



Update and Status of the USGS/MA Cooperative Hydrologic Monitoring Network



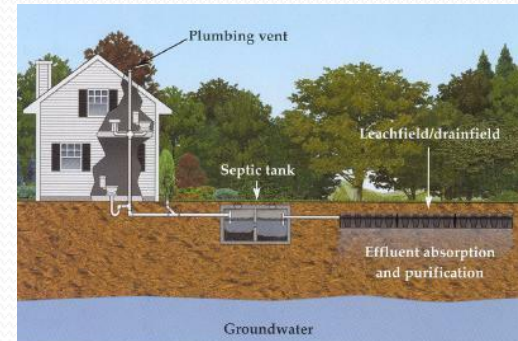
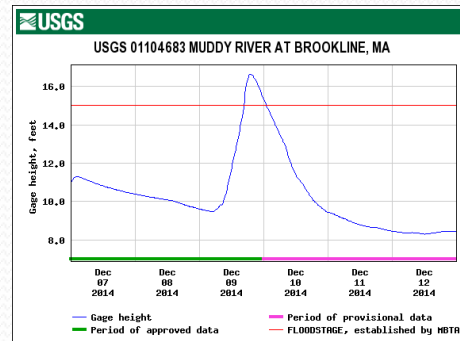
Richard Verdi (USGS)
Viki Zoltay (DCR-OWR)

January 12, 2017

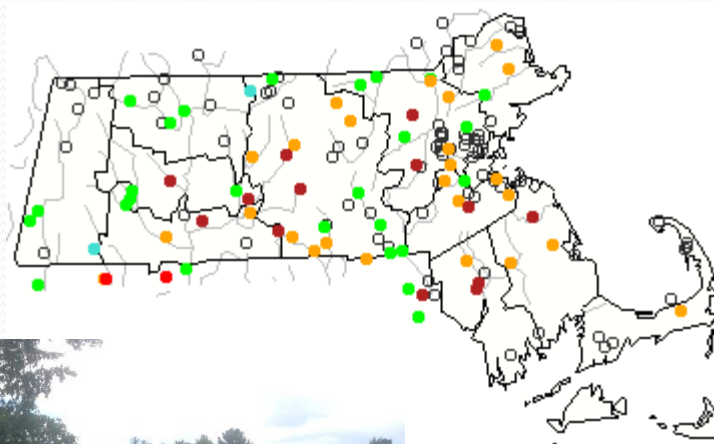


Data Uses

- Emergency management/flood forecasting
- Engineering– bridge design, flood zone mapping, septic system design
- Landslide forecasting
- Environmental monitoring– climate change



