

# **HEARINGS, MEETINGS, LICENSES**

**2-24-14**

# Middleborough Comprehensive Wastewater Management Plan

Public Hearing –  
February 24, 2014

Presented by:

John Braccio, PE

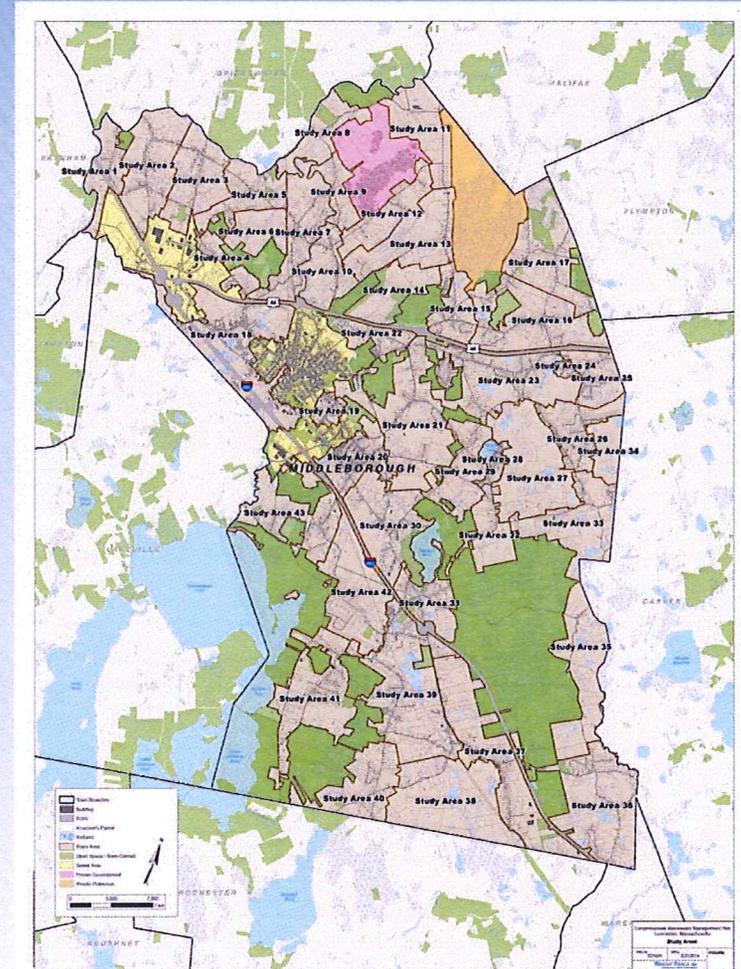
Jon Hume, PE



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# Presentation Overview

- Project Team
- Reasons for CWMP
- Overall CWMP Approach
- Phase 1 CWMP
- Next Steps
- Questions & Discussion



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# CWMP Project Team

- Town of Middleborough
  - Charles Cristello, Town Administrator
  - Christopher Peck, DPW Director
  - Todd Goldman, WPCF Superintendent
  - Jeanne Spalding, Health Department
  - Ruth Geoffroy, AICP, Planning Department
  - Patricia Cassady, Conservation Commission
  - Tara Pirraglia, Information Technology Administrator
- Wright-Pierce
  - John Braccio, PE, Senior Vice President
  - Jon Hume, PE, Senior Project Manager



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# Middleborough's Reasons for Wastewater Management Planning

- Provide Town-Wide Wastewater Planning for Next 20 Years
- Town Owns Water Pollution Control Facility (WPCF)
  - Stricter NPDES Permit Limits for Nutrients (Nitrogen and Phosphorus)
- Identify/Evaluate unsewered Areas that may not Support Individual On-Site Wastewater Systems
- Qualify Town for Low/ Zero Interest DEP SRF Loans for WPCF Upgrades

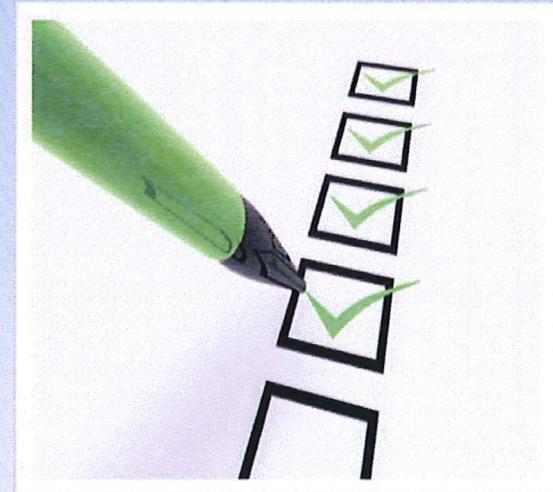


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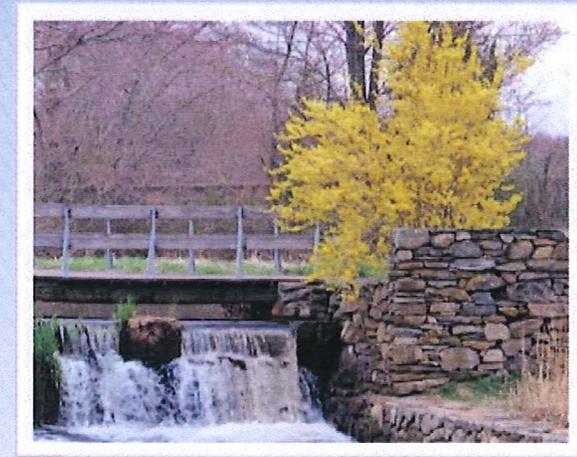
# Middleborough's Overall CWMP Approach

- Phase 1 – Existing Conditions, Problem Identification and Needs Assessment (Purpose of this Hearing)
- Phase 2 – Alternatives Identification and Screening
- Phase 3 – Detailed Evaluation of Alternatives and Recommended Wastewater Management Plan
- CWMP Prepared in Accordance with DEP 1996 Guidelines



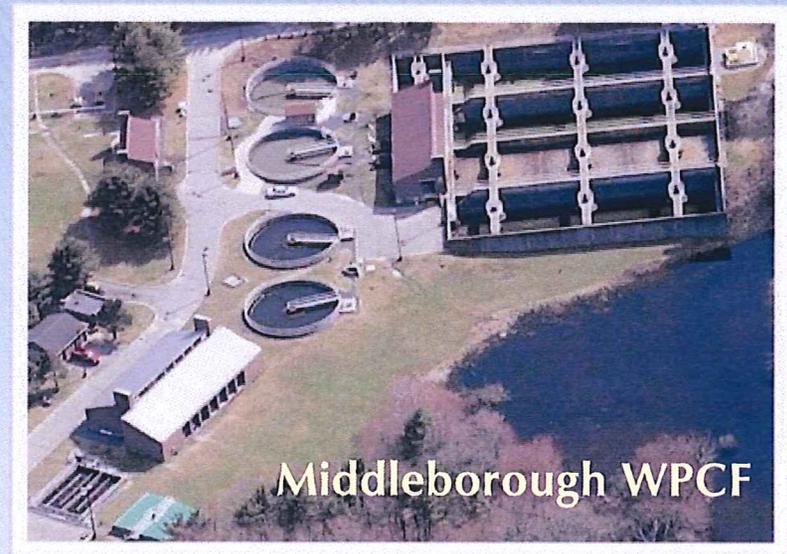
# Phase 1 CWMP

- Summarize Existing Conditions
  - Planning Area
  - Wastewater Collection and Treatment
  - Water Treatment and Distribution
- Evaluated Middleborough Data
  - Previous Studies
  - Existing Soils and Groundwater
  - Health, Assessors, Zoning and Planning Departments
- Perform Wastewater Needs Assessment
  - Define Specific Study Areas
  - Utilized a Two-Tier Approach



