternative:

- MWRA connection through Reading
- Conservation

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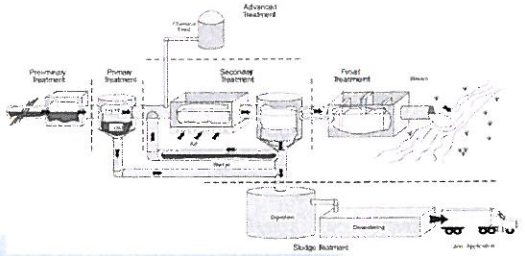
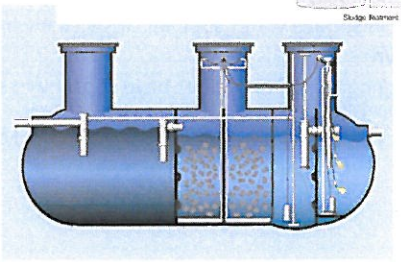
Wastewater Alternatives





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Existing Wastewater Management Systems

- North Reading Board of Health Septic System Regulations and Procedures
- Collection Systems
  - Public/Private Collection Systems
  - Existing MWRA Sewer Connection

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Wastewater Management Needs Assessment Process

- Develop Criteria
  - Physical
  - Location
- Collect Data – Validate
- Rank/weight Criteria
- Determine Needs

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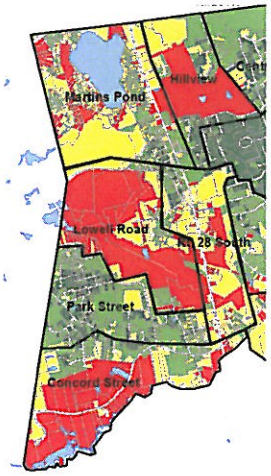
Wastewater Screening Analysis



Study Area	Top 3 Factors		
	1	2	3
Lowell Road	Impaired Water	Zone2/IWPA	Flood Zone
Martin's Pond	Impaired Water	Lot Size	Zone2/IWPA
Rt 28 South	Impaired Water	Water Use Class	Lot Size
Concord Street	Impaired Water	Water Use Class	Zone2/IWPA

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Screened Alternatives

- No build
- In basin
  - Decentralized
  - Centralized
- Out of basin
  - GLSD
  - MWRA
  - Others

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Final Selected Alternatives

- No build
  - Results in no improvement and may cause further deterioration of water quality in Ipswich River Basin
  - I/A systems for residential lots could be used in sensitive areas for improved water quality, but can not be sited on restricted lots.
    - Does not change Title 5 septic system application rates.
    - Small reduction in SAS only helps marginal lots.
  - Non residential users continue to impact water quality
    - Privately managed system operate less reliably and effectively

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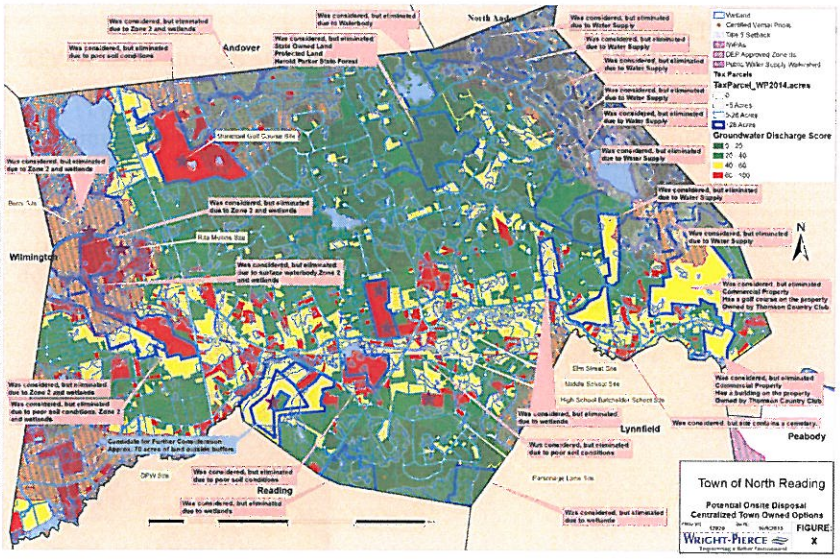
Wastewater Screening Analysis: In-Town System Potential Locations