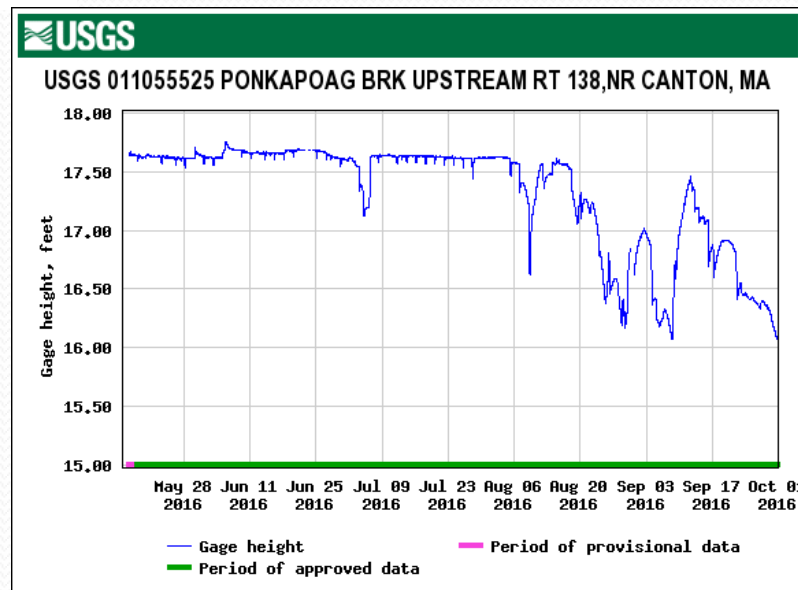
USGS Stream Gage Network



57 Real-time gages

No Changes Planned in FY18

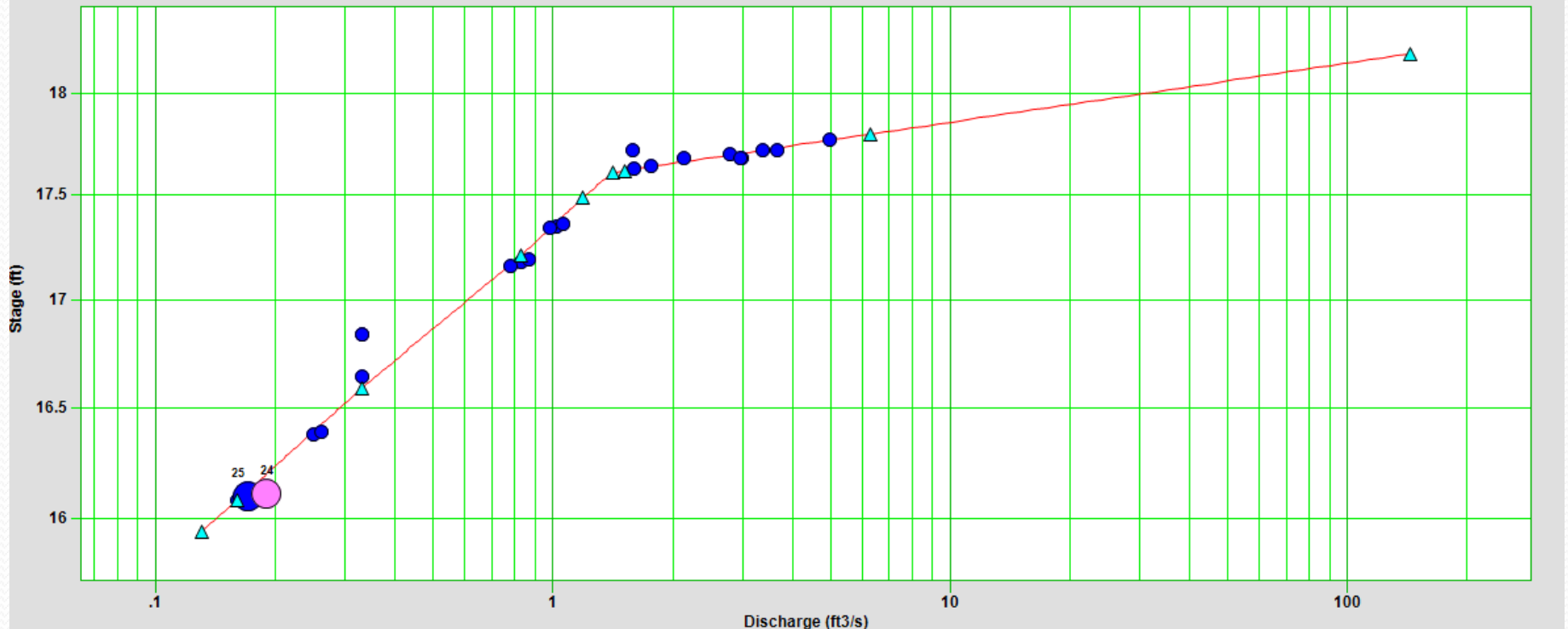
Annual O&M ~\$900,000



Ponkapoag Brook near Canton Rating

011055525 - PONKAPOAG BRK UPSTREAM RT 138,NR CANTON, MA - DD: 1 Rating: 1

Rating period from 10/12/2016

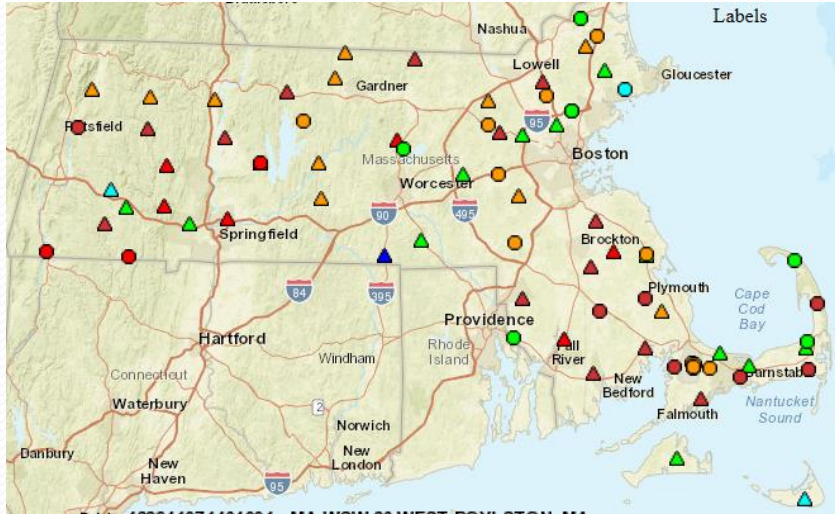


