



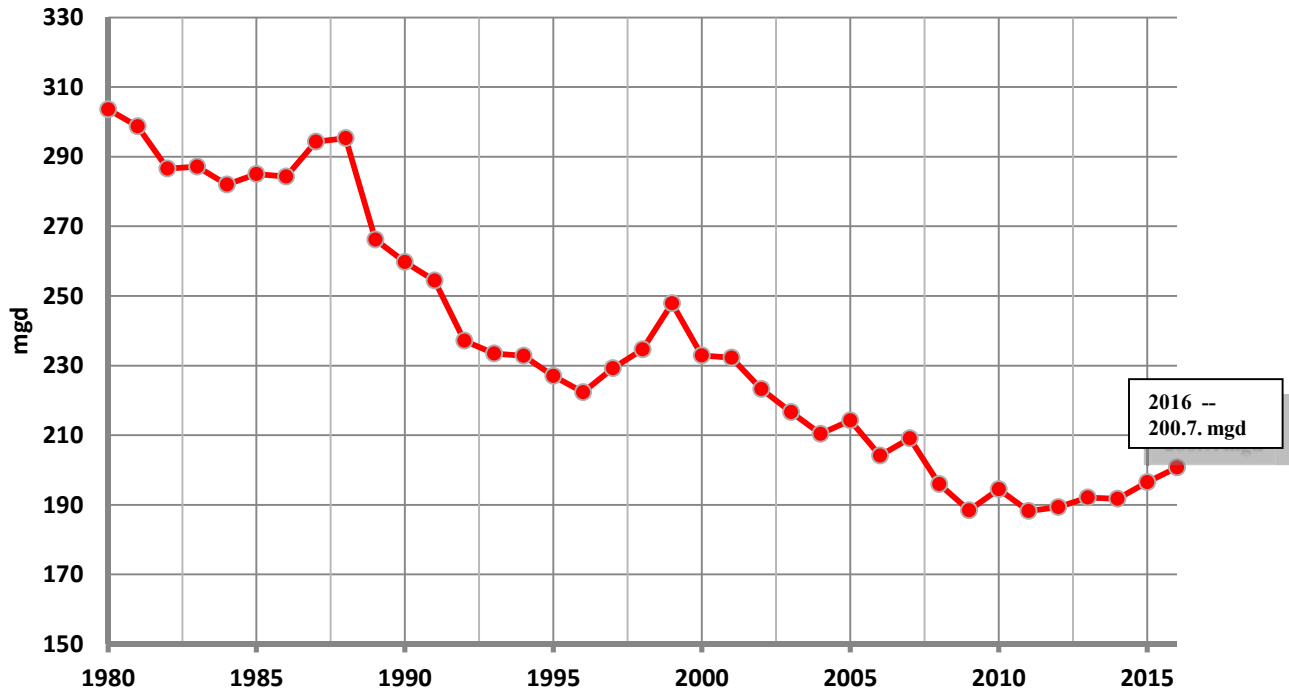


# **Report on 2016 Water Use Trends and Drought Status**

**January 18, 2017**

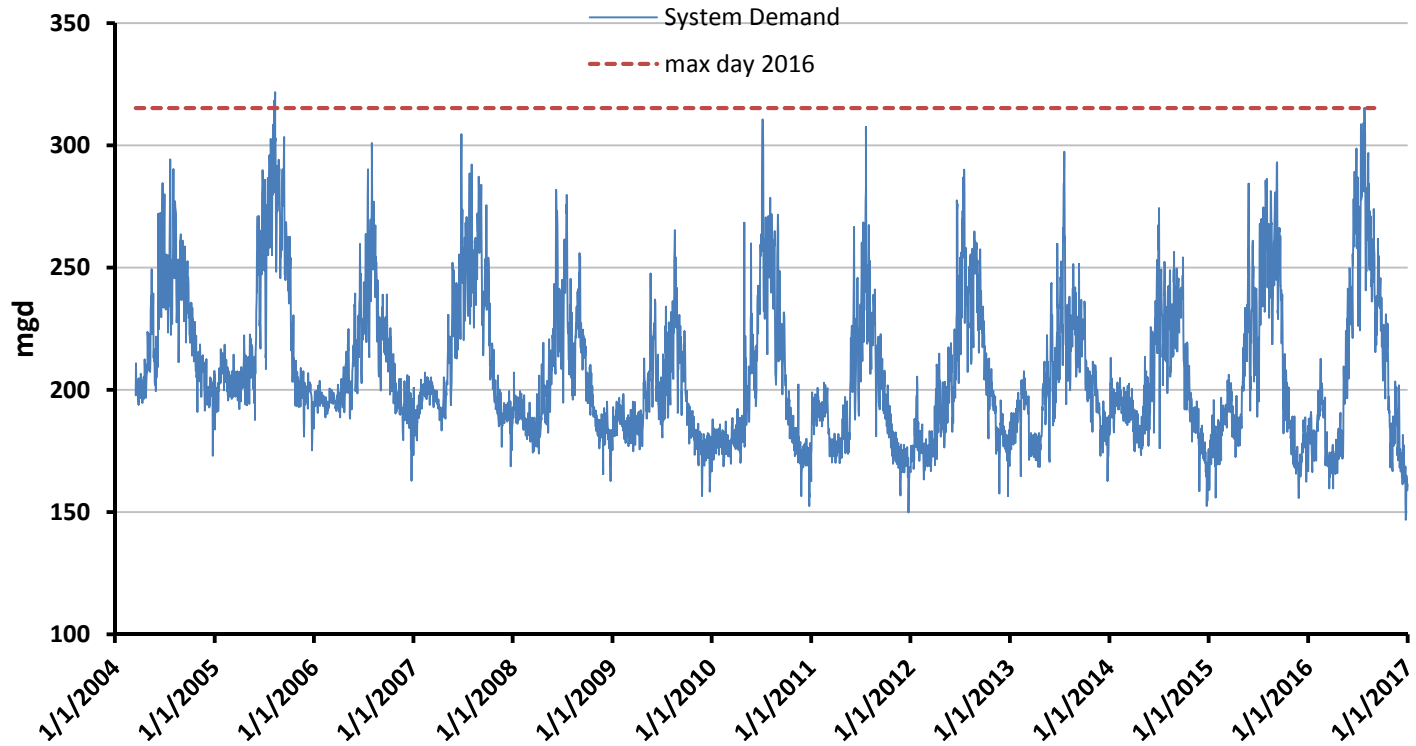


# Total Consumption by MWRA Communities (1980 to 2016)



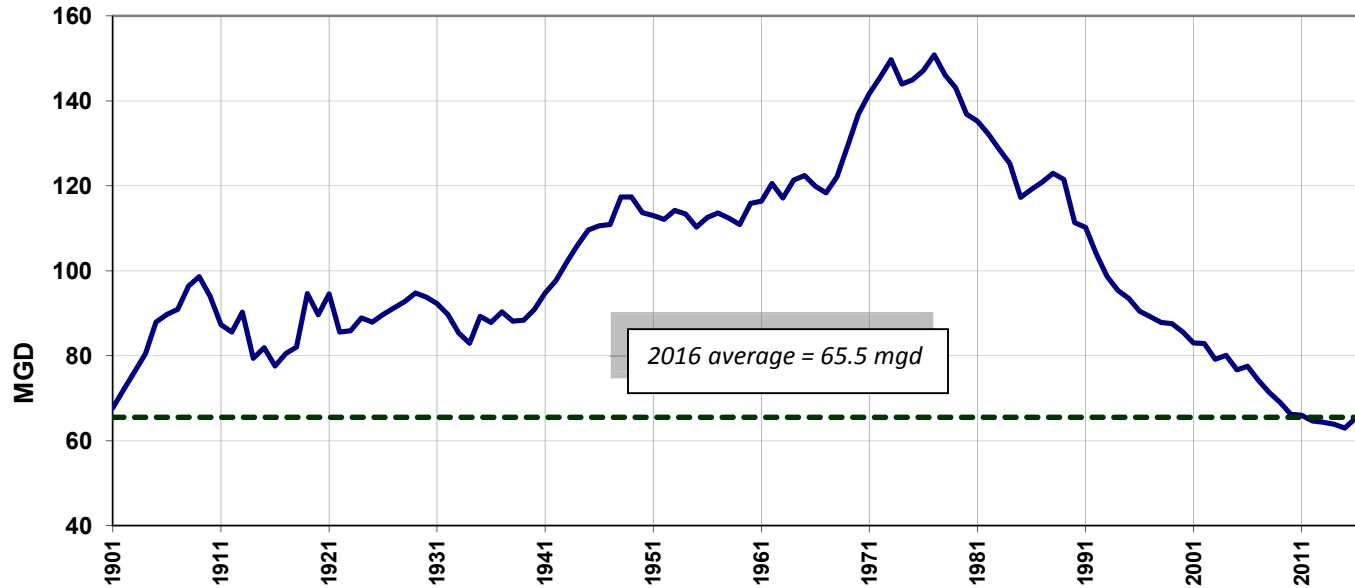