# Existing Wastewater System

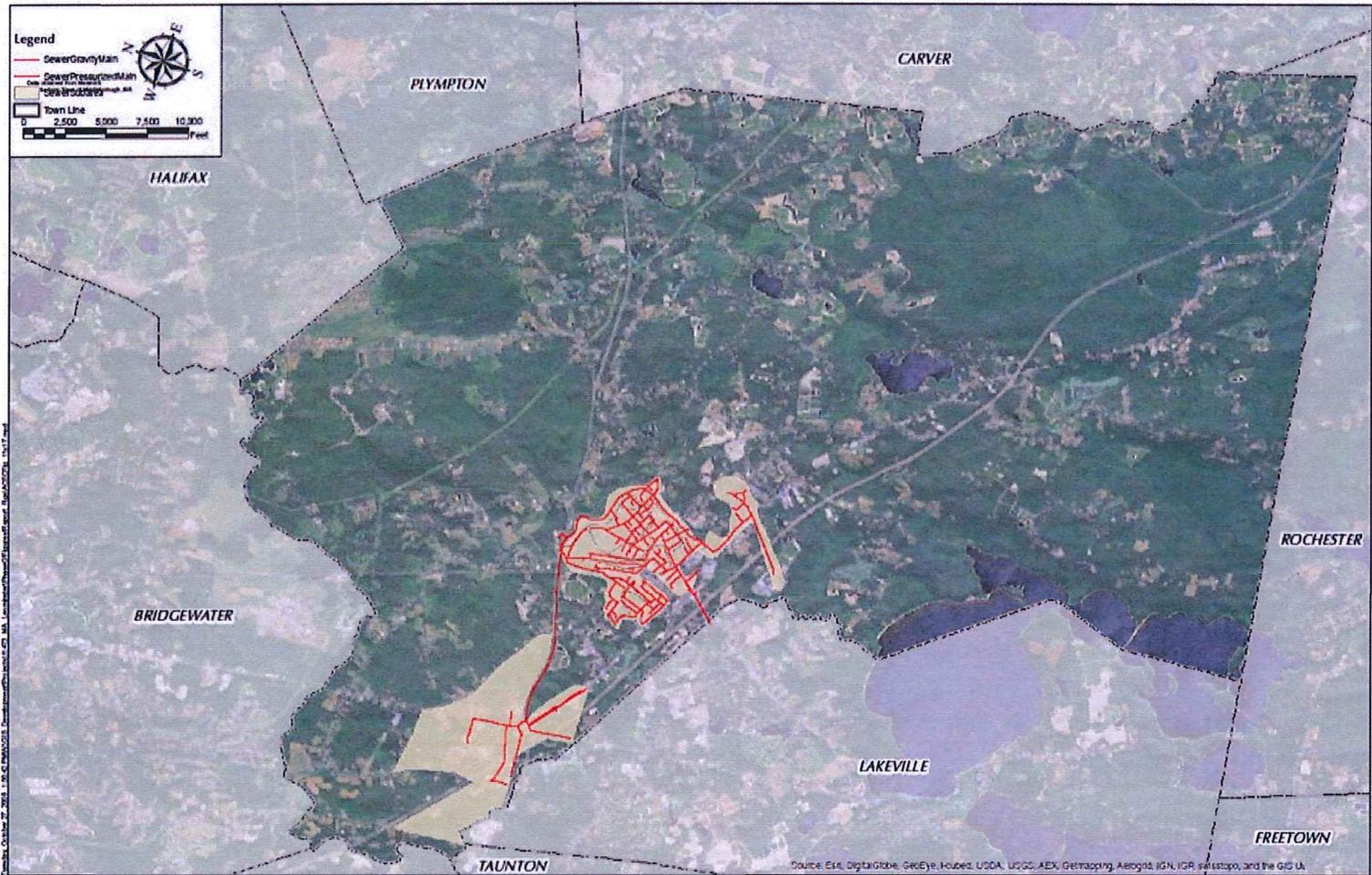
- Middleborough Water Pollution Control Facility
  - Treats flow from > 30% of Town's population
  - No Intermunicipal Agreements
- 6 Pumping Stations
- Approx. 29 Miles of Sewer Pipe



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# Existing Wastewater Collection System

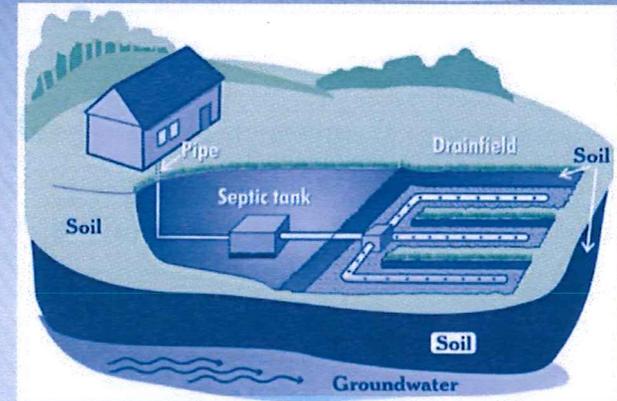


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# Onsite Wastewater Treatment and Disposal Systems

- Title 5 Systems Consist of:
  - Septic Tank
  - Distribution Box
  - Leach/Drain Field
- Approx. 6,500 Existing Onsite Title 5 Systems Located in Non-Sewered Areas within the Town
- Cost-Effective Solution
  - Adequate Soils
  - Sufficient Depth to Groundwater
  - Spacious Lot Sizes
  - Routine Pumping



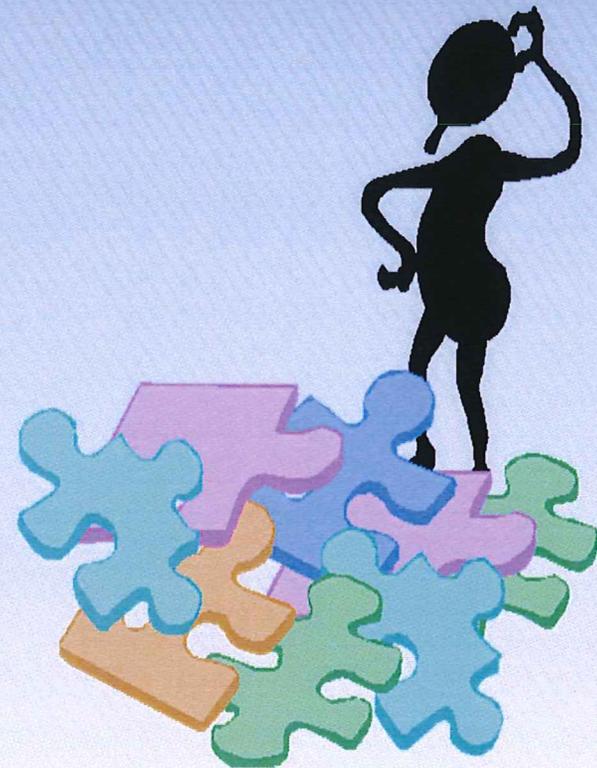
# Wastewater Needs Assessment

- For Non-Sewered Areas, are On-Site Title 5 Wastewater Systems Adequate for:
  - Sanitation?
  - Drinking and Surface Water Protection?
  - Growth Management?
- Which Non-Sewered Areas May “Need” Alternative Wastewater Treatment Including:
  - Enhanced On-Site Solutions?
  - Off-Site Solutions?
  - Sewer Extensions?
  - A Combination of Solutions?

