



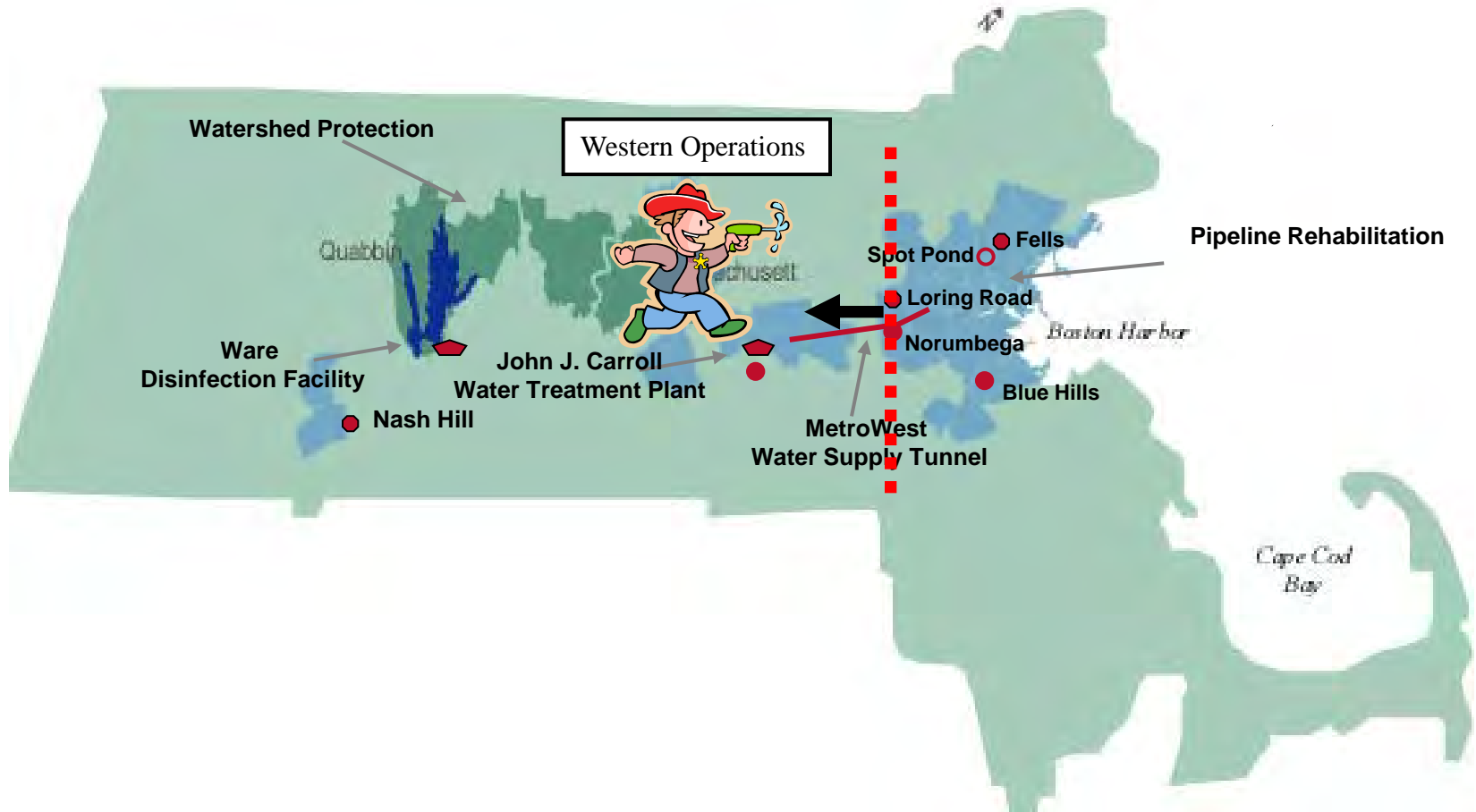
Massachusetts Water Resources Authority

MWRA Water Supply and Treatment

2012

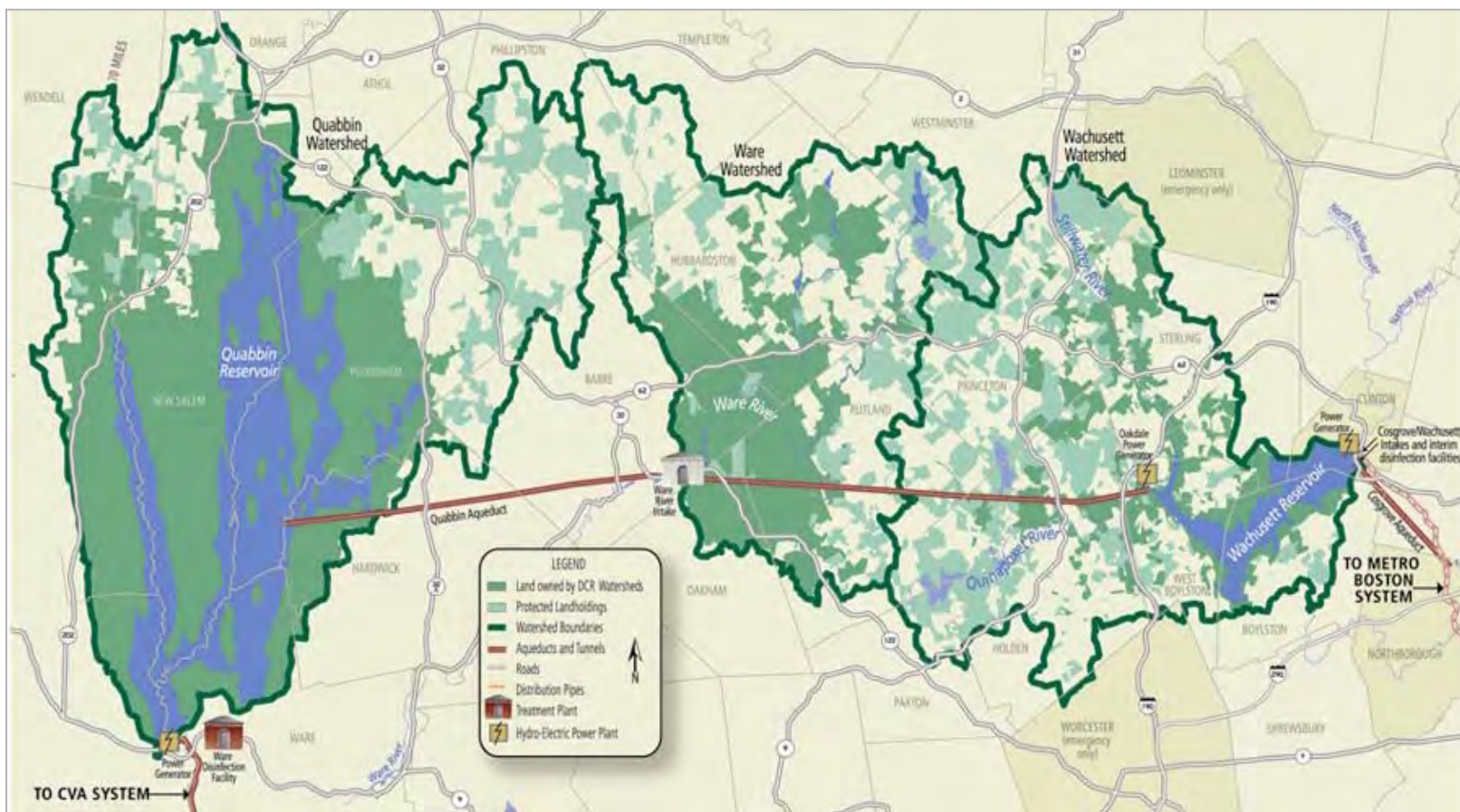


Integrated Water Supply Improvement Program





The Watersheds





Source Reservoirs