# Daily System Demand



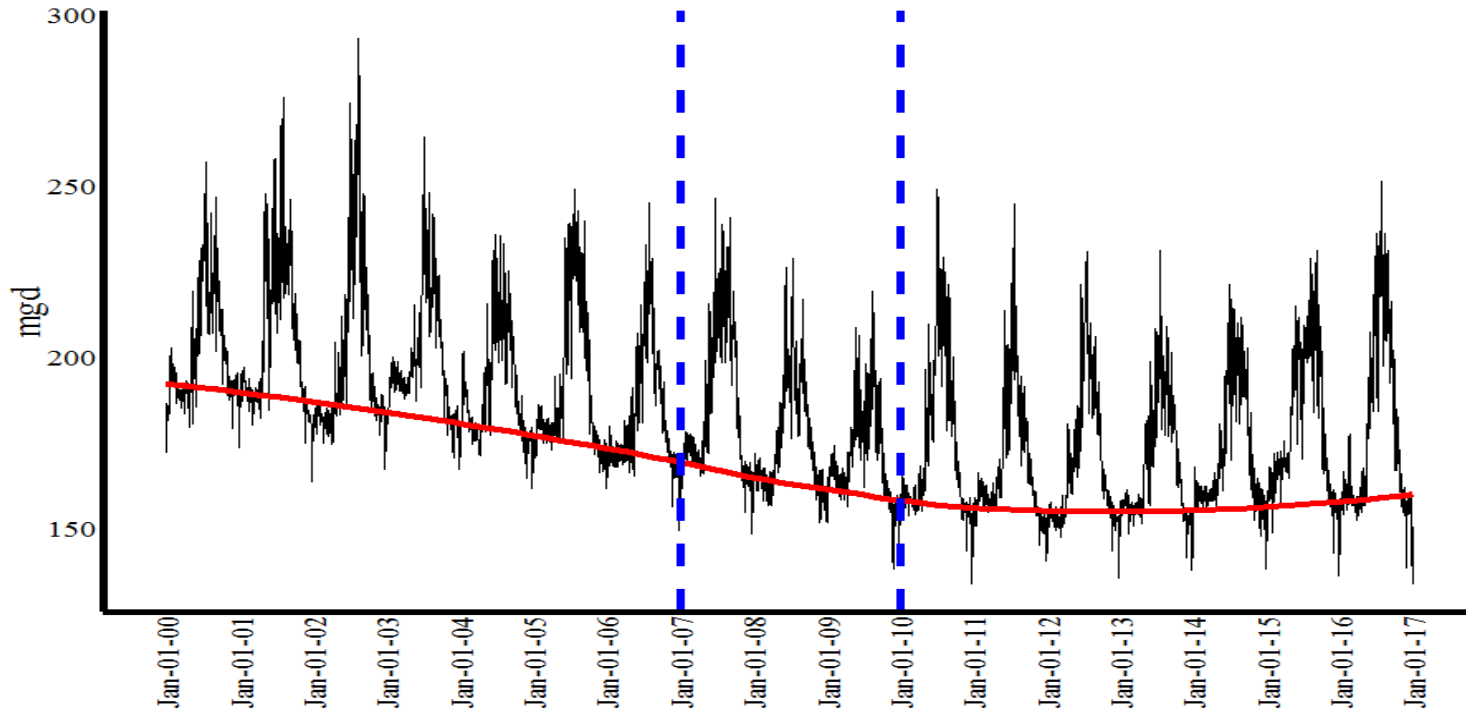


# Boston Water Use (1900 to 2016)



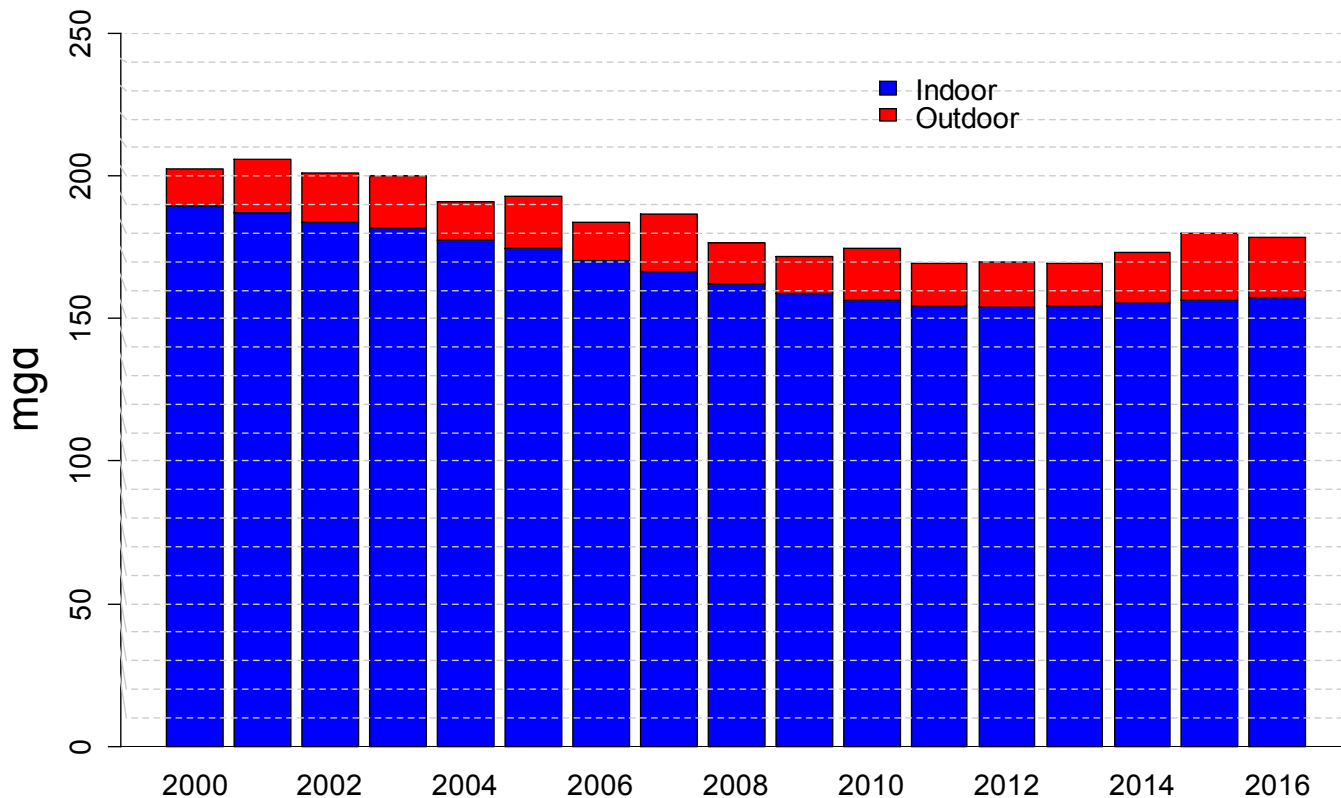


# Fully Supplied Communities Demand (2000 to 2016)