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Alternatives

- In basin - Centralized
  - Reviewed all public and private lots large enough to site 500,000 gpd WWTF
  - There are no feasible sites within North Reading to site a centralized WWTF
  - Findings consistent with CWMP

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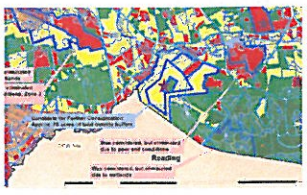
Alternatives

- In basin - Decentralized
  - Reviewed all public and private lots feasible to site decentralized WWTF larger than 50,000 gpd.
    - WWTF smaller than 50,000 uneconomical (would need 10 WWTF)
  - DPW Site was determined to be only site likely viable and economically feasible site for a decentralized WWTF.
    - Environmental Impacts lead to elimination of this site
      - Much of site is in 100 year flood plain
      - Would require cutting down 10 acres of trees and vegetation
      - Increase in impervious surface with limited area for mitigation
      - Increased GHG footprint
        - WWTF less efficient than GLSD WWTF
        - Trees help reduce CO_2



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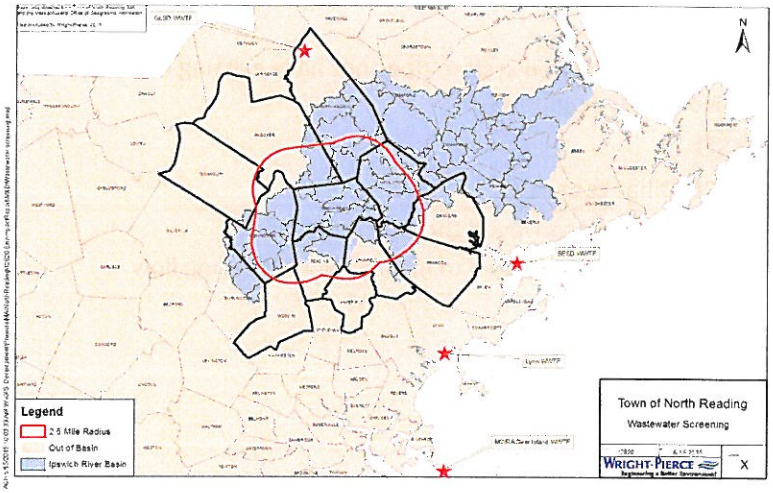
Wastewater Alternatives: Out of Town Options

In-basin option preferred, but not possible



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Wastewater Alternatives: Out of Town Options

Community/District	Municipal System (Y/N)	Capacity (Y/N)
Greater Lawrence Sanitary District	Y	Y
MWRA	Y	Y[1]
South Essex Sewerage District	Y	N
Lynn Regional Sanitary District	Y	N
Lynnfield	N	N
Middleton	N	N
Tewksbury	Y[2]	N

1: MWRA is not actively expanding wastewater service area. Connection possible with significant I/I removal within MWRA system by connecting community
2:Tewksbury discharges its sewer to the Lowell Regional Wastewater Utility

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Wastewater Alternatives

- Out of basin
  - MWRA
    - MWRA collection system does not have existing capacity for North Reading flows.
  - GLSD
    - GLSD has capacity.
    - Wastewater conveyed through Andover.
      - Upgrades required to manage North Reading flow

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Recommended Plan

- Water Solution: MWRA Connection through Reading
- Wastewater Solution: Connection of portion of Town (needs areas) to GLSD through Andover

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Recommended Plan: Water

- Connection to MWRA through Reading
- Water wheeled through existing Reading distribution system
- MWRA has the capacity to serve North Reading's future needs
- MWRA will help reduce the stress on the Ipswich River
- Improvements in Water Quality
- Increased reliability to North Reading with MWRA Connection.