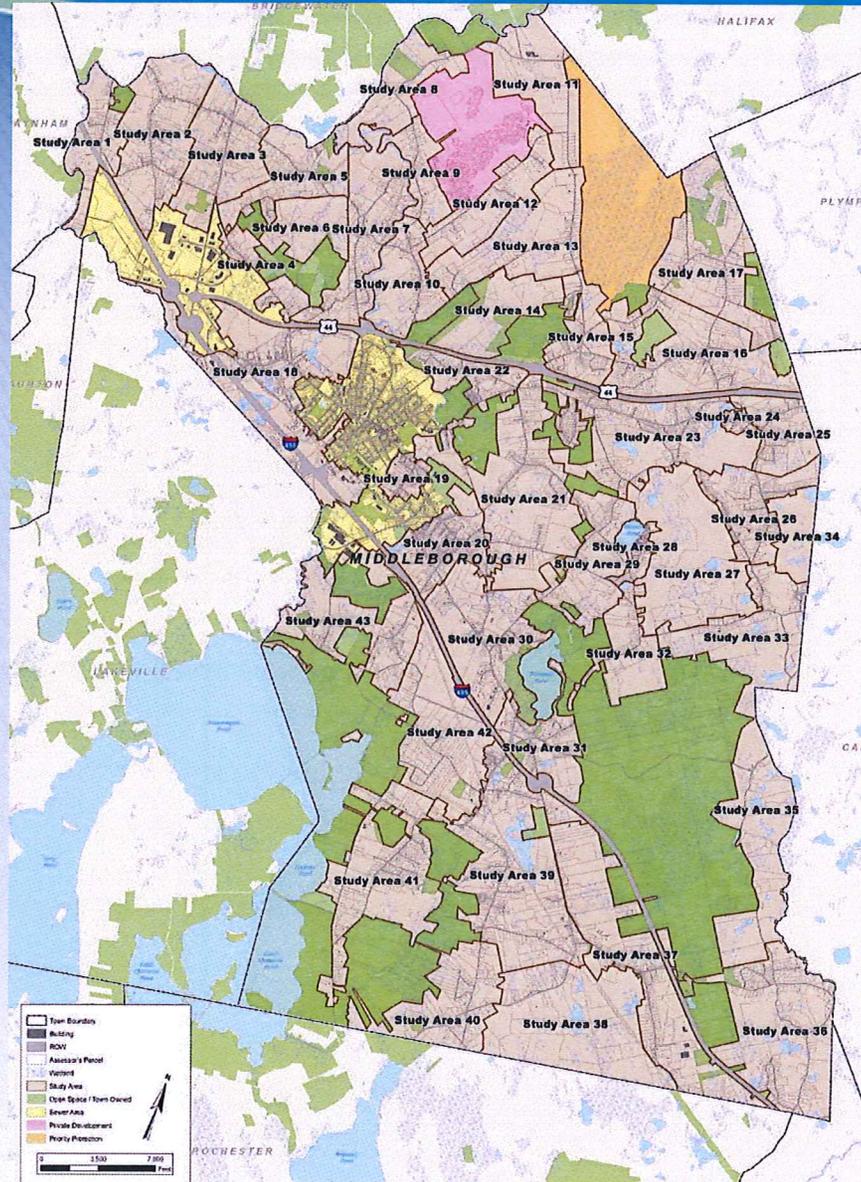


# Determination of Study Areas

- **Parcels Removed from Analysis**
  - Existing Sewered Areas
  - Protected Open Space
  - Cemeteries
  - Proposed Developments
  - Bogs
- **Areas Determined by:**
  - Location
  - Geographic Features
  - Environmental Criteria
- **Established 43 Study Areas**



# Study Areas



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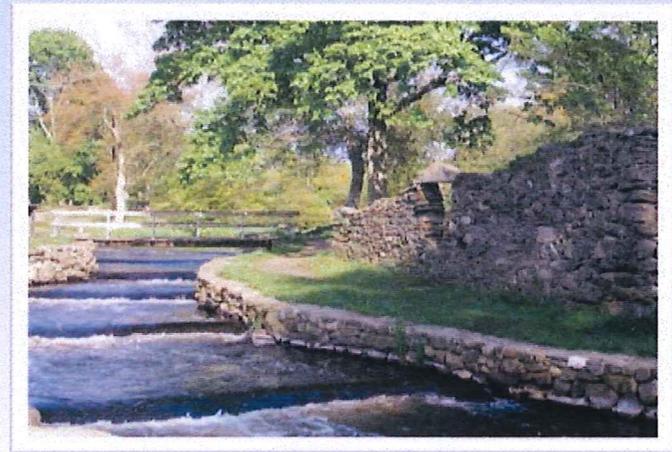
# Study Areas

- Summary
  - 34 Discharge to Taunton River Watershed
  - 9 Discharge to Buzzard's Bay Watershed
  - Study Area Size
    - ◆ Avg. = 700 Acres (160 parcels)
    - ◆ Largest Study Area 39 = 1,475 acres (495 parcels)
    - ◆ Smallest Study Area 24 = 47 acres (74 parcels)
      - Savery Pond Area



# Wastewater Needs Assessment

- Scored and Ranked Using a Two-Tiered Approach
  - Tier 1
    - ◆ Primary Criteria (Ranking 0 to 10 Points)
    - ◆ Secondary Criteria (Ranking 0 to 5 Points)
  - Tier 2
    - ◆ Analysis Used to Either Confirm or Contradict Tier 1 Results
- Medium or High Priority Areas became “Needs Areas”



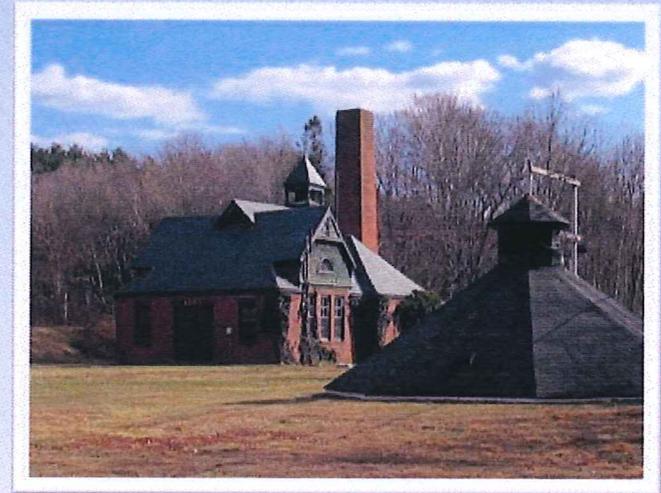
# Tier 1 Analysis

- Primary Criteria (Ranking 0 to 10 Points)
  - Soil Type/Drainage Class
  - Highest Annual Groundwater Table
  - Depth to Bedrock
  - Lot Size
  - Private Wells



# Tier 1 Analysis

- Secondary Criteria (Ranking 0 to 5 Points)
  - Drinking Water Protection Districts
  - Surface Water Protection – Areas with Regulated Setbacks
  - Floodplains
  - Priority/Estimated Habitat Areas
  - Historic Districts

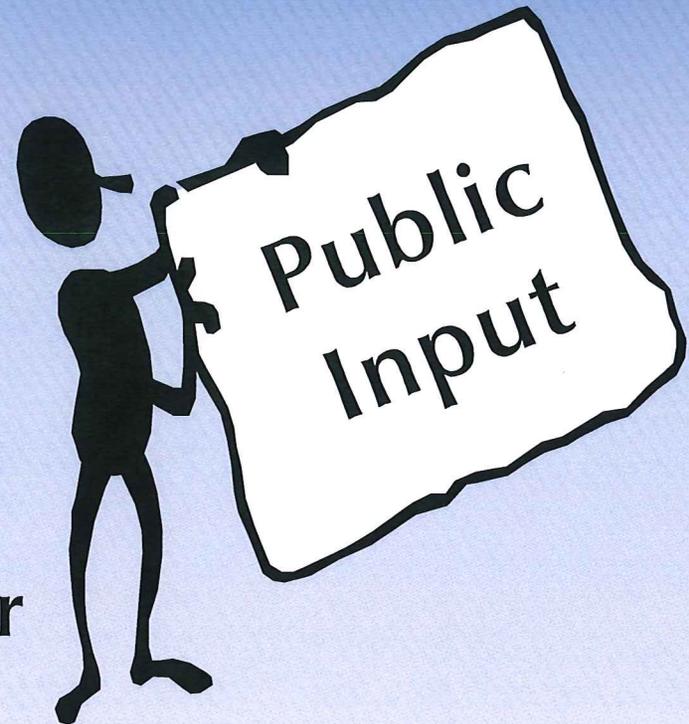


East Grove Street PS



# Next Steps

- Obtain Public Input for wastewater needs areas
- Finalize scoring and ranking of all Study Areas
- Identify “Needs Areas” for further evaluation in Phase 2