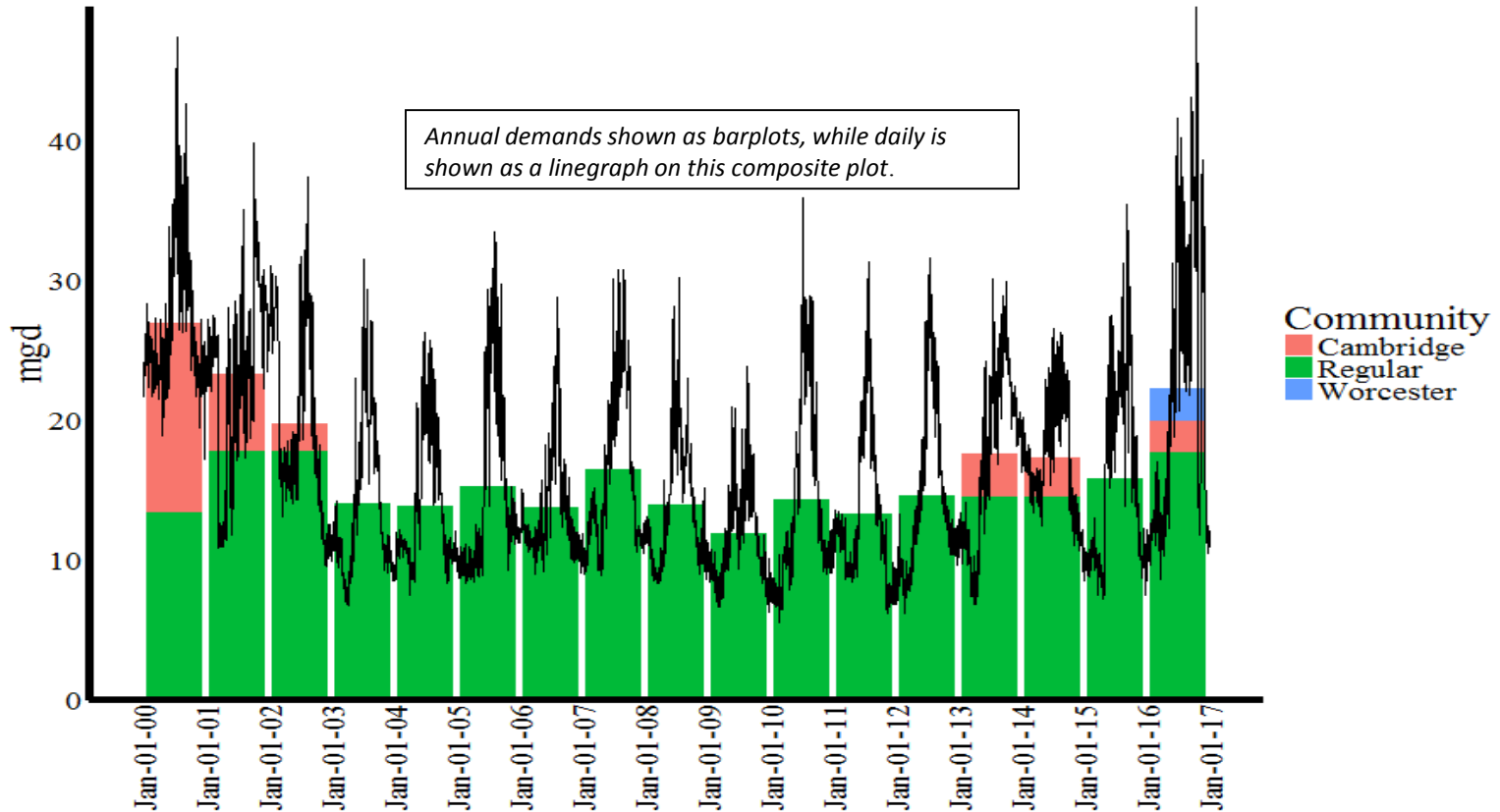


# Fully Supplied Communities (Annual Base and Outdoor Use)





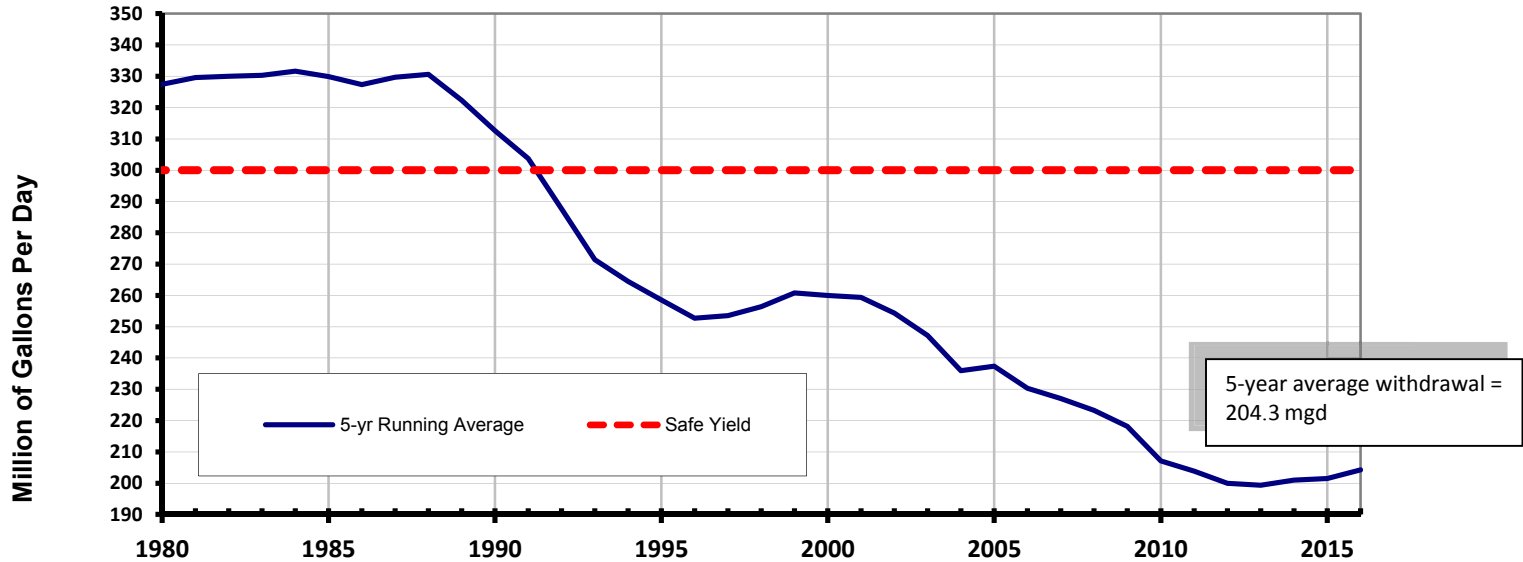
# Partially Supplied Communities





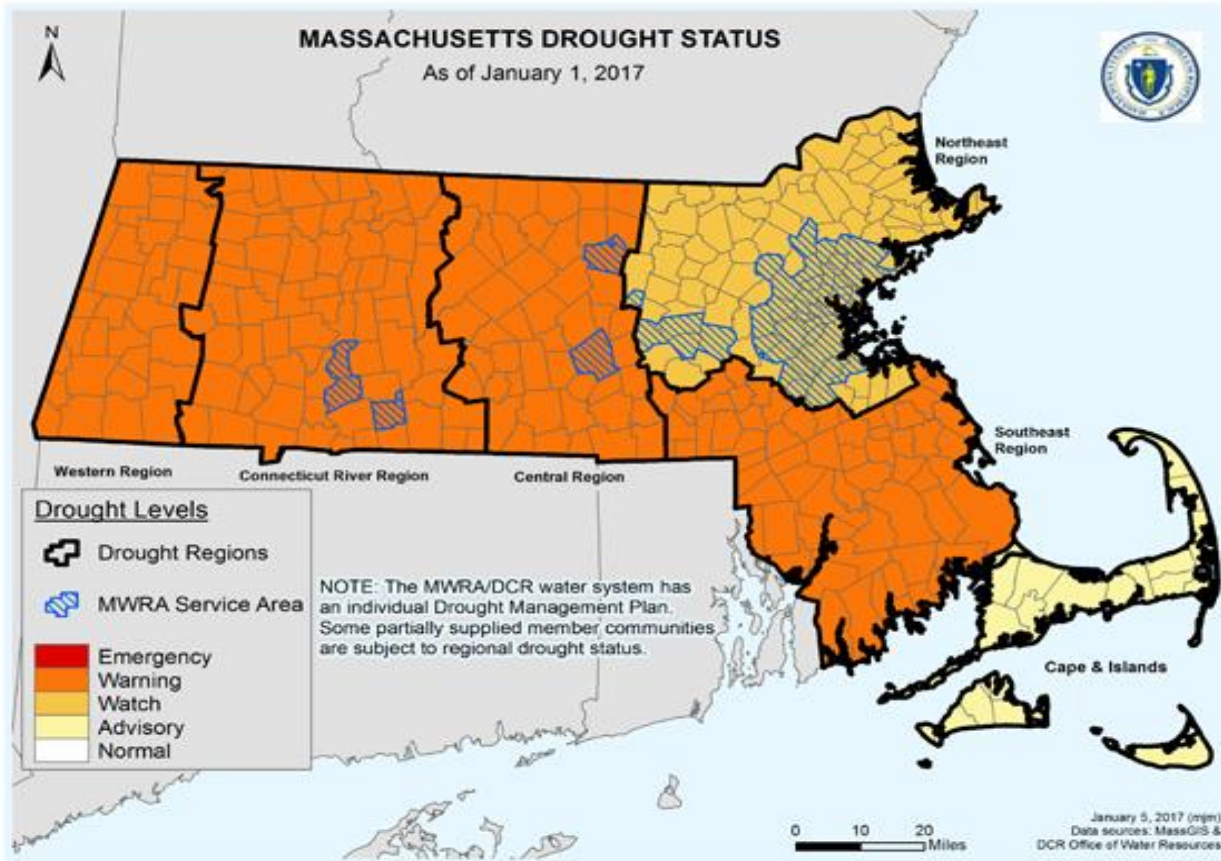