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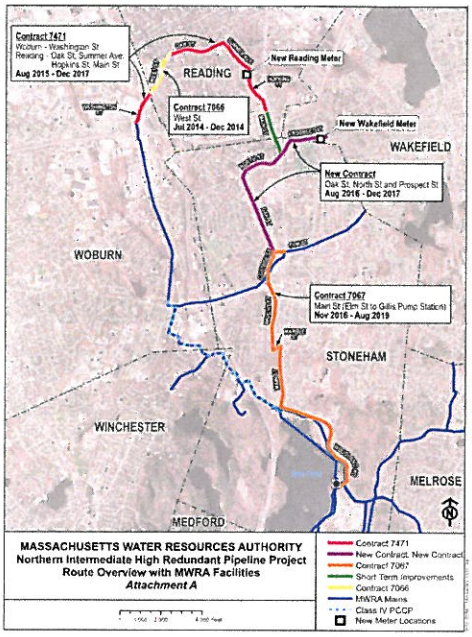
Recommended Plan: MWRA System Improvements

- MWRA has ongoing capital work to provide additional capacity and reliability north of Boston
  - Covered Reservoir in Stoneham
  - Redundant Loop



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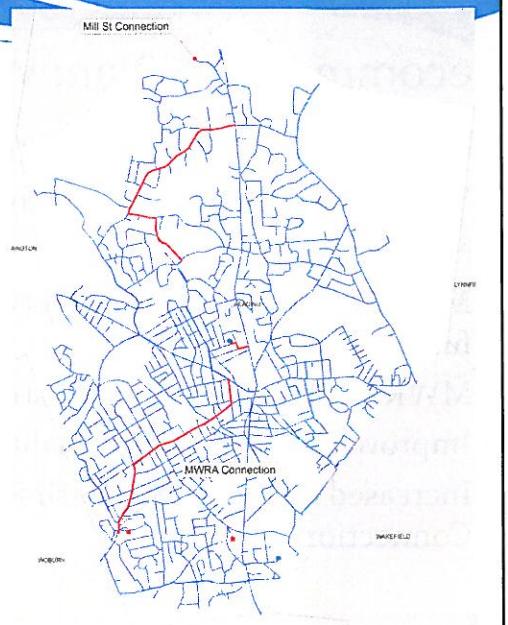
Recommended Plan: Reading Water System Improvements

- Clean and line portions of existing water mains
- Replace various portions of water main with larger pipes, including Woburn Street and Auburn Street
- Increase inlet/outlet piping from the Auburn street tank



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Recommended Plan: Wastewater

- Blended approach with in town and out of town options
- Connection to GLSD
  - Discharge 503,000 gpd
- Optimize existing WWTF at High School and capture select users in the Town center.
- Other users remain on individual systems

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Recommended Plan: Wastewater

- Existing Septic System not in Needs Area remain and upgraded by home owners as needed.
  - Continued enforcement of Public Health regulations.
  - Education for failing systems and implementation of innovative / alternative technologies.

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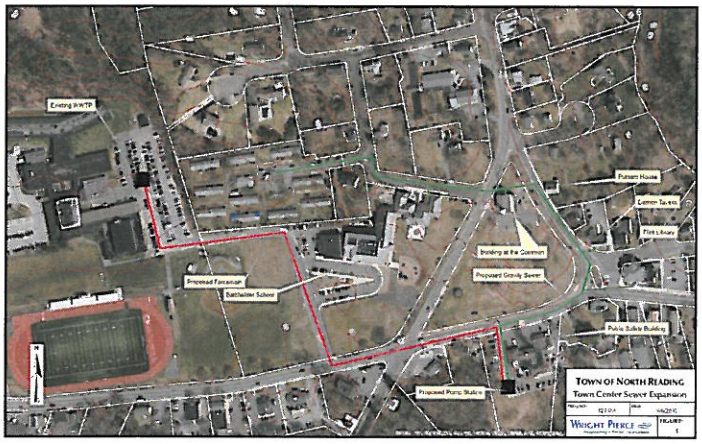
Recommended Plan: Wastewater

- Optimize existing WWTF at High School and municipal users in the center of Town.



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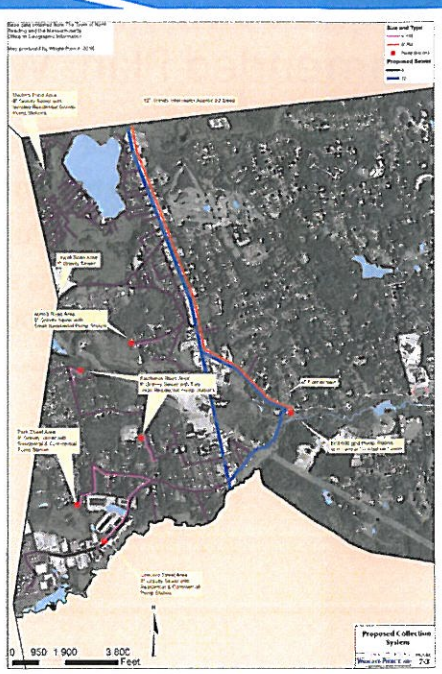
Recommended Plan: Wastewater