Minimum required flow= 0.60 ft³/s

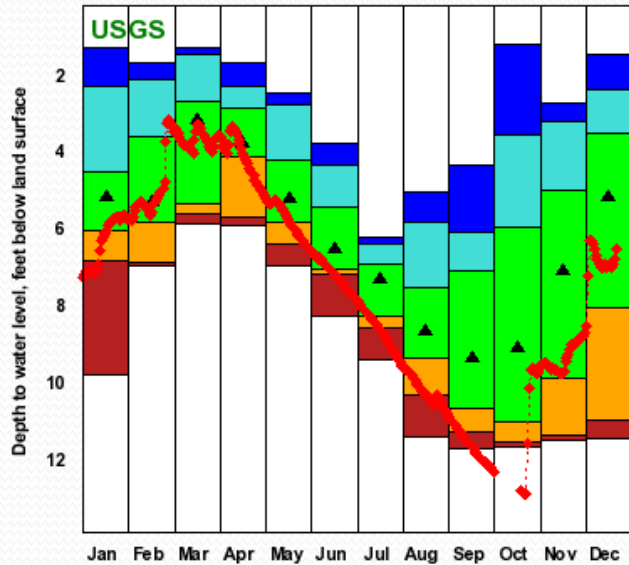
USGS Groundwater Network

92 Observation Wells

Annual O&M ~\$200,000



422341071464901 - MA-WSW 26 WEST BOYLSTON, MA

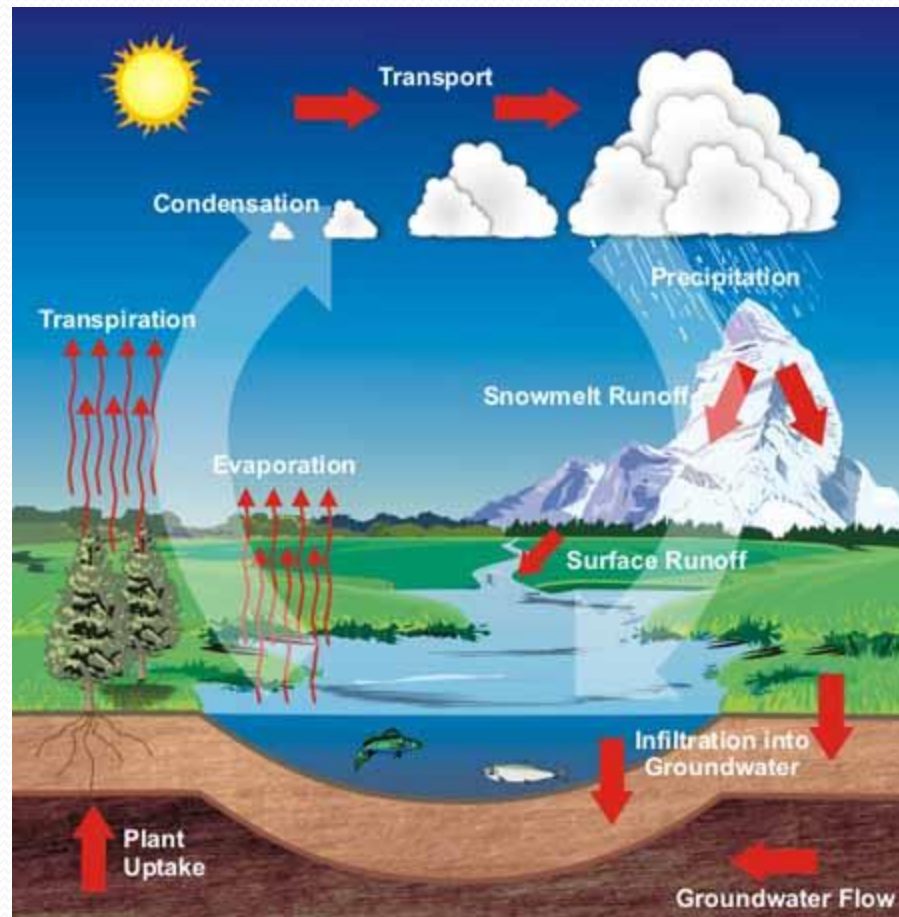


2016

Pbt created 12/21/16 16:52

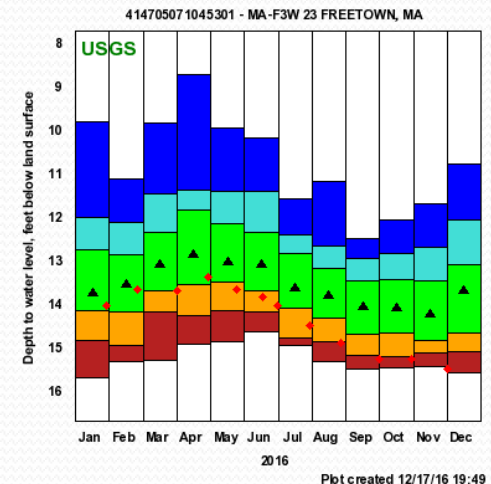
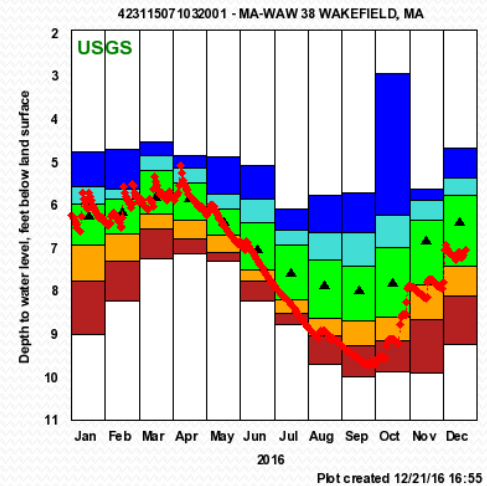