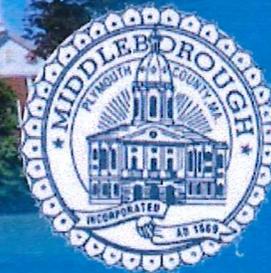
# Questions / Discussions



# Middleborough WPCF Upgrade

Presentation to the Board Of Selectmen  
February 24, 2014

Presented by:



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Engineering a Better Environment

# Presentation Overview

- Background
- Conceptual Design Report
- Schematic Design Report
- Cost Estimate
- Project Schedule
- Next Steps
- Questions & Answers



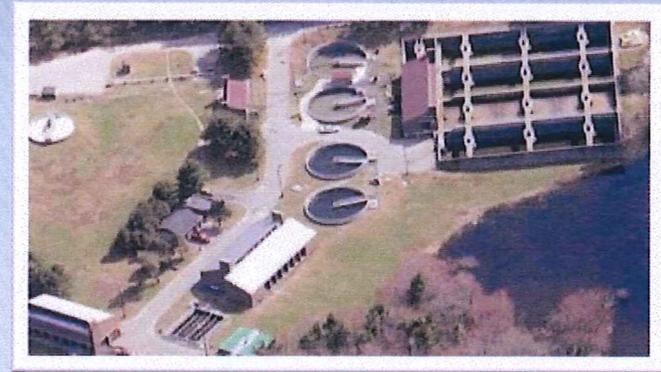
# Project Team

- Town of Middleborough
  - Charles Cristello, Town Administrator
  - Christopher Peck, DPW Director
  - Todd Goldman, WPCF Superintendent
  - Wright-Pierce
  - Environmental Partners Group (EPG), Owners Project Manager



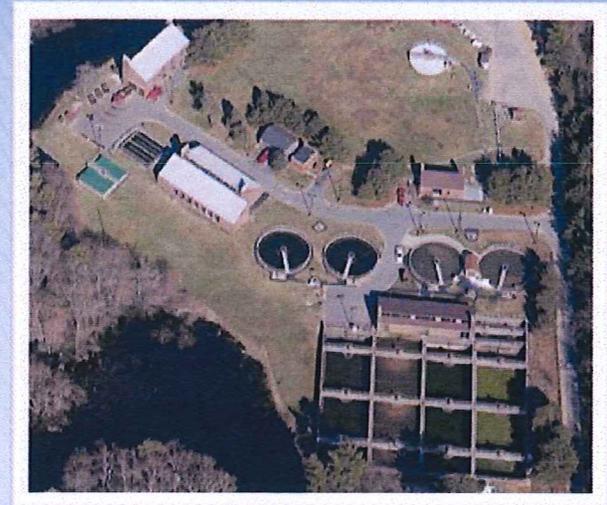
# Background

- WPCF Last Upgrade in 1977
  - Equipment and Building Systems have reached End of Service Life
  - EPA issues new NPDES Permit limits for Nutrients
    - ◆ TN = 5 mg/L  
(May 1<sup>st</sup> through October 31<sup>st</sup>)
    - ◆ TP = 0.15 mg/L  
(April 1<sup>st</sup> through October 31<sup>st</sup>)



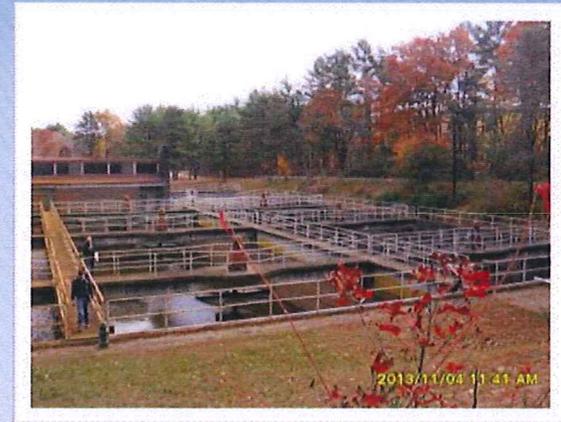
# Conceptual Design Report

- Reviewed recommendations in the *WPCF Upgrades Draft Preliminary Report (EPG Jan. 2013)*
- Presented our specific recommendations for WPCF:
  - Established Design Flows & Loads
  - Operational status of Primary and Secondary Clarifiers
  - Modeled 5-Stage Bardenpho Process
  - Identified other Sludge Dewatering Technology
  - Evaluated Tertiary Filters Building Options
  - Impacts of converting Chlorine Contact Tank to UV Disinfection



# Conceptual Design Report

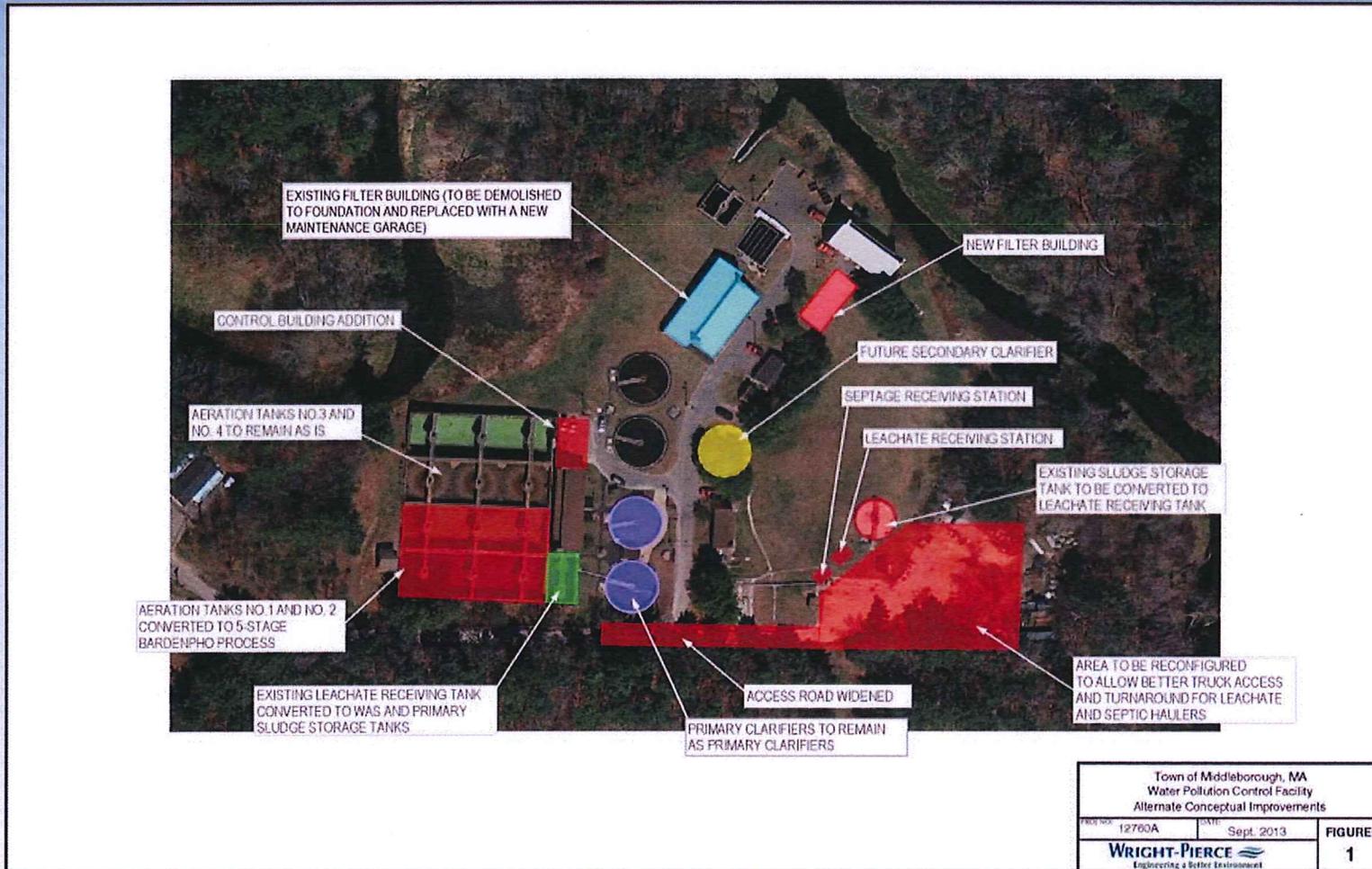
- Developed Phased Approach to meet the Town's needs for next 20 Years
  - Convert only Aeration Tanks 1 and 2 to a 5-stage Bardenpho
  - Aeration Tanks 3 and 4 remain in current state
  - Add a third Secondary Clarifier (Phase 2 only)
  - Town saves Capital and O&M Costs