Quabbin Reservoir

Storage:	412 billion gallons
Depth:	150 feet
Length:	17.9 miles
Width:	3 miles



Wachusett Reservoir

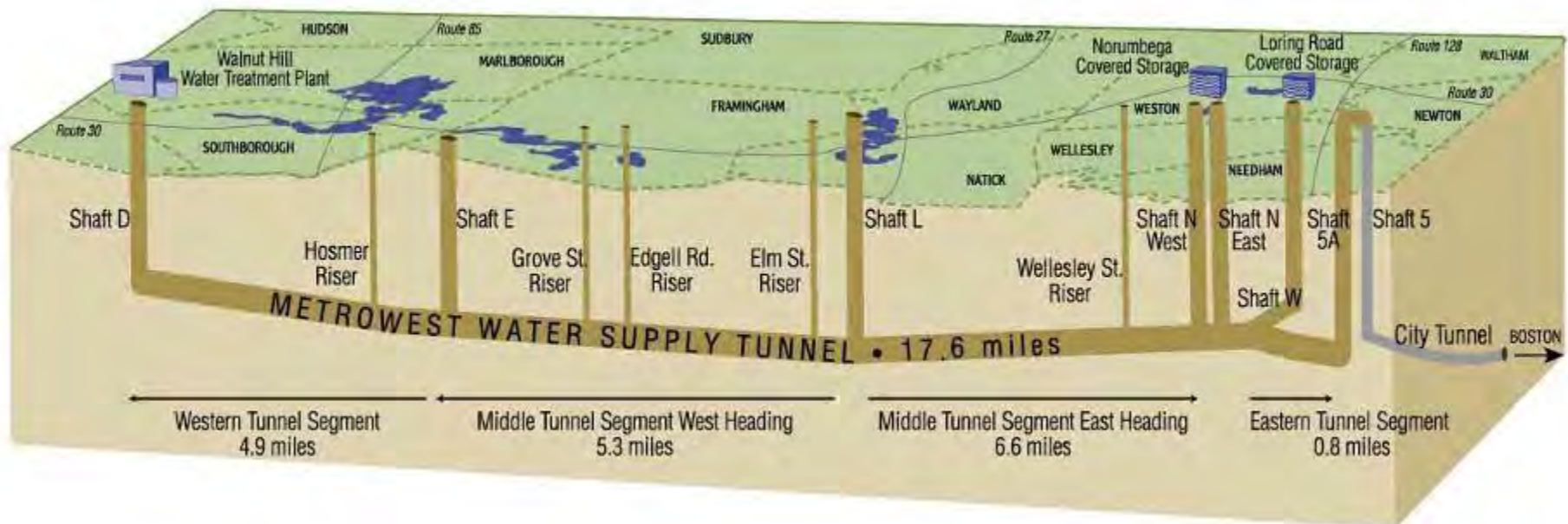
Storage:	65 billion gallons
Depth:	129 feet
Length:	8.5 miles
Width:	1 mile