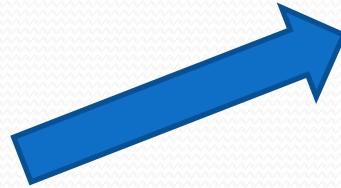


USGS Groundwater Network = Climate Response Network

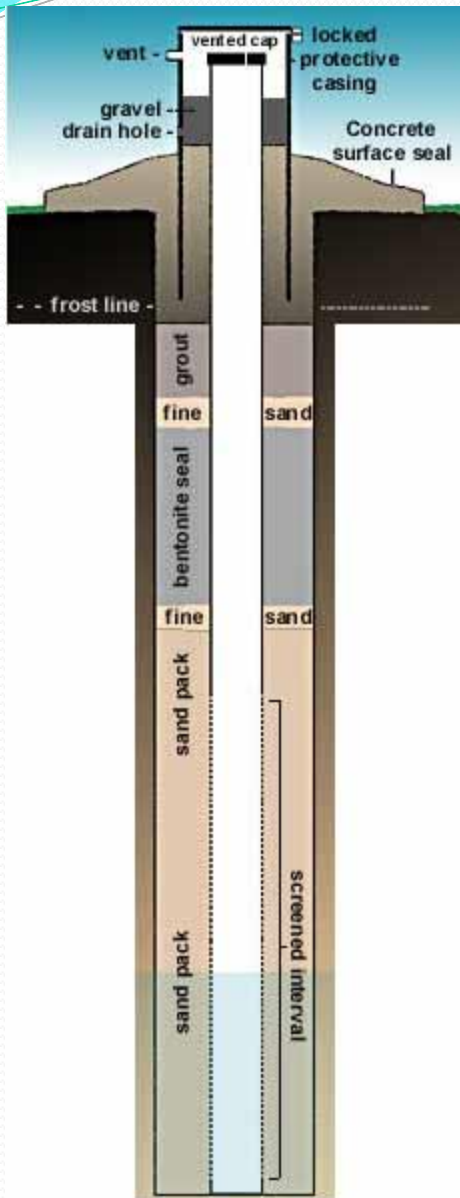


USGS Groundwater Network = Climate Response Network

- 92 wells total (including 7 new bedrock wells)
- 26 real-time wells at \$5,800 each, annually
- 59 measured by State staff monthly at \$750 each, annually