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# Conceptual Design Report

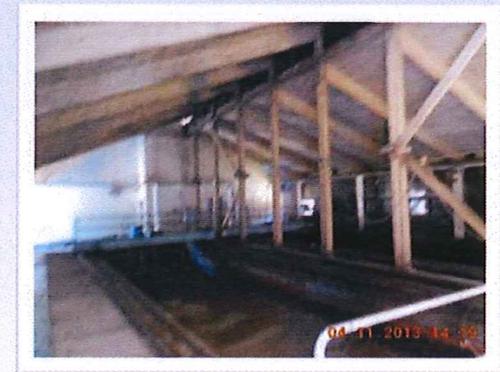
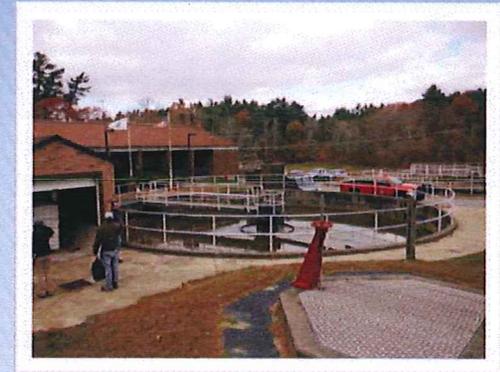


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# Conceptual Design Report

- Other Recommendations
  - Reconfigure the plant entrance road for better truck access
  - Keep Primary Clarifiers
  - Construct new Tertiary Building and demo existing Sand Filter Building to its foundation
  - Build new Maintenance Garage on Sand Filter Building Slab



# Conceptual Design Report

- Other Recommendations (Cont.)
  - Upgrade Chlorination and Dechlorination chemical feed systems instead of UV system
  - Install new Sludge Dewatering Technology that require less operator attention instead of BFP
  - Convert Existing Sludge Storage Tank to new Leachate Tank
  - Convert Existing Leachate to new Sludge Storage Tank
  - Add 1,500 ft<sup>2</sup> Control Building Addition



# Schematic Design Report (SDR)

- Draft SDR Submitted on February 2014:
  - Updated Phased Approach for Design Flows & Loads
  - Phased Approach allows Town to save Capital Cost while maintaining WPCF permitted capacity of 2.1 MGD

Parameter	UNITS	Current 2007-2013	W-P Updated- Phase 1 Interim Design	W-P Updated- Phase 2 Final Design
<b>RAW INFLUENT FLOW</b>				
Annual Average	MGD	1.115	1.605	2.095
Max. Month (Flow Based)	MGD	2.786	4.010	5.234
Peak Daily (Flow Based)	MGD	2.940	4.230	5.520
Peak Hourly	MGD	4.000	5.760	7.520



# Schematic Design Report (SDR)

- Other Items in SDR
  - Unit Process Descriptions
  - Plant Hydraulics
  - Design Data for each Unit Process
  - Project Schedule
  - Updated Cost Estimate
  - Detailed Technical Memos
  - Preliminary Design Drawings

**WATER POLLUTION CONTROL FACILITY  
UPGRADE  
SCHEMATIC DESIGN REPORT  
for the  
TOWN OF MIDDLEBOROUGH, MA**

**FEBRUARY 2014**



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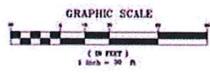
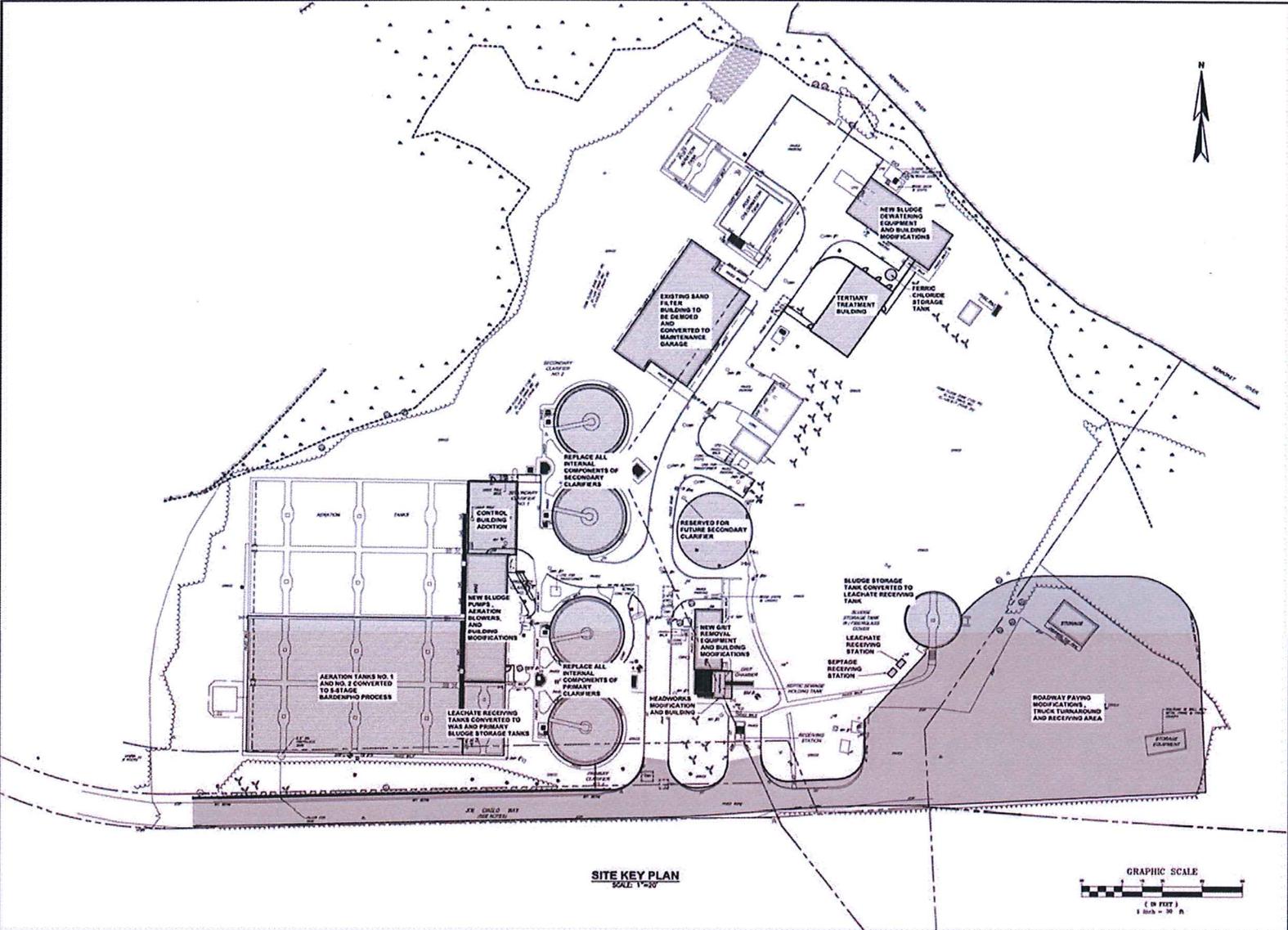