# Reservoir Withdrawals – 5 Year Running Average



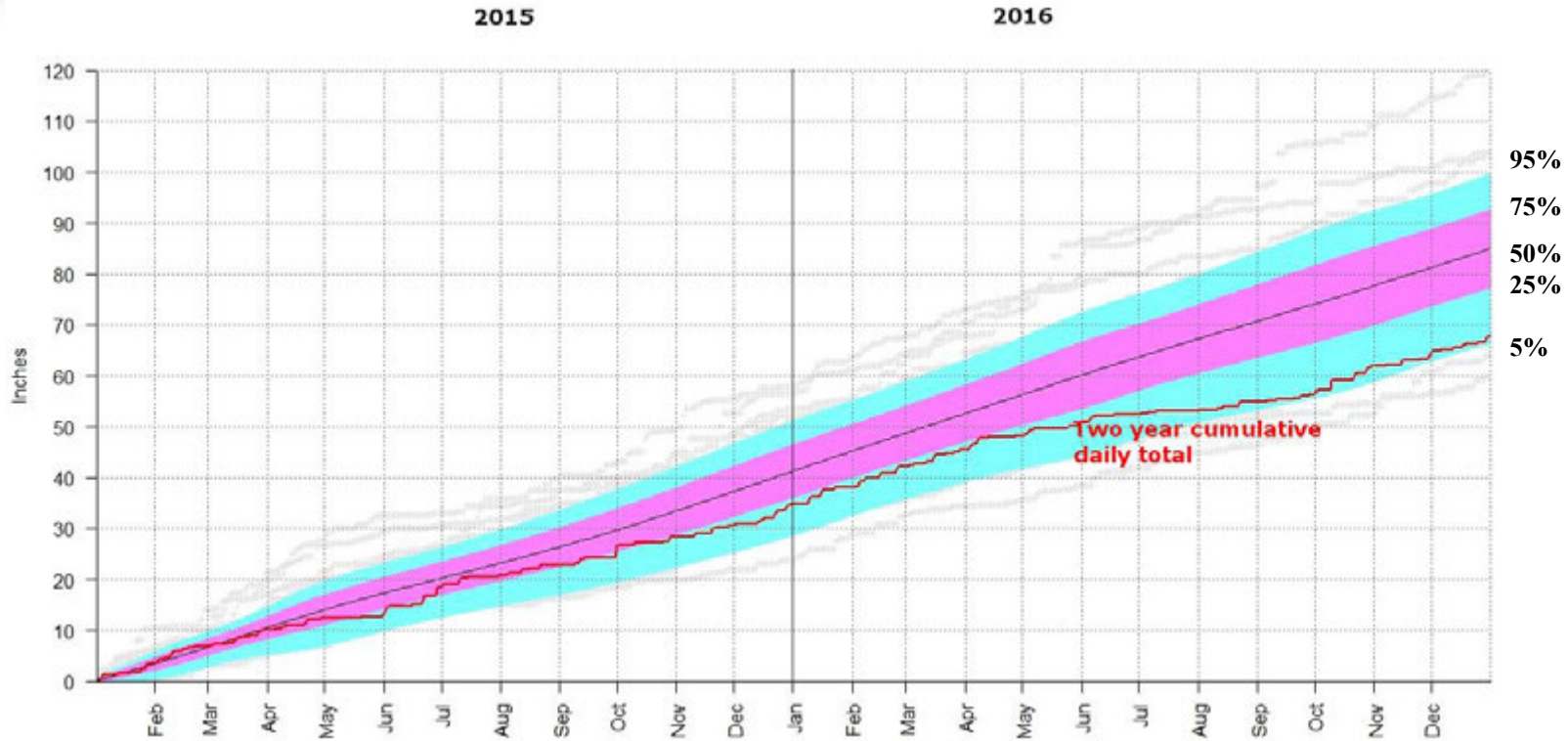


# Massachusetts Drought Status Designations





# It Has Continued To Be Dry In the Service Area





# Driest Summer on Record

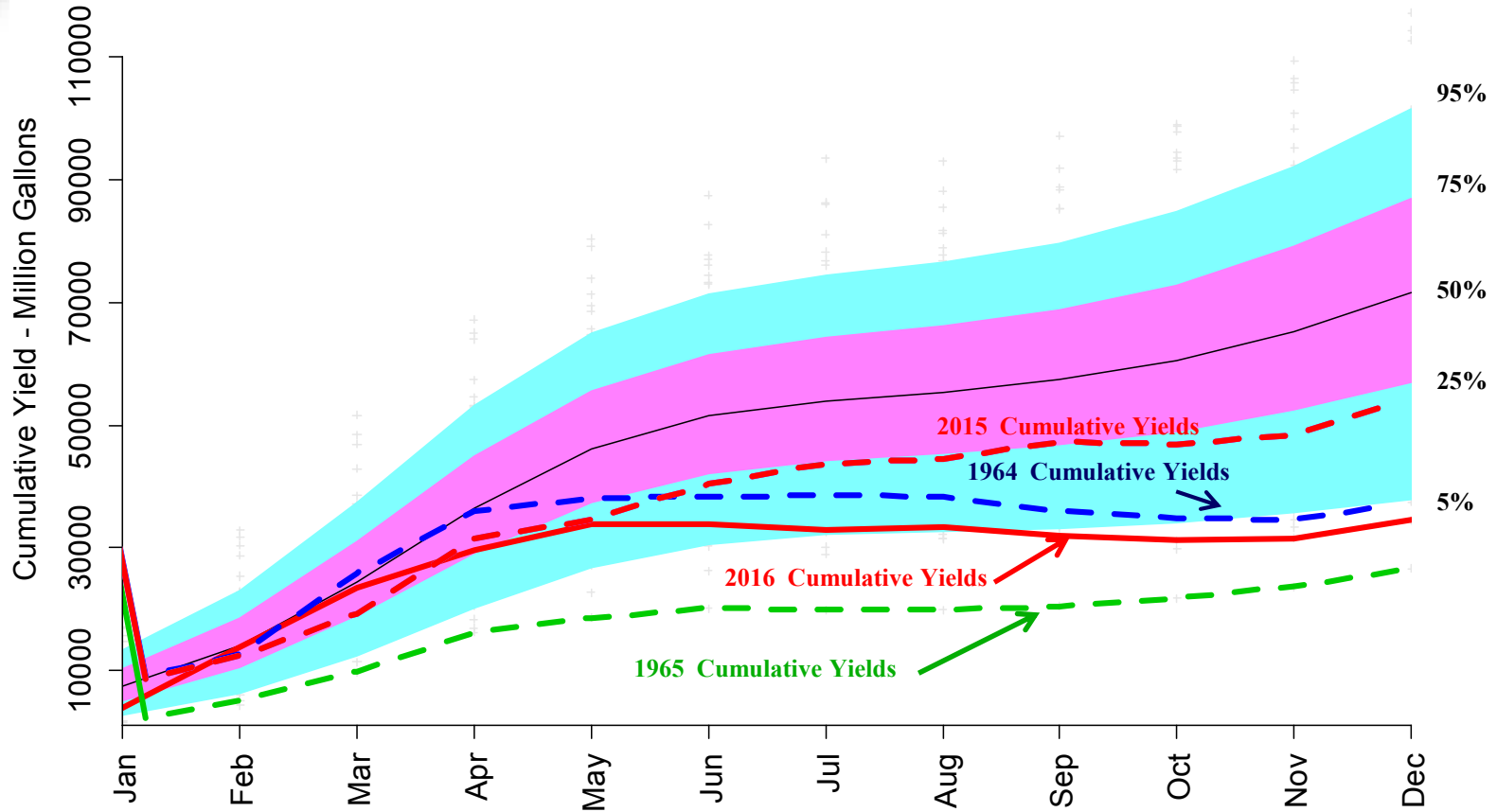
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
Long-term Average	3.64	3.36	4.01	3.57	3.37	3.46	3.04	3.40	3.29	3.44	4.01	4.09	42.7
2016 Total	3.27	4.18	3.17	2.91	2.83	1.33	0.87	1.72	1.38	5.46	2.7	3.25	33.07