- Construct Municipal Collection System
  - ≃ 25 miles of sewer
  - 6 Pump Stations
  - Limited number served by low pressure sewer



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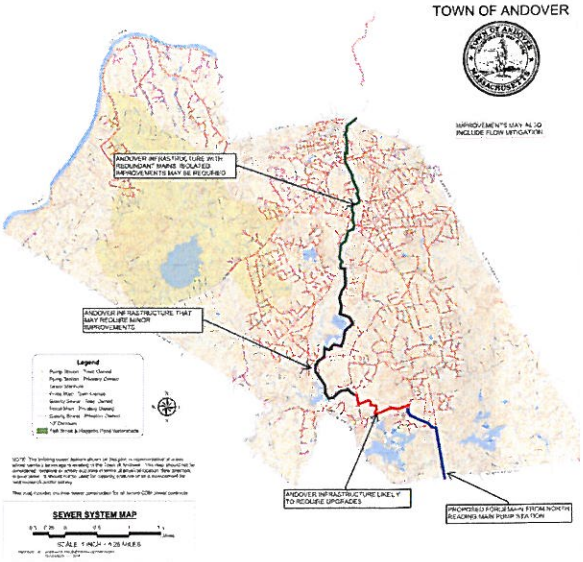
Recommended Plan: Wastewater

- Out of town discharges:
  - Connection to GLSD through Andover
  - 503,000 gpd average daily flow



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Environmental Impacts

- Greenhouse Gases
- Stormwater impacts
- Ipswich River
- Resource Areas
- Mitigation Measures

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Environmental Impacts: Greenhouse Gases

- Analysis required per MEPA/ENF Certificate
- Quantify CO_2 emissions for baseline (no build) and preferred alternative
- Factors considered
  - Water: Treatment plant and pump station electricity, chlorine production, maintenance vehicle fleet emissions, treatment plant natural gas use
  - Wastewater: Septic tank methane production, septic tank hauling, biological treatment processes, vehicle fleet emissions, treatment plant electricity

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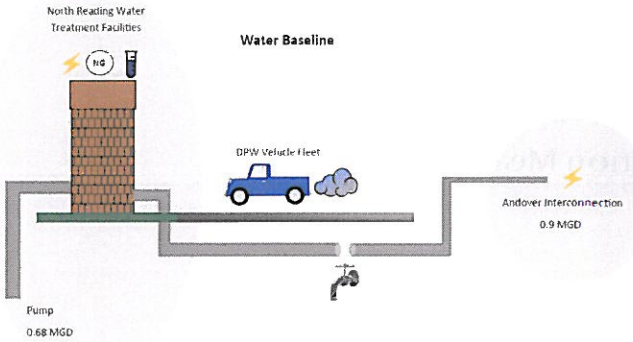
GHG - Existing Conditions Water



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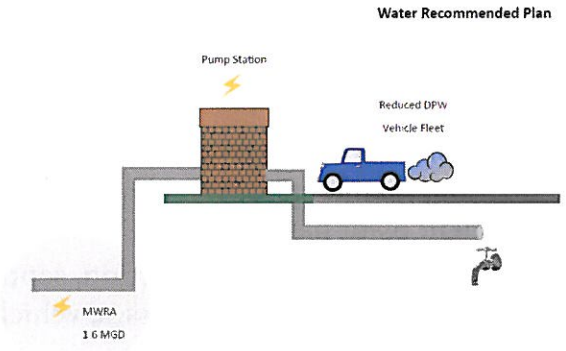
GHG – Water Recommended



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Greenhouse Gases: Water

Emission Source	Emission Type (lbs/day)							Total
	Treatment Plant Electricity			Natural Gas	Vehicle Fleet Fuel	Chemical Production	Pump Stations	
	North Reading	Andover	MWRA					
Baseline	1508	975	-	104	282	73	-	2942
MWRA	-	-	313	-	226	-	156	694
							Emissions Reduction	76%