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DATE	2/7/14
BY	RWB
CHECKED BY	
DATE	
BY	
DATE	
BY	
PROJECT NO.	12780A

NO.	1	2	3	4	5
DESCRIPTION					

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TOWN OF MIDDLEBOROUGH, MA  
WATER POLLUTION CONTROL FACILITY  
COMPREHENSIVE UPGRADE  
ORIGINAL SITE PLAN

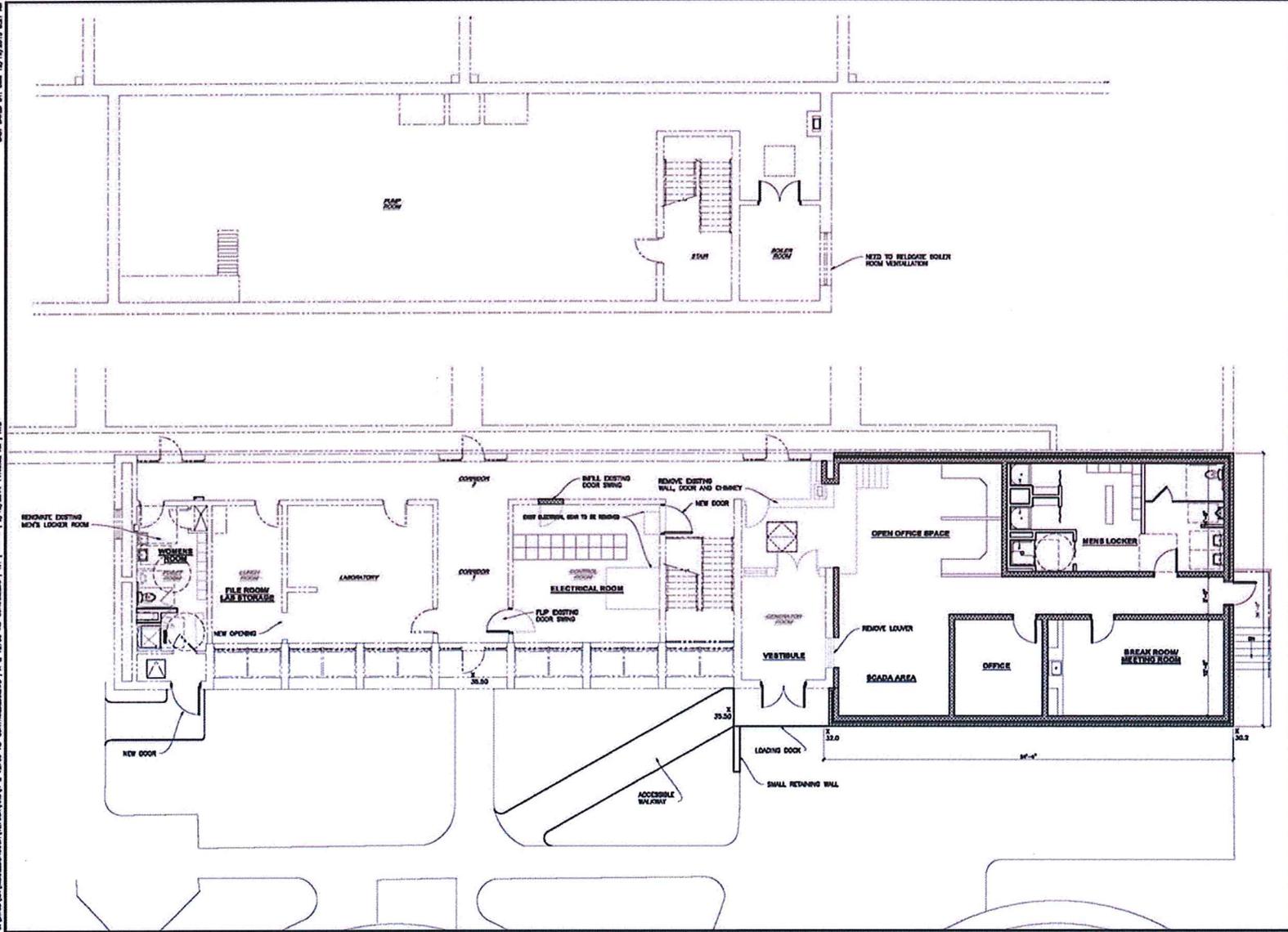
DRAWING  
C-2



Town of Middleborough

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<b>WRIGHT-PIERCE</b> Engineering a Better Environment Office Throughout New England 888.621.8156   www.wright-pierce.com	
<b>TOWN OF MIDDLEBOROUGH, MA</b> WATER POLLUTION CONTROL FACILITY COMPREHENSIVE UPGRADE CONTROL BUILDING JOINT BID RENOVATIONS	
<b>DRAWING</b> A-2	
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DRAWN BY: RW	CHECKED BY: RW
PROJECT NO. 17700-05	SHEET NO. 17700-05-01