Integrated Water Supply Improvement Program: The MetroWest Water Supply Tunnel

- The MetroWest Water Supply Tunnel was brought on-line in November 2003
- By March 2004, the Tunnel was fully utilized allowing the shutdown of the Hultman Aqueduct





Covered Storage Projects

- MWRA is building seven new covered storage tanks to replace all open reservoirs
- Six are completed and on-line
- A new tank at Spot Pond in Stoneham will complete this work



20 MG Fells Tank



115 MG Norumbega Covered Storage Facility



Integrated Water Supply Improvement Program: John J. Carroll Water Treatment Plant



- Placed in service in July 2005
- Treatment Processes
 - Ozonation for primary disinfection
 - Corrosion control
 - Chloramination for secondary disinfection
 - Fluoridation
- Plant capacity 405 MGD max, 270 MGD average

Ozone System

> 3 log *giardia* inactivation

2 log *cryptosporidium* inactivation*

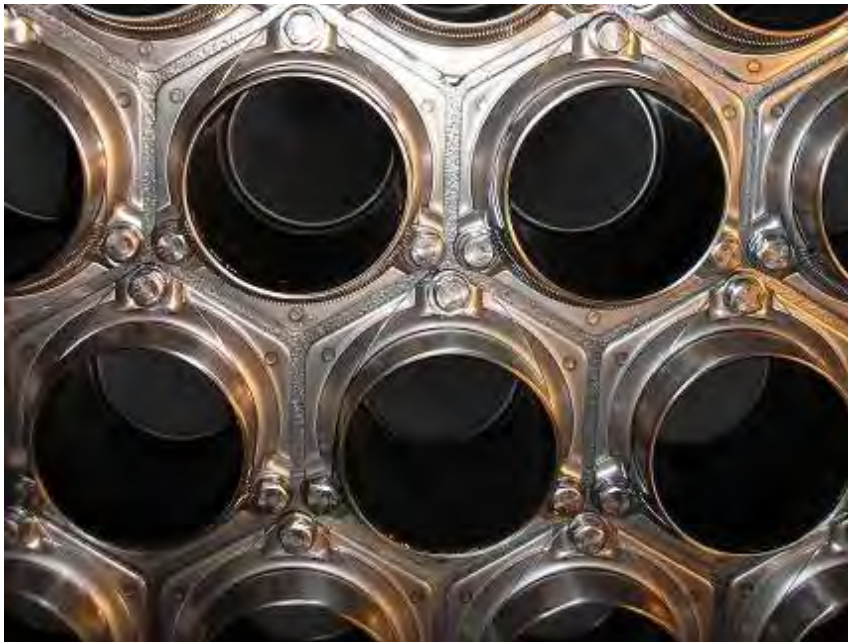
Up to 3.3 mg/l dose





Ozone Generators

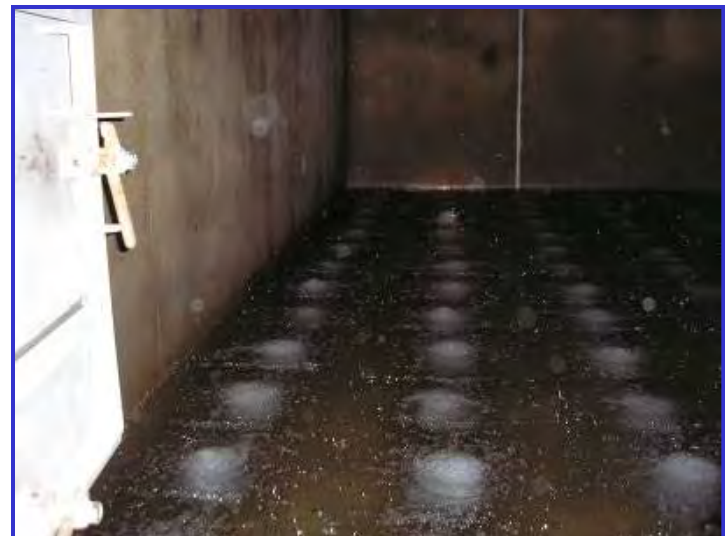
- 4 Generators total
- 3,380 pound capacity each
- 10% ozone by weight
- 529 dielectric tubes
- 13.8 kv electric supply
- 560 gpm cooling water flow