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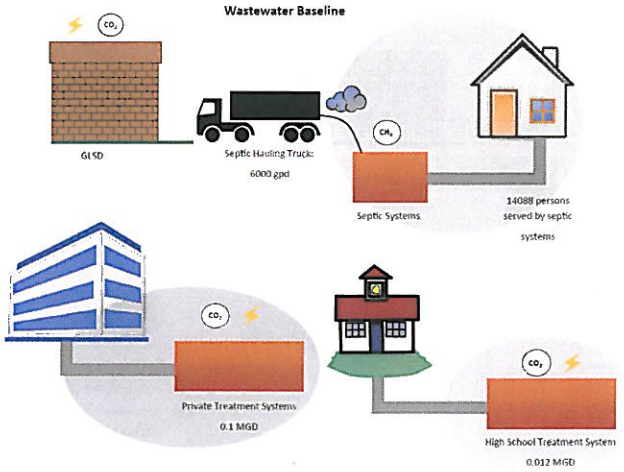
GHG – Existing Conditions Wastewater



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Greenhouse Gases: Wastewater

Baseline (As is)

Emission Source	Emission Type (lbs/day)				Total (lbs/day)
	Treatment Electricity	From Biological Treatment Processes	Hauling Fuel	Methane in CO_2e	
Septic Systems	10.06	47.59	727.33	17,610.12	18,395.28
High School Treatment Facility	121.70	9.85	-	-	131.56
Private Treatment Facilities	183.77	86.96	-	-	270.74
				Total	18,797.58

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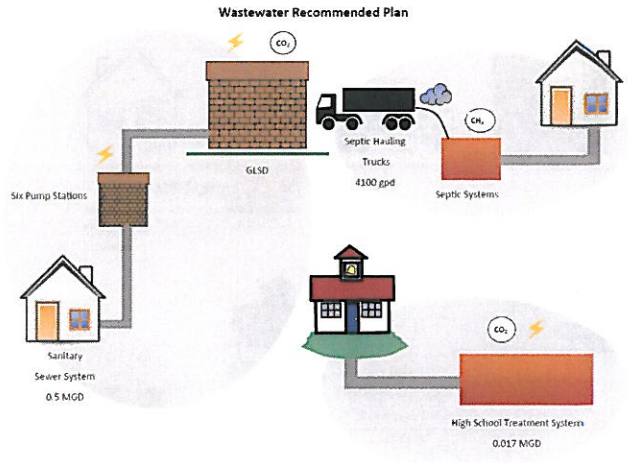
GHG – Wastewater Recommended



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Greenhouse Gases: Wastewater

Emission Source	Emission Type (lbs/day)					Total (lbs/day)
	Treatment Electricity	Operating Electricity	From Biological Treatment Processes	Fuel	Methane in CO_2e	
Septic Systems	7.04	-	33.32	509.25	12327.08	12,876.70
High School Treatment Facility	171.17	-	13.86	-	-	185.04
Pump Stations	-	645.5	-	-	-	645.5
GLSD	846.6	-	400.62	-	-	1247.22
Vehicle Fleet				70.5		70.5
					Total	15,025.01

Recommended Plan – 20% emissions reduction compared to baseline

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Greenhouse Gases: Summary

- 20% reduction in GHG emissions from wastewater recommended plan compared to baseline
- 76% reduction in GHG emissions from water recommended plan compared to baseline

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Environmental Impacts: Ipswich River

Water Balance in Relation to Ipswich River Basin

	Existing Conditions	Recommended Plan (Future Conditions)
Sources - Approvals		
Local Source Registration (annual AVG)	0.96 MGD	0.00 MGD
Andover IBTA (Max Day)	1.50 MGD	Emergency Only
MWRA IBTA (Max Day)	0.00 MGD	2.58 MGD
Sources -Withdrawals		
Local Source Registration (annual AVG)	0.52 MGD	0.00 MGD
Andover IBTA (annual AVG)	0.89 MGD	Emergency Only
MWRA: ADD	0.00 MGD	1.60[1] MGD
MDD (IBTA)	0.00 MGD	2.58 MGD
Ipswich River Basin		
Total Withdrawal from Basin	- 0.52 MGD	- 0.00 MGD
Wastewater Generated	+ 1.41 MGD[2]	+ 1.60 MGD[2]
Wastewater Conveyed out of Basin	- 0.00 MGD	- 0.503 MGD[3]
Net Water Change to the Basin	+ 0.89 MGD	+ 1.10 MGD

1. Assumes current well users are added to system, 65 gpcd, 10%UAW, maintain current trends in CEMU and Non-residential use. DEIR includes detailed analysis.
2. Assumes 100% of water use become wastewater discharge.
3. Assumes 0.503 MGD of wastewater is sent to GLSD under recommended plan.