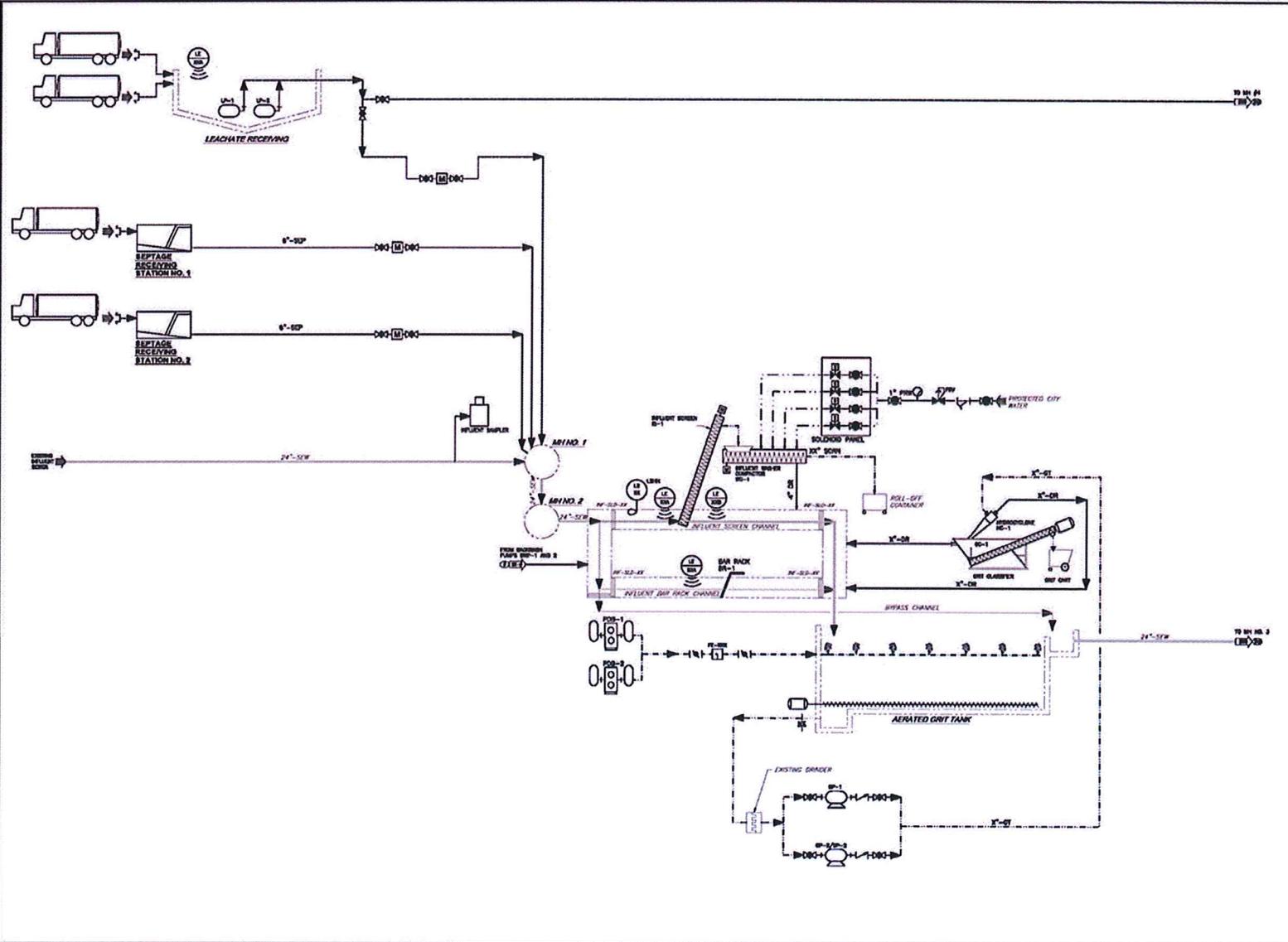
Town of Middleborough

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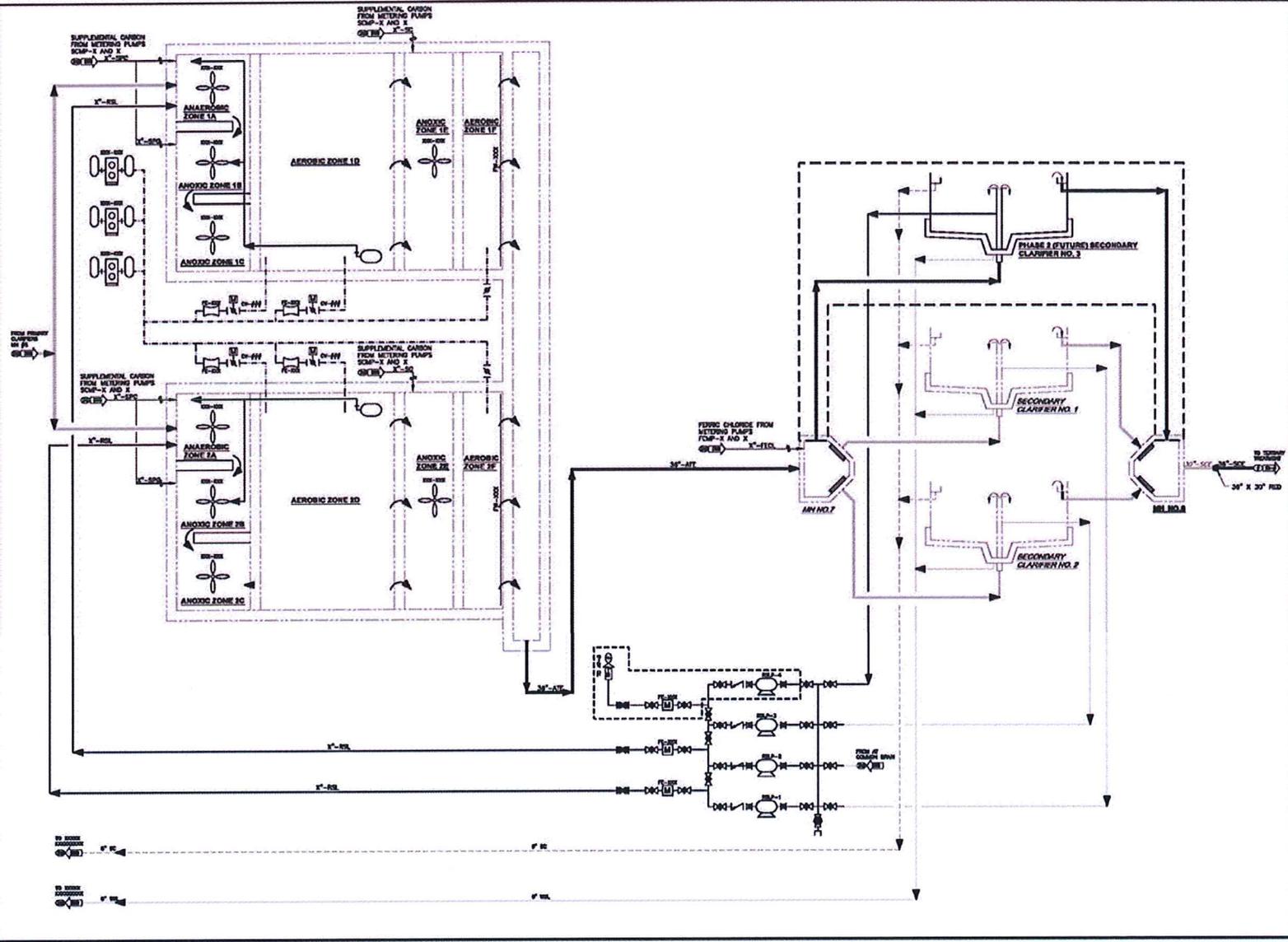
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DATE	5/1/2014
SCALE	AS SHOWN
DESIGNER	WRIGHT-PIERCE
CHECKER	W. WISHE
DATE	5/1/2014
SCALE	AS SHOWN
PROJECT NO.	127000-11-10-2014
CLIENT	TOWN OF MIDDLEBOROUGH
DATE	5/1/2014
SCALE	AS SHOWN
DESIGNER	WRIGHT-PIERCE
CHECKER	W. WISHE
DATE	5/1/2014
SCALE	AS SHOWN
<p><b>TOWN OF MIDDLEBOROUGH, MA</b>  <b>WATER POLLUTION CONTROL FACILITY</b>  <b>COMPREHENSIVE UPGRADE</b></p> <p>PROJECT FILE # 127000-11-10-2014          PROJECT NO. 127000-11-10-2014          PROJECT NAME: WATER POLLUTION CONTROL FACILITY UPGRADE</p>	
<p><b>WRIGHT-PIERCE</b>          Engineering a Better Environment          Offices Throughout New England          888.501.8156   www.wright-pierce.com</p>	
<p>DRAWING          PR-2</p>	



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<b>TOWN OF MIDDLEBOROUGH, MA</b> <b>WATER POLLUTION CONTROL FACILITY</b> <b>COMPREHENSIVE UPGRADE</b>	<b>WRIGHT-PIERCE</b> Engineering a Better Environment Offices Throughout New England 888.621.8155   www.wright-pierce.com	PROCESS FLOW SCHEMATIC SECONDARY CLARIFIERS	<b>DRAWING</b> <b>PR-4</b>
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Town of Middleborough

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# Schematic Design Cost Estimate

DESCRIPTION	TOTAL ESTIMATED COST
Civil / Site Work	\$1,219,000
Screening Building	\$577,000
Pretreatment Building	\$740,000
Control Building	\$1,926,000
Primary Treatment	\$699,000
Secondary Treatment	\$2,783,000
Tertiary Treatment	\$2,981,000
Sludge Handling Building (w/Chlorine & Bisulfite Systems)	\$1,982,000
Post Chlorination & Reaeration Tanks	\$89,000
Stand-By Power	\$1,216,000
Sludge Holding & Septage & Leachate Facilities	\$742,000
Maintenance Garage	\$436,000
<b>Subtotal, Construction</b>	<b>\$15,390,000</b>