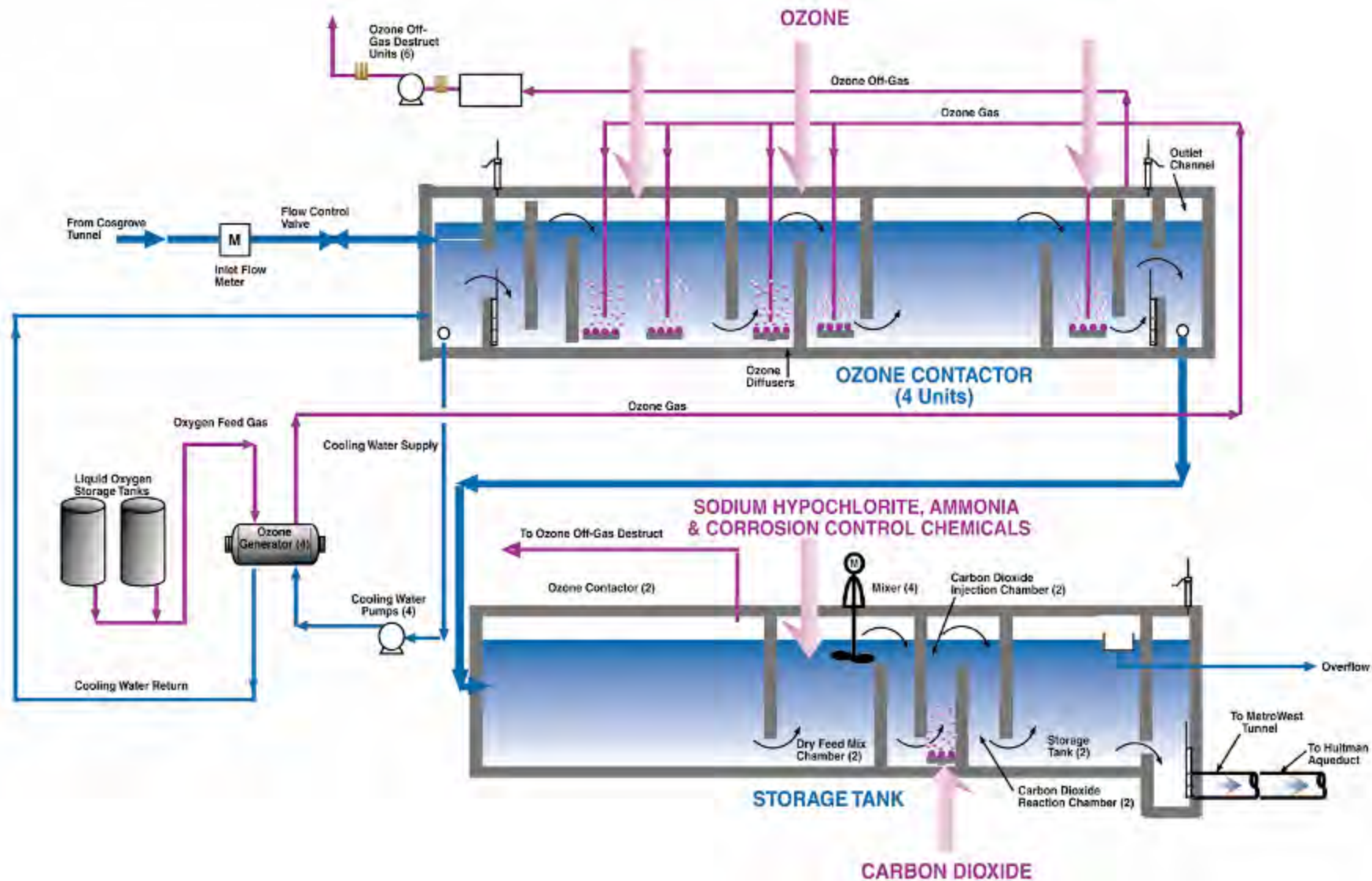
Ozone System

- Three 24,000 gallon liquid oxygen storage tanks
- Nitrogen boost system for added efficiency
- Four 1.3 million gallon primary contactors
 - with 5 bubble diffuser-stone grids, each
- Two 3.4 million gallon extended contactors
- Four dissolved ozone analyzers per contactor