USGS Groundwater Network



- 55 steel wells older than 50 years (1965 and before) in acidic ground water!
- 20 wells with entire screen full of sediment, likely collapsed



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USGS Groundwater Network = Climate Response Network

Long-Term Network, 105 Wells With 20 or
More Years of Monthly Data



Long-Term Network, 58 Wells With 50 or
More Years of Monthly Data



Real-time Ground Water Obs

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Massachusetts Real-Time Groundwater Level Network

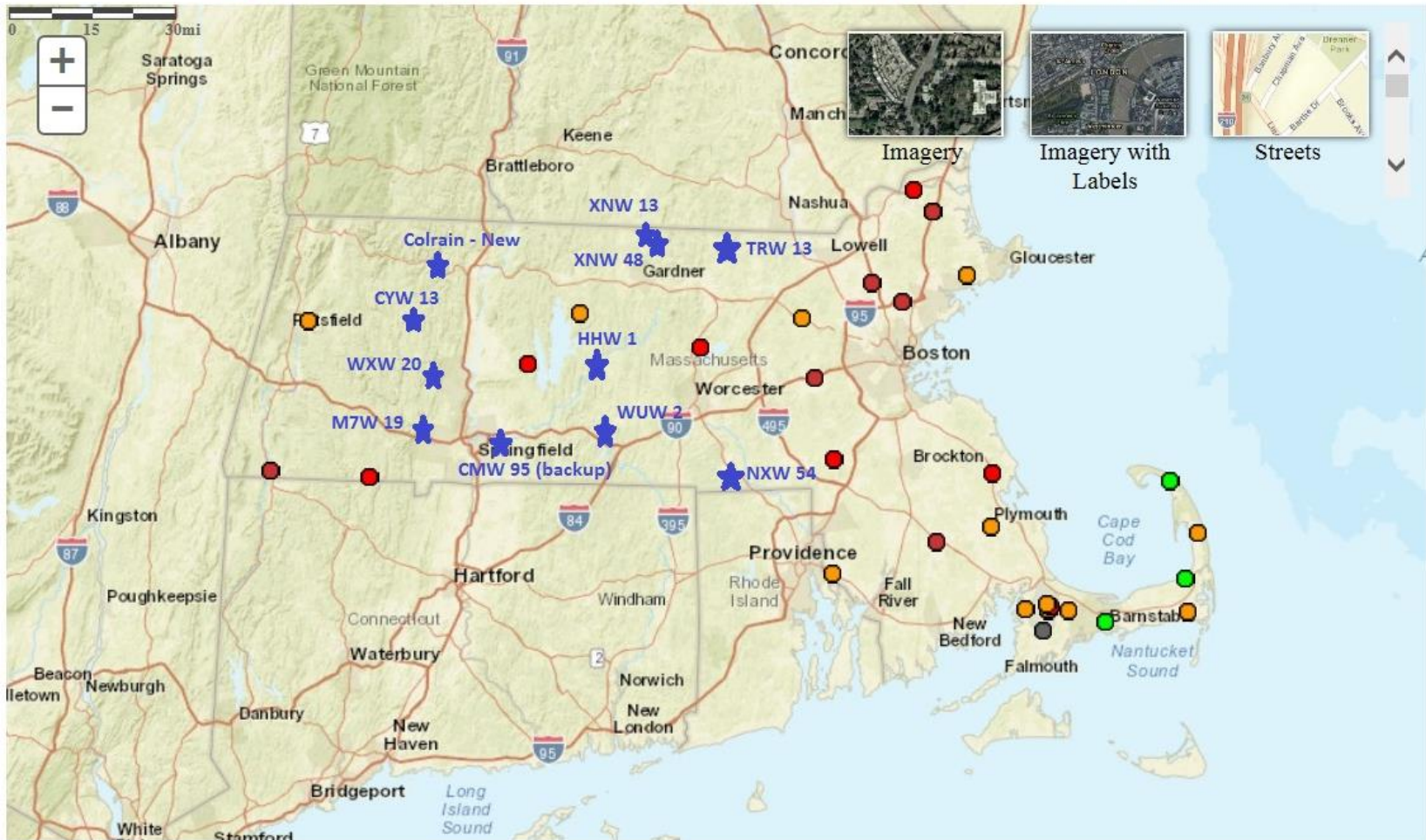
Click site symbol to open information pop-up. Click Station ID in pop-up for information and data.