# Schematic Design Cost Estimate

DESCRIPTION		TOTAL ESTIMATED COST
	<b>Subtotal, Construction</b>	<b>\$15,390,000</b>
General Contractor OH&P and General Conditions	17.5%	\$2,693,000
Other Markups (Bonds, Insurance, etc.)		\$502,000
	<b>Subtotal, Construction Costs</b>	<b>\$18,585,000</b>
Design Contingency	1.15	\$2,788,000
Project Multiplier, Inflation To Midpt Const.	1.05	\$1,068,650
<b>Engineers Estimate of Construction Cost</b>		<b>\$22,442,000</b>
Engineer's Design Fee		\$2,082,800
Engineer's Construction Administration Fee – <i>to be determined (assume 10%)</i>		\$1,858,500
	<b>Total Project Cost</b>	<b>\$26,383,300</b>



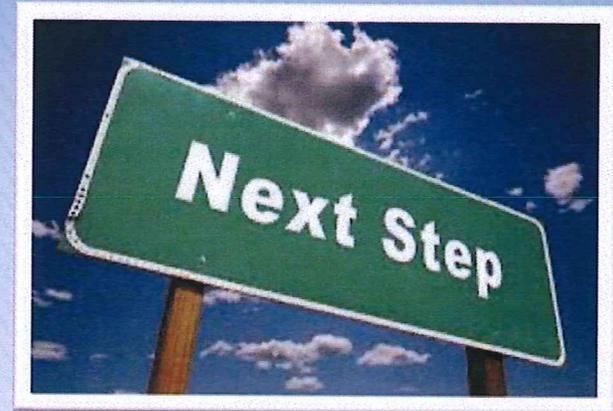
# Project Schedule

Milestone	Target Date
Schematic Design Report (SDR) Review	February 2014
Review by Town/OPM	February 2014
Send to DEP	March 2014
<b>Design Development Phase</b>	
50% Submittal to Town/OPM	March 2014 – May 2014
50% DEP Review	May 2014
<b>Final Design Phase</b>	
75% Submittal to Town/OPM	June 2014 – July 2014
75% DEP Review	July 2014
95% Submittal to Town/OPM	September 2014
Final Design Review to DEP	October 2014
Finalize Contract Documents	December 2014
Bidding	January 2015 – March 2015
<b>Construction</b>	
(Start and Substantial Completion)	May 2015 – May 2017
Final Completion	August 2017

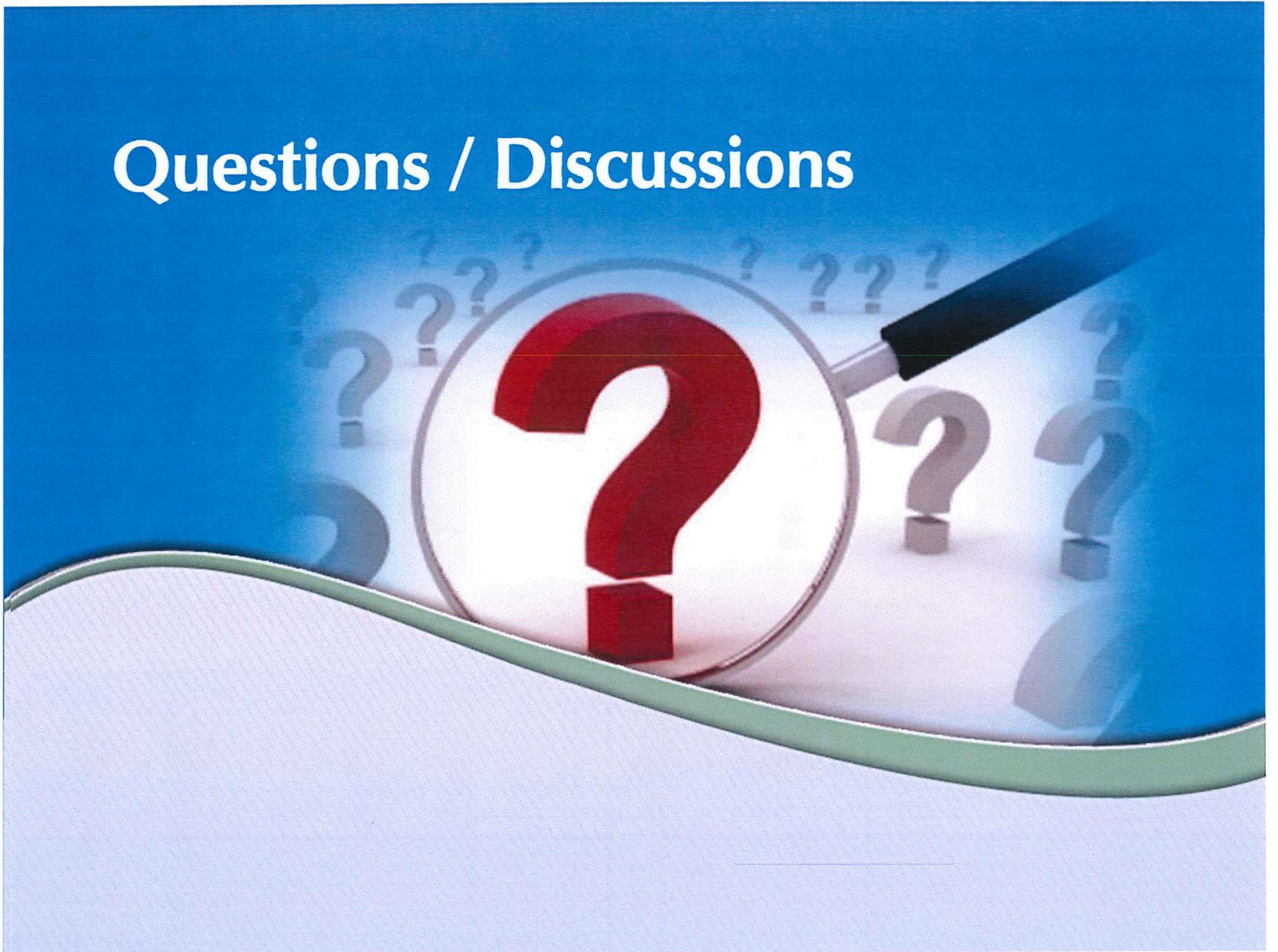


# Next Steps

- Workshop to discuss P removal system risk and cost
- Move forward with the Design Development Phase (up to 50%)
- Final Design in October tied to DEP SRF Funding deadlines



# Questions / Discussions





A hearing will be held in the Selectmen's Meeting Room at the Town Hall, 10 Nickerson Avenue, Middleborough, MA on Monday, January 27, 2014 at 8:00 PM, for the purpose of discussing an application filed by G.A.F. Engineering, Inc. on behalf of Riverrock Realty Trust, for an Earth Removal Permit for property located 288 Thompson Street, Middleborough, Assessors Map 033, Lots 2968, 2065, 2146 & 1366. The reason for this request is for the construction of a cranberry bog and a water supply/tailwater pond. Anyone desiring to be heard on this matter should appear at the time and place designated.

Stephen J. McKinnon  
Allin Frawley  
Ben Quelle  
Leilani Dalpe  
John M. Knowlton  
BOARD OF SELECTMEN

Publish: January 16, 2014

Payment forthcoming - Advertiser #300074



The Board of Selectmen will hold a public hearing in the Selectmen's Meeting Room at the Town Hall, 10 Nickerson Avenue, Middleborough, MA on Monday, January 27, 2014 at 7:40 PM, for the purpose of discussing an application filed by Marcus, Errico, Emmer & Brooks, P.C. on behalf of Cumberland Farms, Inc., for a Special Permit under the Water Resource Protection District By-law to allow for the construction of a convenience store and gasoline station at 90 East Grove Street, Assessors Map 65, Lot 299, 92 East Grove Street, Assessors Map 65, Lot 1112, and 147 Wood Street, Assessors Map 65, Lot 372 Zoning District – General Use, WRPD District Z4. Anyone wishing to be heard on this matter should appear at the time and place designated.

Stephen J. McKinnon  
Allin Frawley  
Ben Quelle  
Leilani Dalpe  
John M. Knowlton  
BOARD OF SELECTMEN

Publish: January 16<sup>th</sup> & January 23<sup>rd</sup>, 2014

Payment forthcoming – Advertiser #300074