**Driest summer ever recorded. Total only 3.92 inches**

Inches of Precipitation at Logan Airport

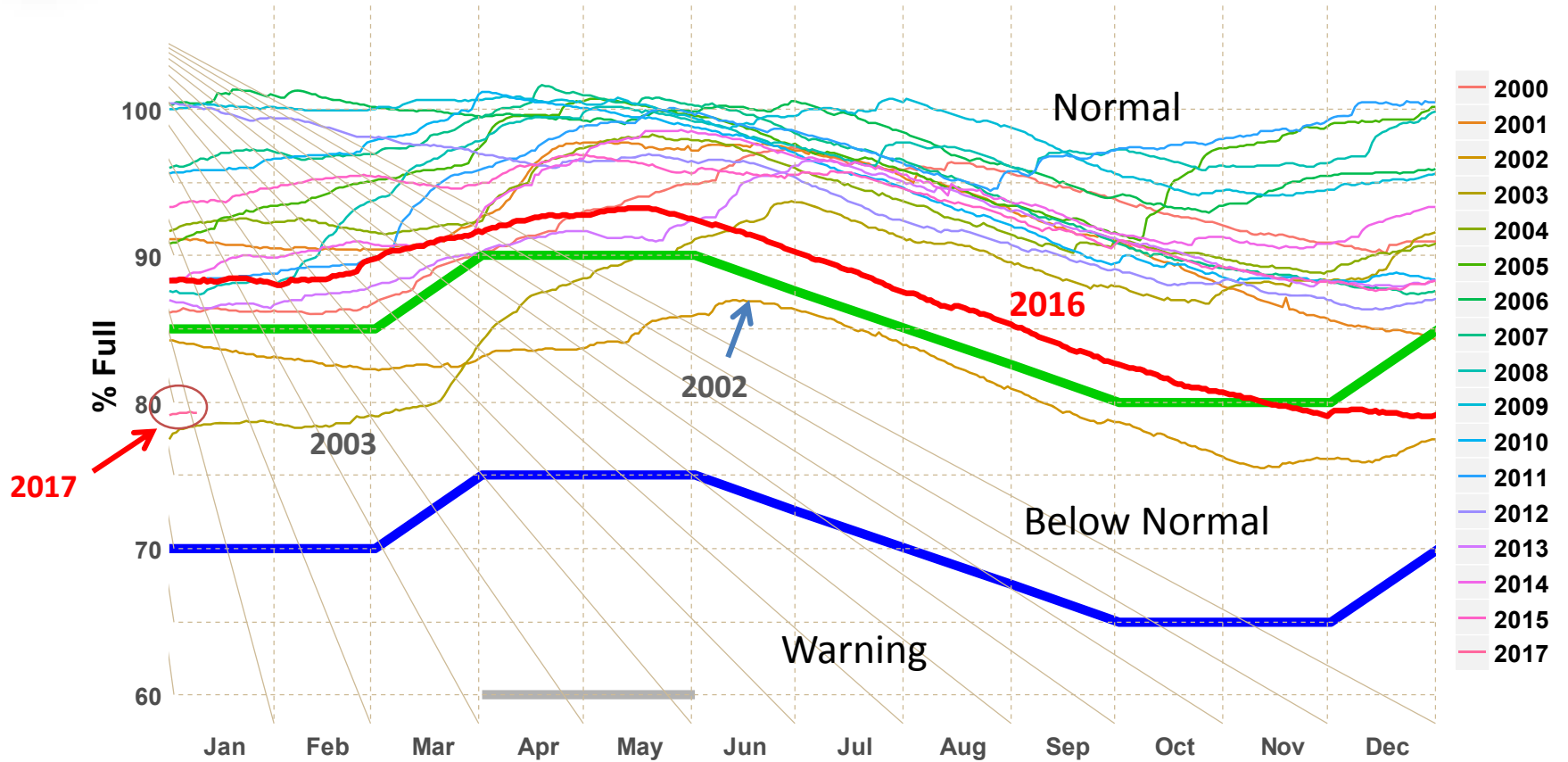


# Quabbin Watershed - Cumulative Yields





# Quabbin Reservoir Volume





# Quabbin Reservoir Projections – Starting January 1, 2017

	<b>1-Month</b>	<b>3-Months</b>	<b>6-Months</b>	<b>12-Months</b>
<b>Median Yield</b>	Below Normal	Below Normal	Normal	Normal
<b>Dry (75th Percentile)</b>	Below Normal	Below Normal	Below Normal	Normal
<b>Driest (of Record)</b>	Below Normal	Below Normal	Below Normal	Below Normal



## Communities That Received Emergency Drought Assistance in 2016

Community	Amount Supplied (Million Gallons)
Worcester	847.3
Cambridge	515.2
Burlington	7.9
Ashland	3.2





## Summary

- **Quabbin Reservoir remains in Below Normal status**
- **There is sufficient water to meet MWRA member community demand**
- **Plus help adjacent communities that are stressed by the drought**





**Settlement Agreement for Various Design  
Contracts and Hatchery Pipeline and  
Hydroelectric Project Amendment No. 2  
Contract 7017A**

January 18, 2017



# Settlement Agreement

## Design Errors and Emissions Stantec (Formerly Fay, Spofford, and Thorndike)

<b>Contract</b>	<b>Project</b>	<b>Construction Cost</b>
6584	Lynnfield/Saugus Pipeline	\$4.92 M
7259	North Dorchester Bay Vent building	\$5.16M
7085A	CWTP Secondary Gaseous Oxygen	\$ 1.23M

## Settlement Agreement

- \$70,000 Credit to MWRA for Design Errors and Omissions
- Applied to Contract Hatchery Pipeline and Hydroelectric Project



## Amendment No. 2 - \$146,000

- Design Improvements \$ 83,737
  - Meter, Valve and Hydrant at Hatchery Mixing Basin
  - Value Engineering/Cost Reduction
  - Permit Fee Reimbursement
- Engineering Services During Construction and  
and Three Month Time Extension \$62,263





## Amendment No. 2

- **Time Extension – 3 months to September 1, 2017**

- Current Stantec End Date: May 31, 2018
- Current Construction Substantial Completion: Sept. 1, 2017
- Current Warranty End Date: Sept. 1, 2018

- **Negotiated Settlement- 5B and Amendment Request**

- Additional Services Provided \$146,000
- Subtract 5B Settlement **\$ 70,000**  
(N Dot Vent Blg., Saugus Pipeline, Gaseous O2)
- Reallocation – Unexpended Funds **\$ 76,000**
- **Balance** \$ 0



# Project Status

- Pipeline on line - December 2016
- Substantial Completion – September 2017



**Hydropower Building**



**Stainless Steel Pipe Below Rt. 9 Bridge.**





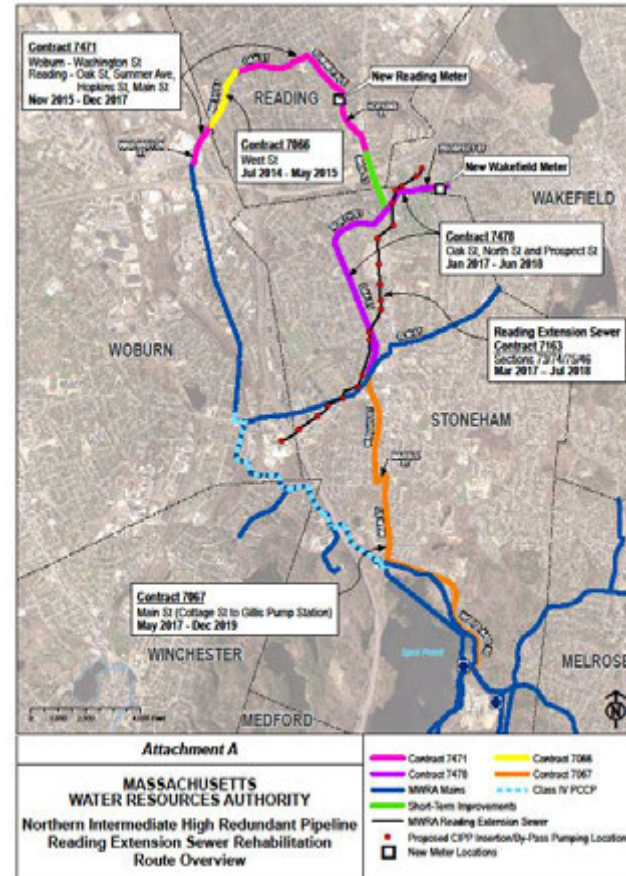
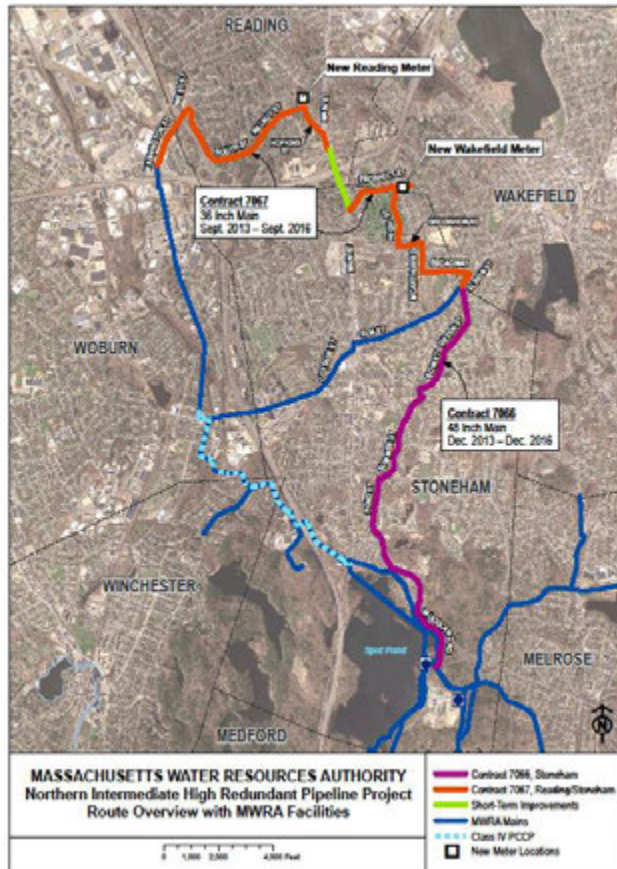