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Environmental Impacts & Mitigation:

- Negligible increases in impervious surfaces at pump stations (Approximately 3,000 sqft)
  - Mitigated with BMPs such as onsite detention and treatment.
- Temporary Construction Impacts to wetlands/water resource areas
  - Mitigated by BMPs such as erosion control devices
- Hazardous Materials encountered mitigated through proper soils management
- No anticipated impacts to Endangered Habitats
- No anticipated impacts to Historical Archeological properties
- No anticipated land impacts
- Overall reduction in GHG

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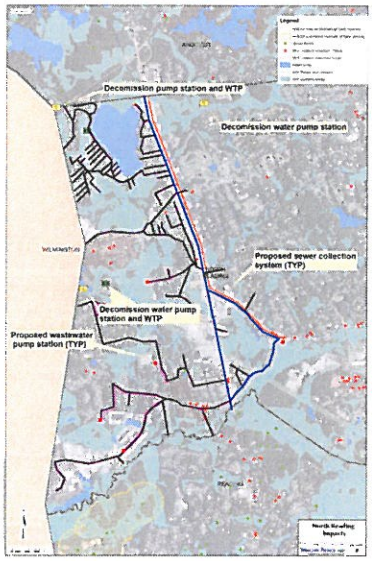
Environmental Impacts: Resource Areas



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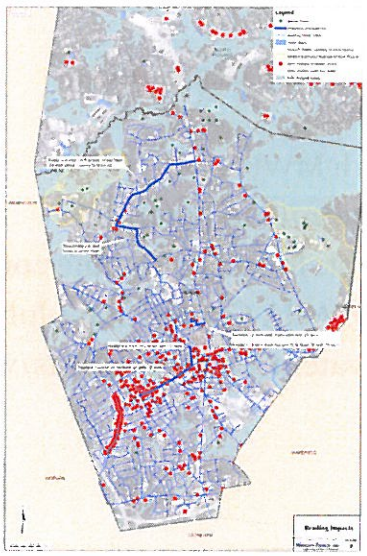
Environmental Impacts: Resource Areas



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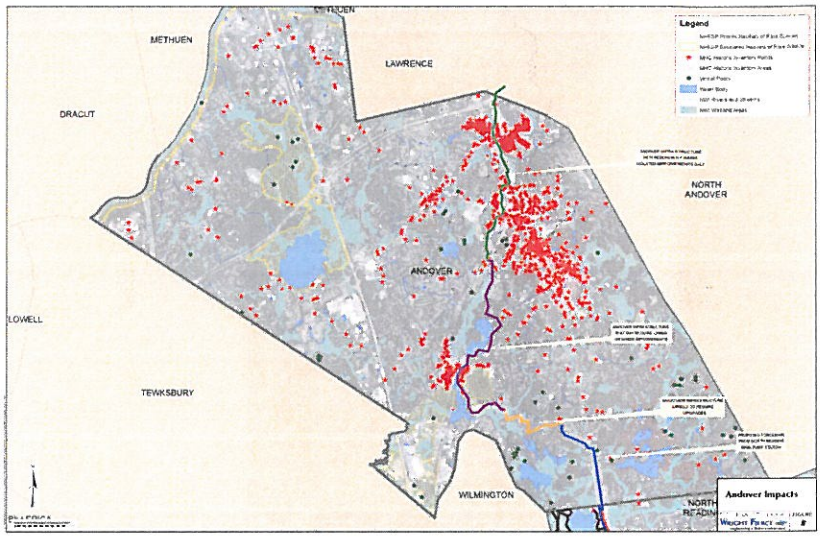
Environmental Impacts: Resource Areas



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Recommended Plan: Implementation Schedule