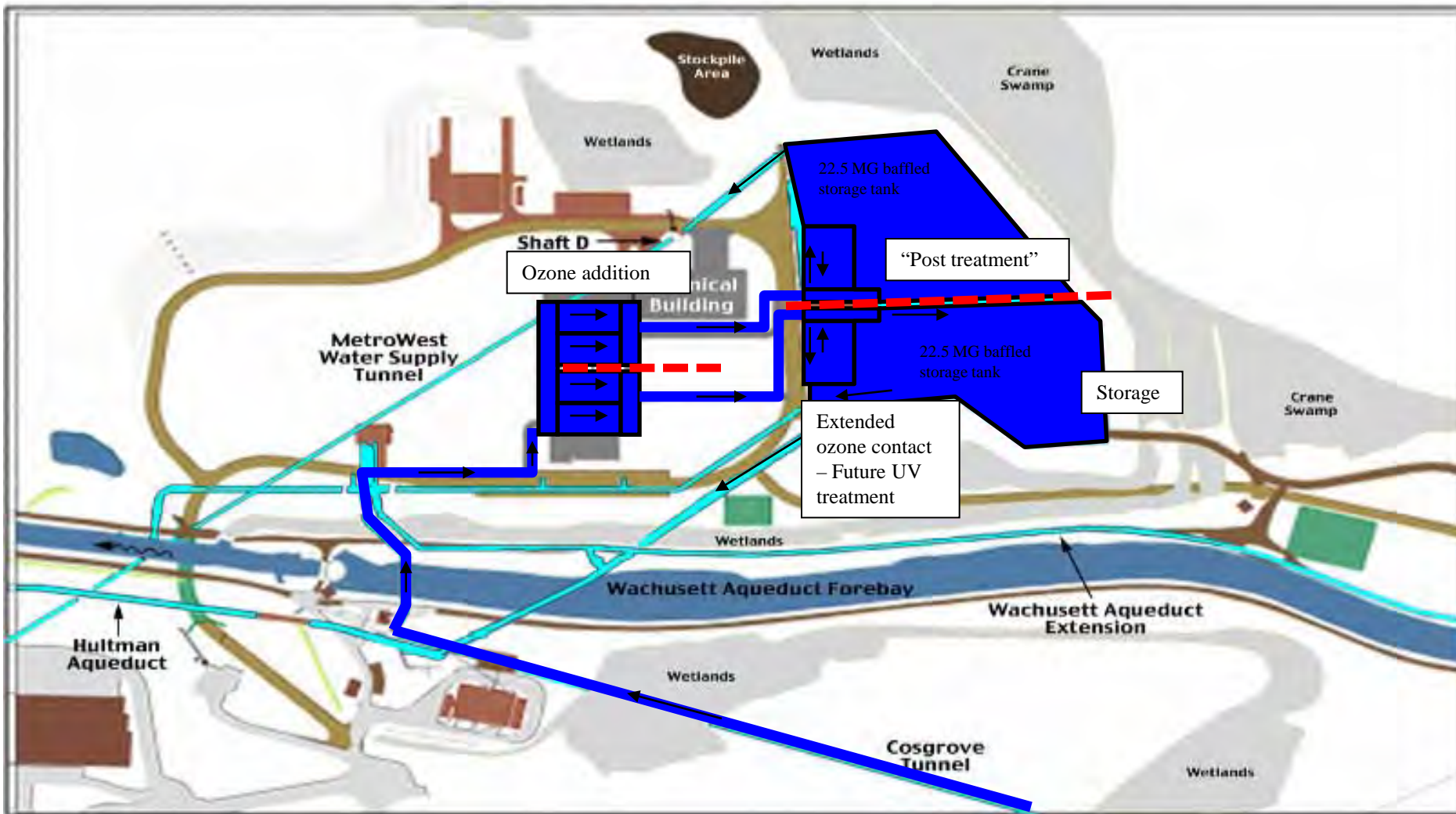


Process Flow Diagram





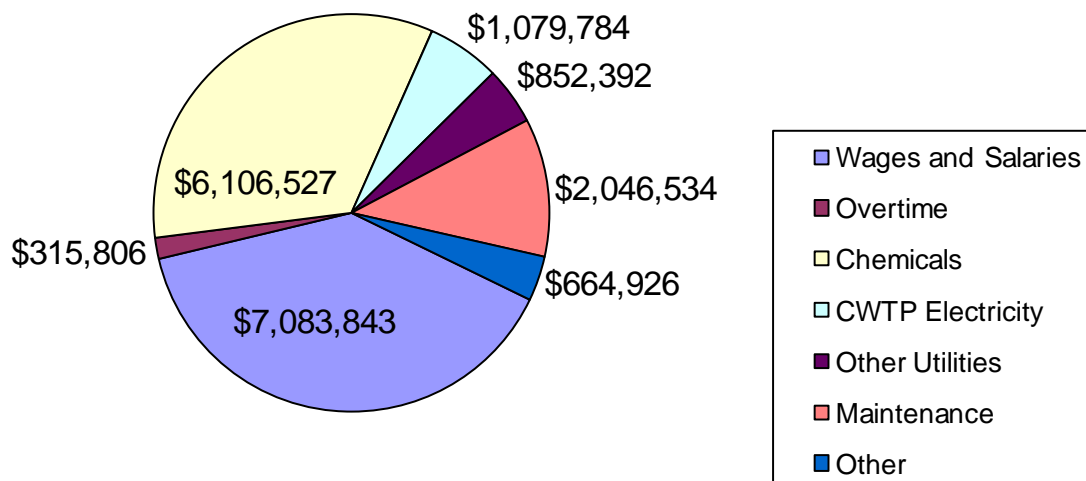
John J. Carroll Water Treatment Plant



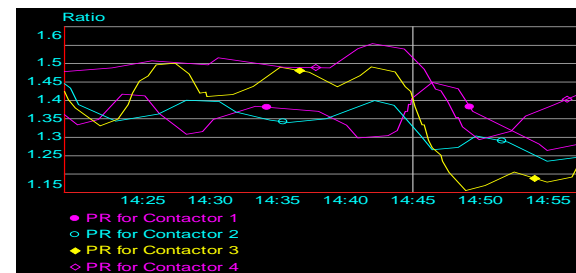


Process Optimization

Western O&M FY12 Budget \$18,149,812

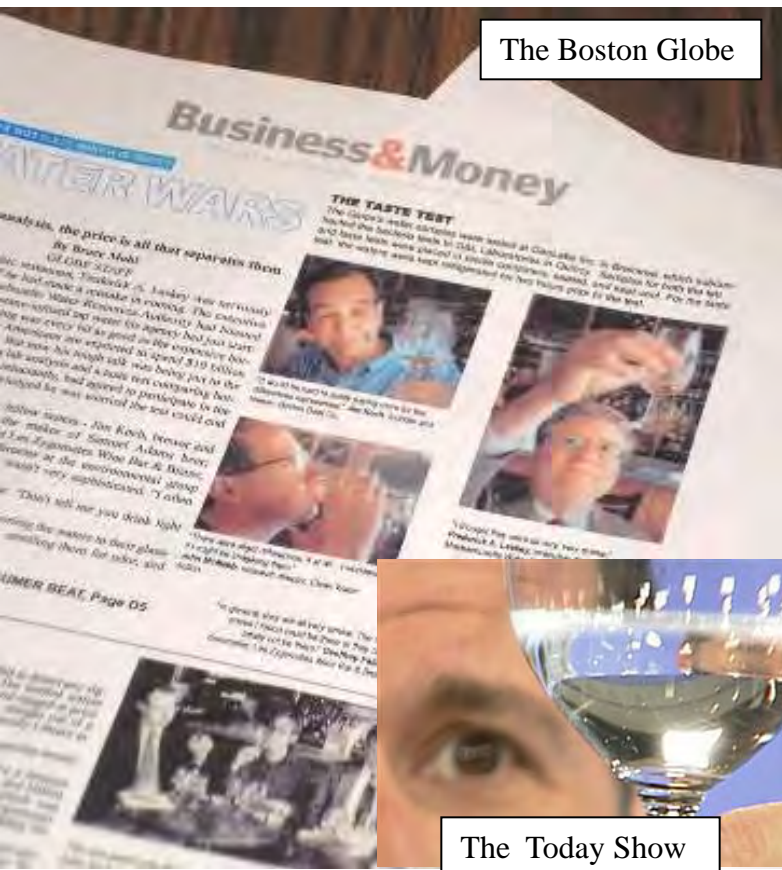