**NIH Redundancy Pipeline  
Design, ESDC/REI  
Contract 6906**

January 18, 2017

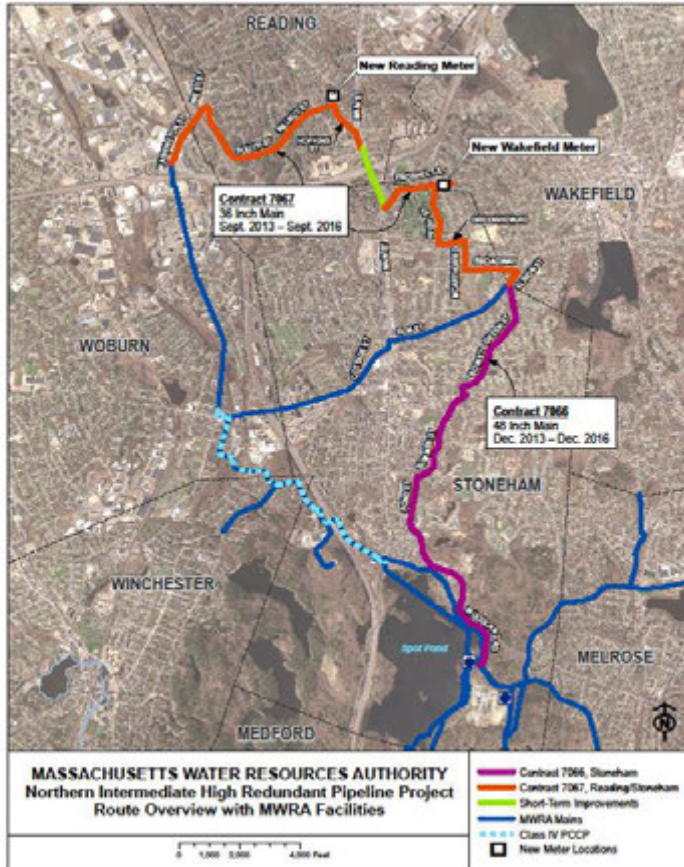


# NIH Redundancy Pipeline Contract 6906





# NIH Redundancy Pipeline Contract 6906 - Original Project Route



## Contract 7066:

- 19,600 linear feet of 48-inch pipeline
- Original Anticipated NTP December 2013.
- Substantial Completion December 2016



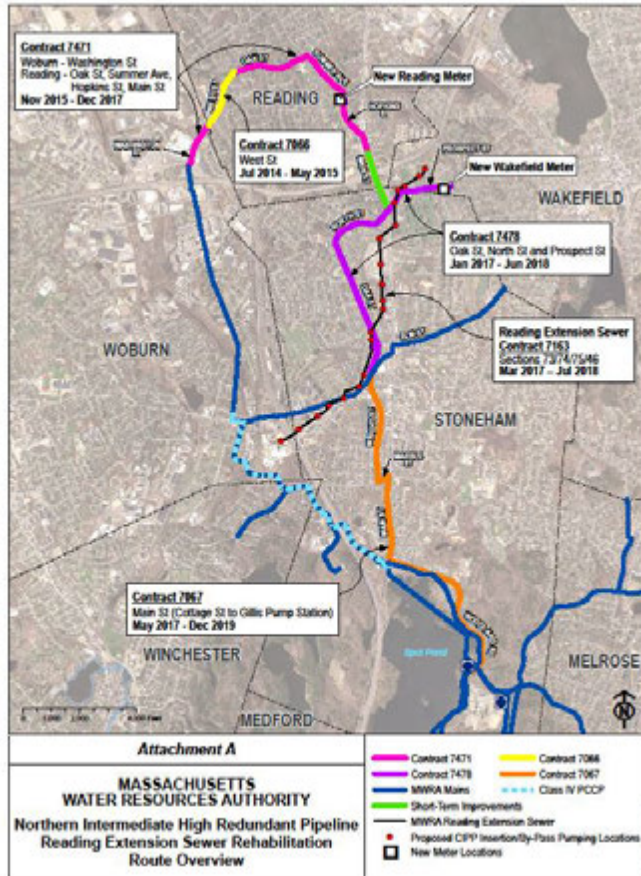
## Contract 7067:

- 16,500 linear feet of 36-inch pipeline
- Original Anticipated NTP September 2013
- Substantial Completion September 2016





# NIH Redundancy Pipeline Contract 6906 - Current Project Route



- **Contract 7066:**
  - 2,400 linear feet of 36-inch pipeline
  - Completed May 2015.
- **Contract 7471:**
  - 8,800 linear feet of 36-inch pipeline
  - NTP January 2016
  - Substantial Completion December 2017
- **Contract 7478:**
  - 7,800 linear feet of 48-inch pipeline
  - 2,600 linear feet of 16 and 12-inch pipeline
  - NTP January 2017
  - Substantial Completion June 2018
- **Contract 7067:**
  - 14,000 linear feet of 48-inch pipeline
  - Anticipated NTP May 2017
  - Substantial Completion December 2019