- Permitting Phase:
  - IBTA- Following FEIR Certificate
  - IMA with Reading
  - Agreement with MWRA
- Design – Est. June 2016 to June 2017
- Construction – Est. June 2017 to June 2019
- Target Date for MWRA Connection - July 2019
- Decommission water treatment plants/wells

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Recommended Plan: Implementation Schedule

- Preliminary: 2017-2019
  - IMA with Andover
  - Agreement with GLSD
- Phase 1 Andover Sewer Improvements
  - Design– 2020 - 2021
  - Construction – 2022 - 2024
- Phase 2 Rt. 28 and Concord Street Sewer, Main PS and FM
  - Design – 2024 - 2025
  - Construction – 2026 - 2028

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Recommended Plan: Implementation Schedule (Cont.)

- Phase 3 Rt.62 Area Sewer
  - Design – 2028 - 2029
  - Construction – 2030 - 2031
- Phase 4 Martins Pond Area Sewer
  - Design – 2031 - 2032
  - Construction – 2033 - 2034
- Phase 5 Park St Area Sewer
  - Design – 2031 - 2032
  - Construction – 2033 - 2034

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Recommended Plan: Permitting Water

- IBTA/Water Resource Commission
- Massachusetts Environmental Policy Act
- Local approval (planning, zoning, BOH, conservation commission)
- MWRA/OP.10
  - Advisory Board
  - Board of Directors
- MassDEP approval
  - Modification to distribution system
  - Decommissioning/abandonment of current infrastructure

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Recommended Plan: Permitting Wastewater

- MassDEP
- Local approval (planning, zoning, BOH, conservation commission)
- Stormwater management - Construction

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Meeting Summary

- Reviewed water and wastewater needs and alternatives
- Covered final selected alternatives:
  - Water: MWRA connection through Reading
  - Wastewater
    - In-Town
    - GLSD
  - Implementation schedule, permitting
  - Environmental Impacts

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Next Steps

- Submit DEIR
- Public Comment Period
- File FEIR

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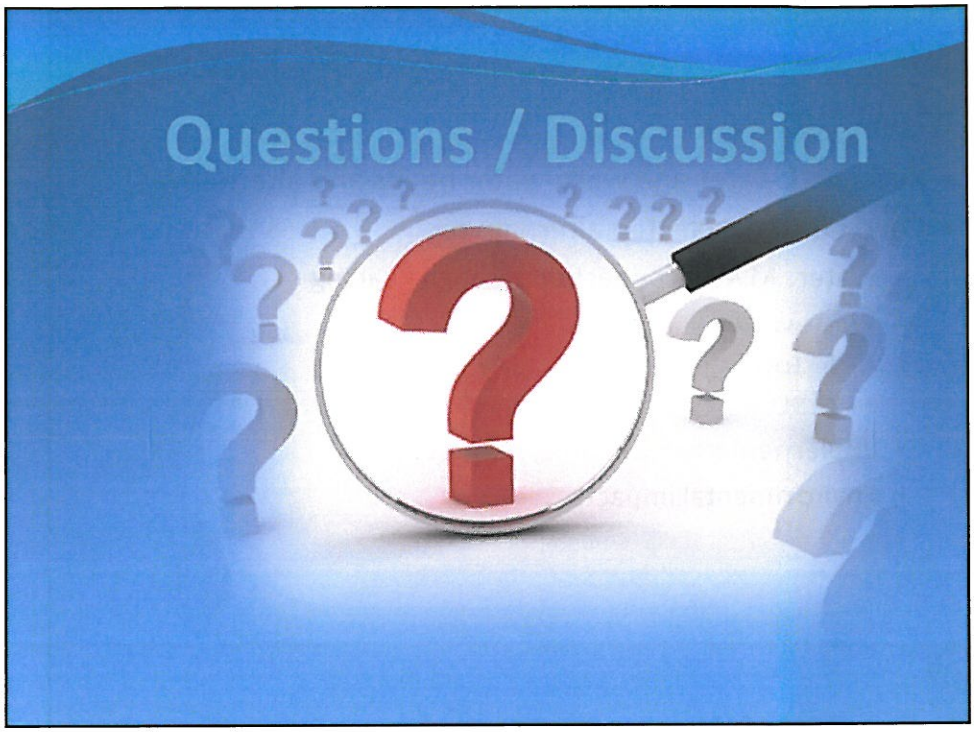
Questions / Discussion