- Plant staff utilize plant monitoring and control system to optimize chemical and electrical usage





Benefits of the Carroll Water Treatment Plant



The Boston Globe

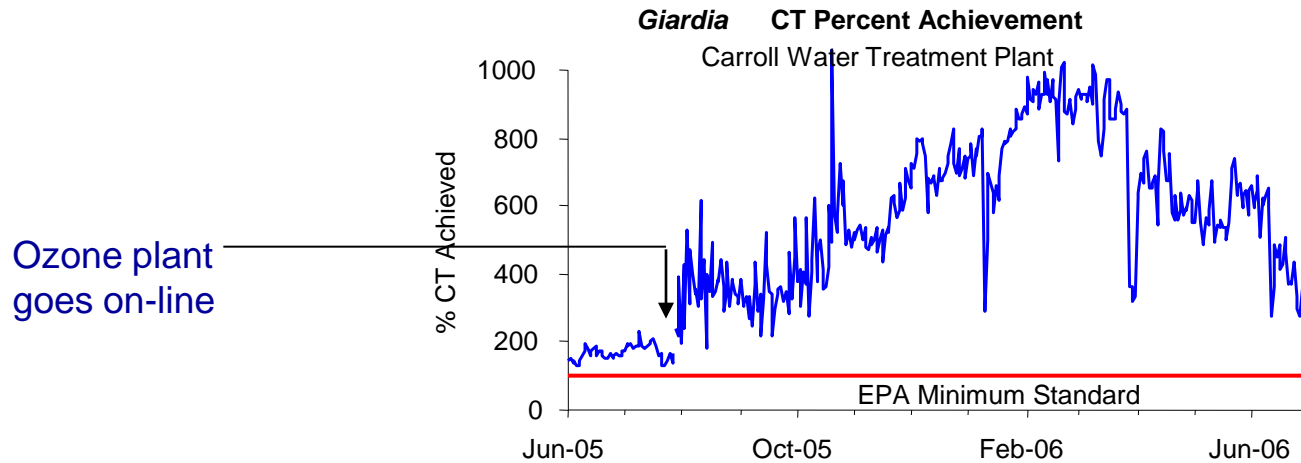
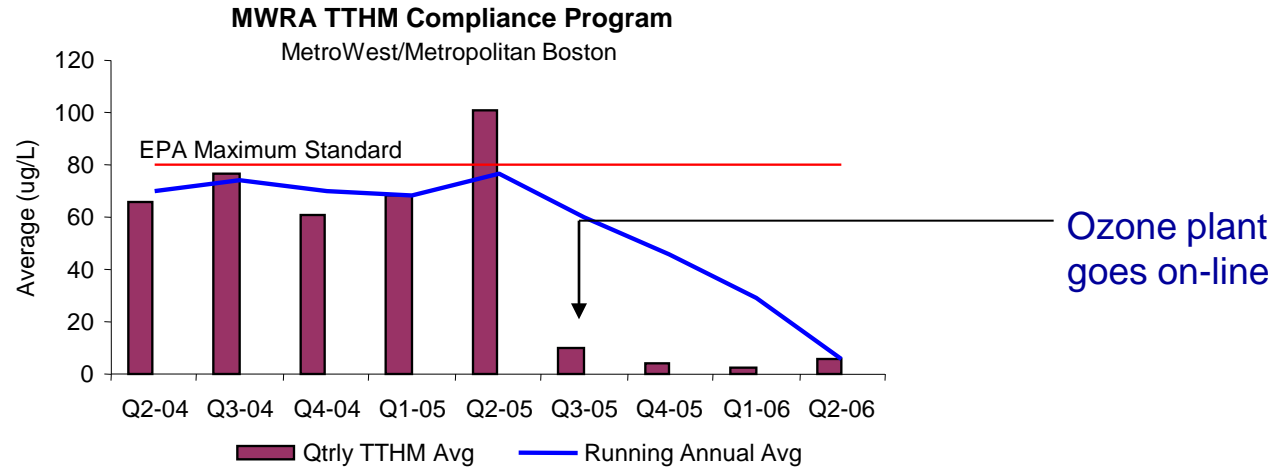
The Today Show