Changes to the RT Network

Massachusetts Real-Time Groundwater Level Network

Click site symbol to open information pop-up. Click Station ID in pop-up for information and data.



Changes to the RT Network

- • Colrain-8 Well Replacement
- • Cummington (MA-CYW 13) S&G well
- • Westhampton (MA-WXW 20) S&G well
- • Montgomery (MA-M7W 19) S&G well
- • Hardwick (MA-HHW 1) S&G well
- • West Brookfield (MA-WUW 2) S&G well
- • Winchendon (MA XNW 13) Till well
- • Winchendon (MA-XNW 48) Bedrock well
- • Townsend (MA-TRW 13) S&G well
- • Northbridge (MA-NXW 54) S&G well
- • BACK-UP - Chicopee (MA-CMW 95) S&G well

Precipitation/Weather Stations

- Flash Flood Warnings
- Spring Flood Modeling
- Soil Moisture at Heath
- MassDOT/ State Geologist/
UMass Amherst Culvert
Vulnerability pilot in
Deerfield River basin
(Route 2)



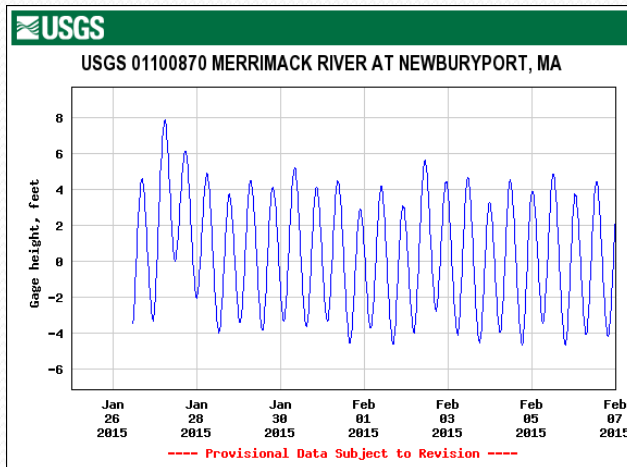
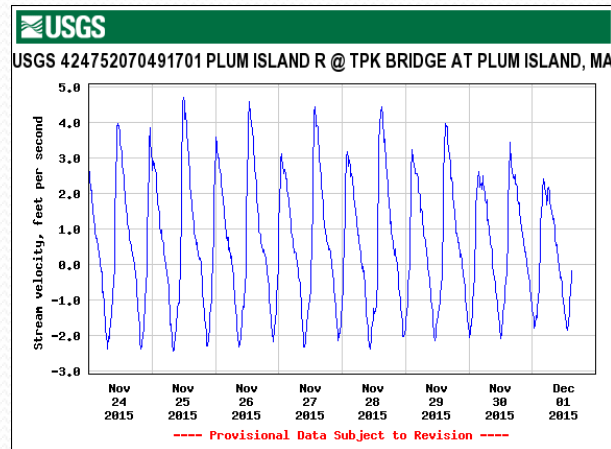
Meteorological Stations

- Peabody
- Fall River
- Groton
- Florida



Tide Gages

- Provincetown
- Dennis
- Merrimack



Landslide warning system



FY18 Hydrologic Monitoring Network Budget

- State
 - \$800,000
- USGS
 - \$290,124
- NSIP
 - \$68,900
- Total Budget
 - \$1,159,024

Program Budget FY18

- Stream Gages
 - \$875,185
- Ground Water
 - \$208,679
- Precipitation/Weather
 - \$17,000
- Tide Gages
 - \$18,000
- Soil Moisture
 - \$2,500

Well Replacements

- State received USGS grant of \$164,000 for well replacements
 - More from Viki...

Interpretive Projects (other funding sources)

- Blackstone River water quality/TMDL
- Assabet River water quality/TMDL monitoring
- Reservoir Model
- Effects of Impervious Cover
- SYE Equations → StreamStats web site
- Southeast MA kettle ponds/streamflow
- Flood Frequency Equations update

FLOOD INUNDATION MAPPING SCIENCE



Gardner Bent, U.S. Geological Survey, New England Water Science Center



FEMA