# NIH Redundancy Pipeline

## Contract 6906 – Amendment 2 Summary

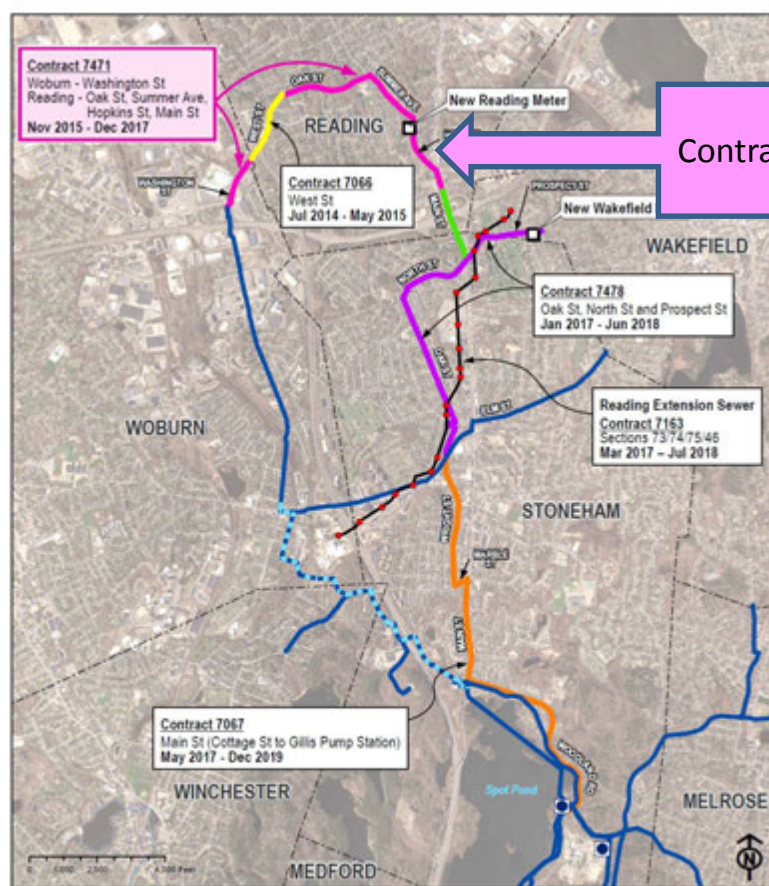
• Time Extension (September 2017 - December 2020)	39 Months
• Task 1 Project Administration	\$103,409
• Task 3 Engineering Services During Construction	\$306,722
• Task 4 Resident Engineering Services	\$490,723
• Amendment 2 Total	\$ 900,854





**Northern Intermediate High, Section 110**  
**Contract No 7471 – Change Order 7**

January 18, 2017



**Contract 7471**  
Woburn - Washington St  
Reading - Oak St, Summer Ave,  
Hopkins St, Main St  
Nov 2015 - Dec 2017

**Contract 7096**  
West St  
Jul 2014 - May 2015

**Contract 7478**  
Oak St, North St and Prospect St  
Jan 2017 - Jun 2018

**Reading Extension Sewer**  
**Contract 7153**  
Sections 73,74,75,46  
Mar 2017 - Jul 2018

**Contract 7067**  
Main St (Cottage St to Gillis Pump Station)  
May 2017 - Dec 2019

Contract No 7471 NIH

**Attachment A**

**MASSACHUSETTS  
WATER RESOURCES AUTHORITY**

**Northern Intermediate High Redundant Pipeline  
Reading Extension Sewer Rehabilitation  
Route Overview**

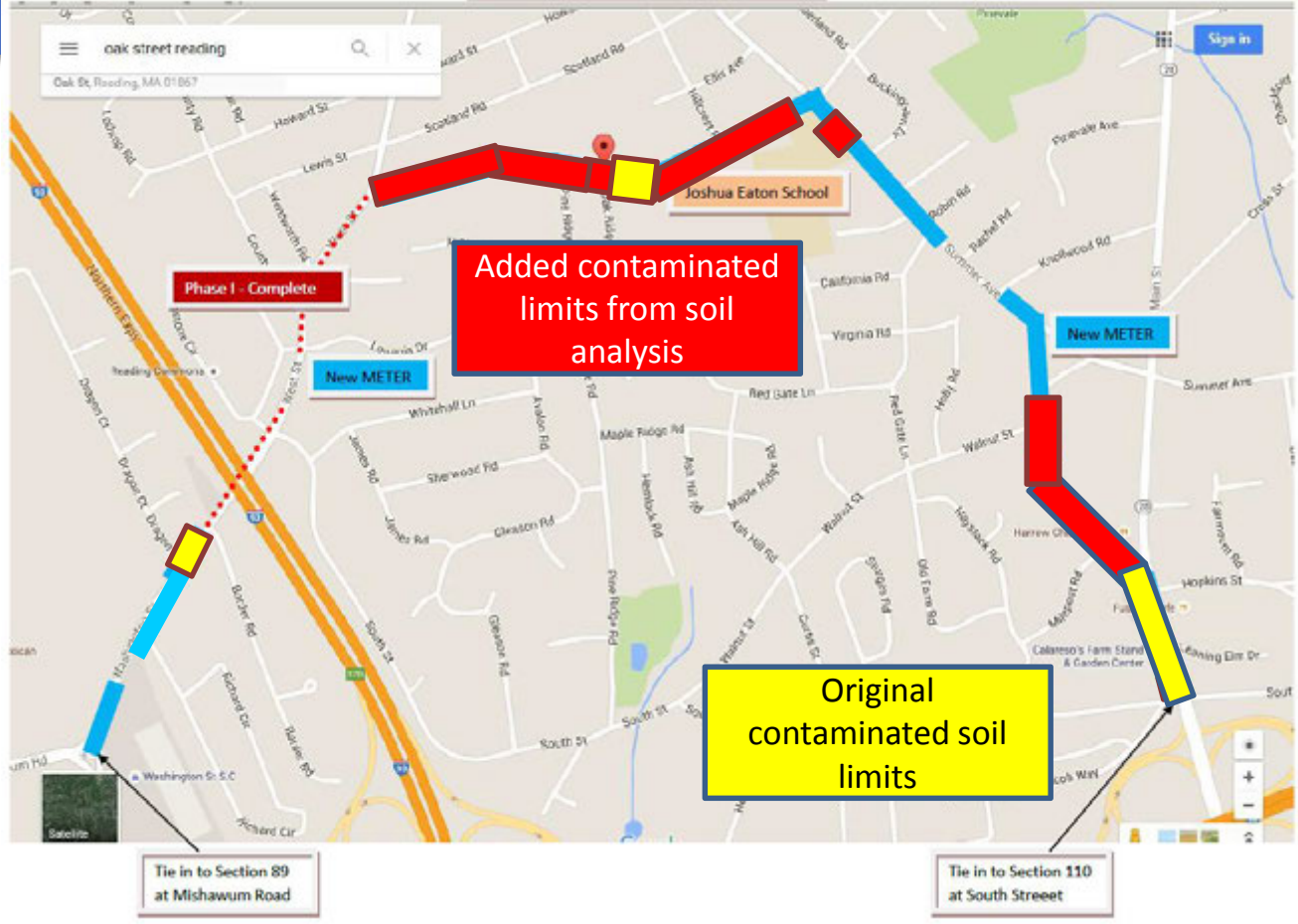
Contract 7471	Contract 7096
Contract 7478	Contract 7067
MWRAs Mains	Class IV PCOP
Short-Term Improvements	
MWRAs Reading Extension Sewer	
Proposed CIPP Insertion/By-Pass Pumping Locations	
New Meter Locations	





# Plan

NIH - SECTION 110 TRANSMISSION MAIN





# Geoprobe on Oak Street - Reading

- Pre-Characterization of Soil





# Geoprobe on Main Street - Reading

- Pre-Characterization of Soil







# Excavation and Pipe Installation