- Immediately noticeable taste & odor improvements
- Dramatic reduction in disinfection by-products
- Increased pathogen inactivation achievement
- Elimination of multiple satellite treatment facilities

(including 9 community re-treatment facilities)



Chlorine By-products Have Been Reduced, Disinfection Improved With Ozone Treatment





Ultraviolet Disinfection will meet new regulations

- UV disinfection chosen to meet new EPA regulations*
- Calgon Carbon UV equipment was selected through a life-cycle oriented competitive bid process
- Contract award in April 2011.
- UV system must be in operations by April 1, 2014



* Long term 2 Enhanced Surface Water Treatment Rule



Ultraviolet Disinfection construction underway

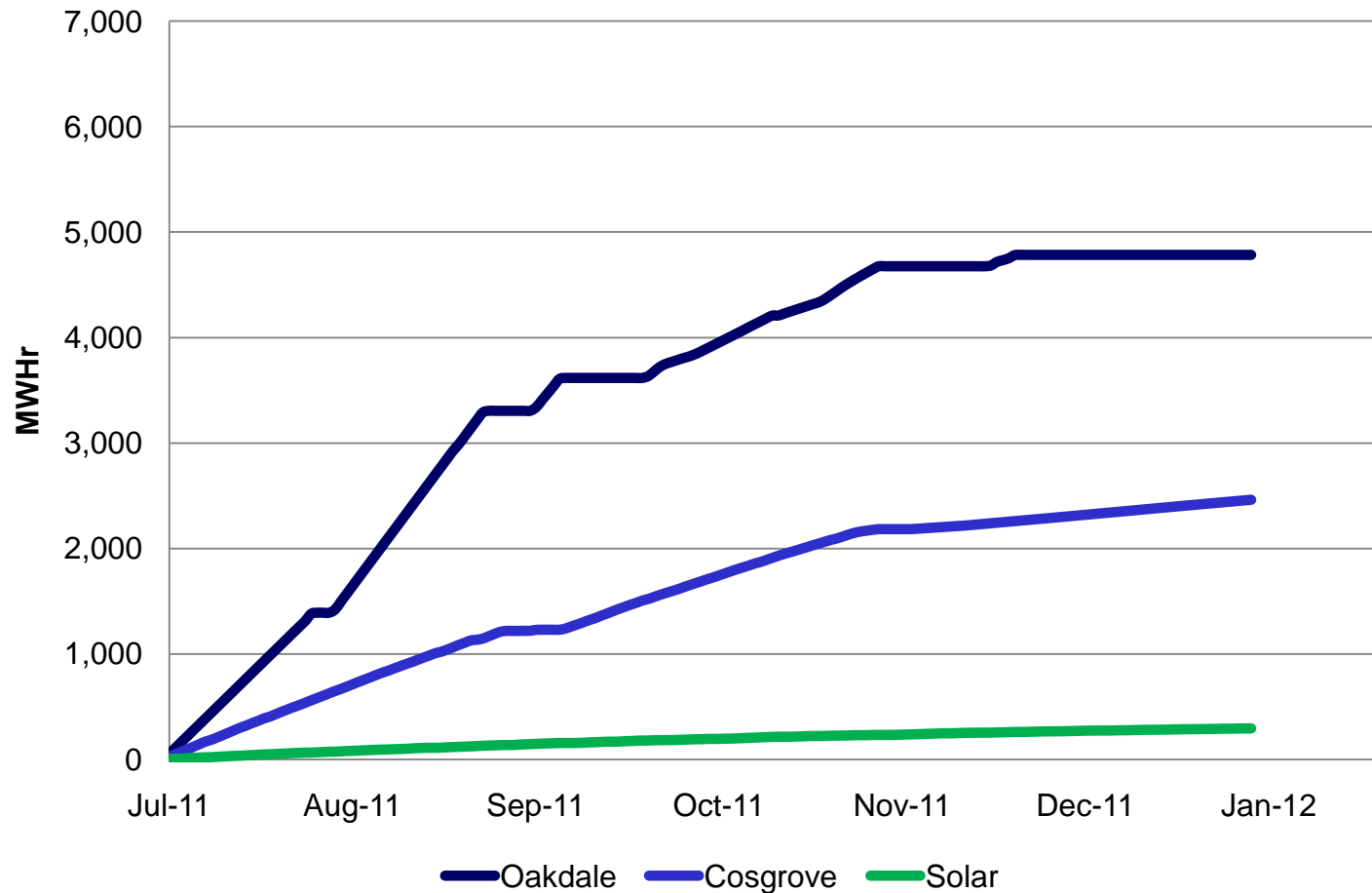
- A-side demolition nearly complete
- B-side demolition proceeding
- UV equipment to arrive in summer 2012





Western Operations Energy Production

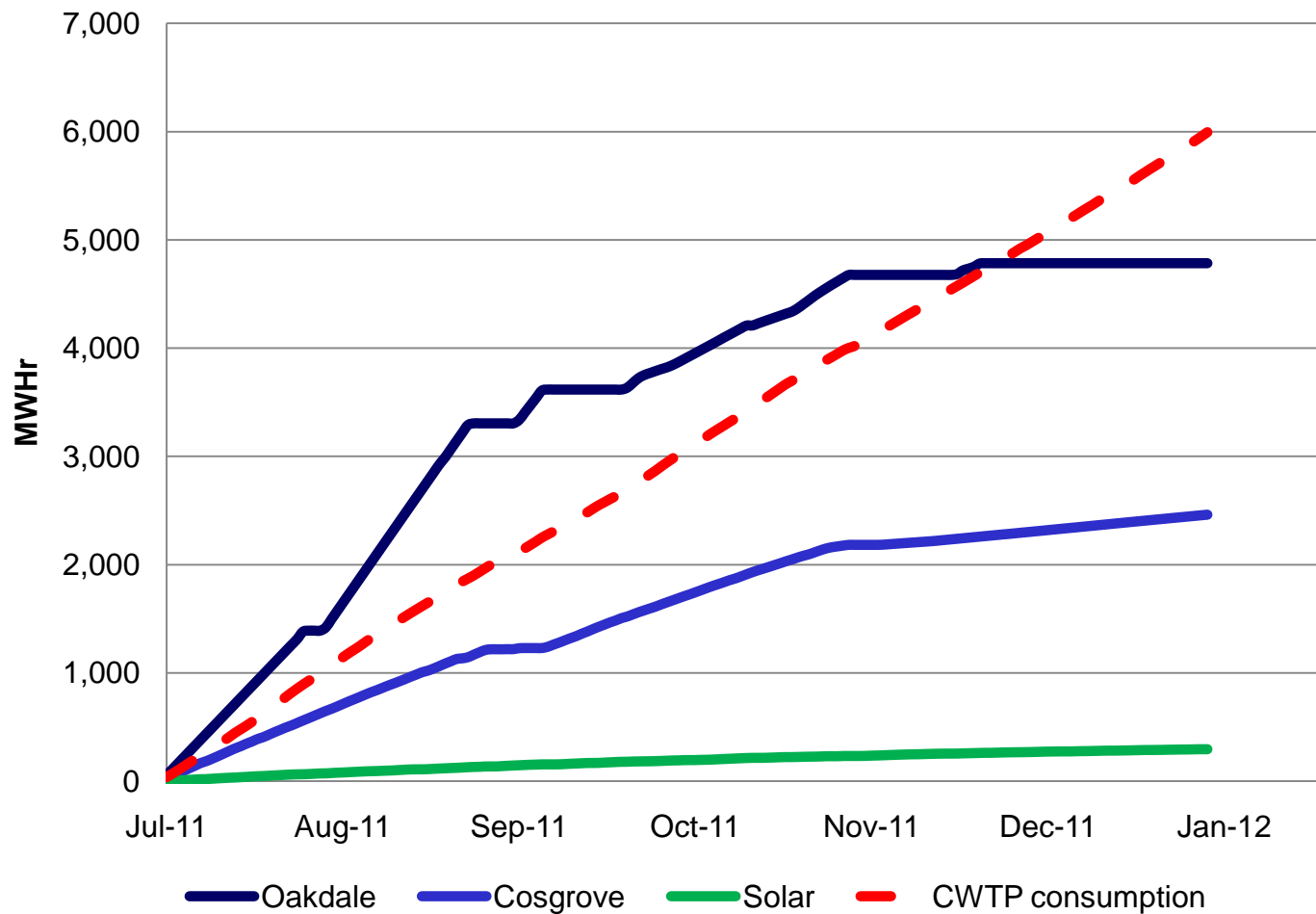
FY12 Power Production Q1 & Q2





Western Operations Energy Production

FY12 Power Production Q1 & Q2





Questions?

