

Hydrogeologic Evaluation of a Radial Collector Well
City of Manchester, New Hampshire

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Project History

Need
Population of 160,000
Average Daily Demand = 18 MGD
Maximum Daily Demand = 31 MGD

Supply
Lake Massabesic
Maximum "Safe Yield" 20.2 MGD

Problem
Use near 90% of "Safe Yield"
Inadequate for projected future growth
2016 drought

Solution
MWW selected use of the Merrimack River as a potential supply

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Project History

Options

Direct Intake
Inconsistent raw water quality
More residuals (sludge) produced

Riverbank Filtration Using a RCW
"Natural" filtration – TOC, turbidity, microbial, color, taste & odor removal
More consistent raw water quality = lower operating costs
Feasibility dependent upon geology

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Exploration Program

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Selected RCW Location

2013 Study Area

2016 Study Area

Merrimack River

Wetlands

Merrimack Valley Regional Airport

Merrimack Valley Regional High School

0 1,200 2,400 3,600 4,800 Feet

RCW Construction

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GZ

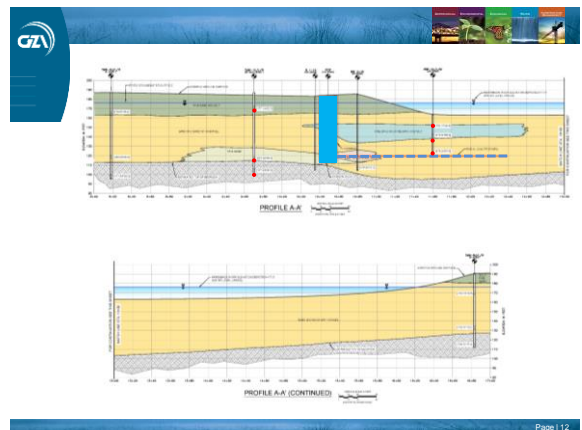
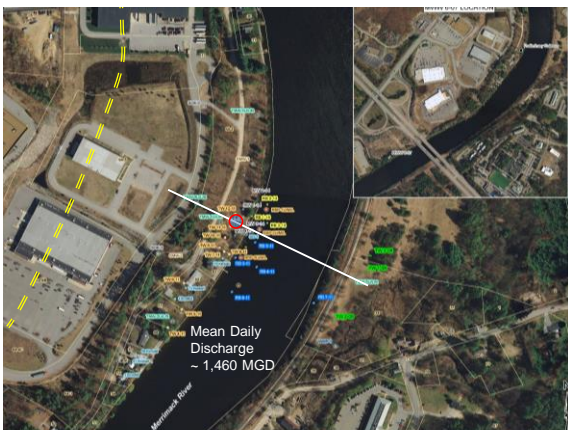
Withdrawal Testing and NH Permitting Process

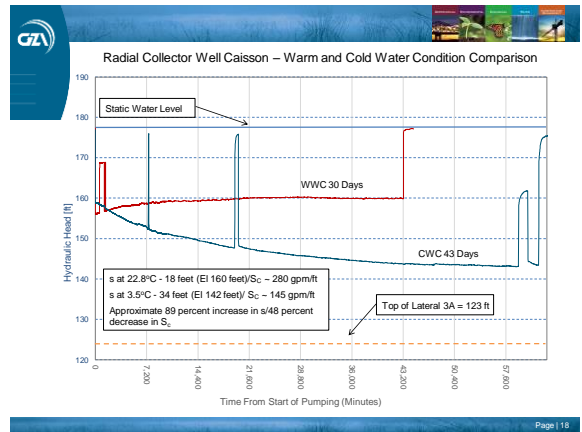
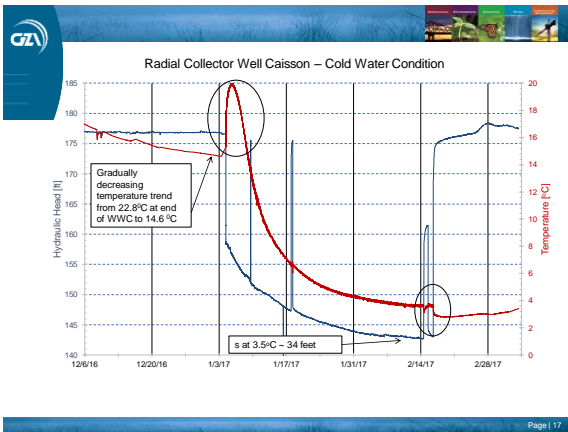
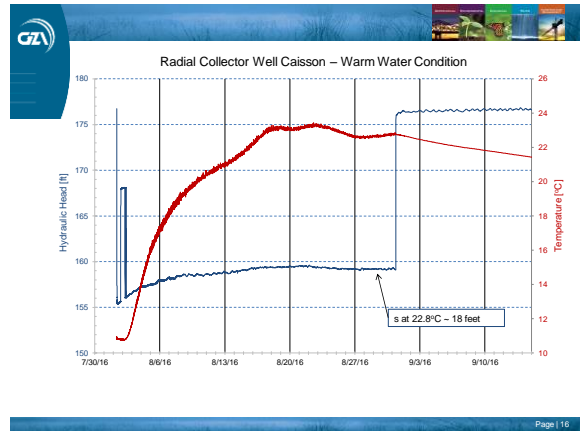
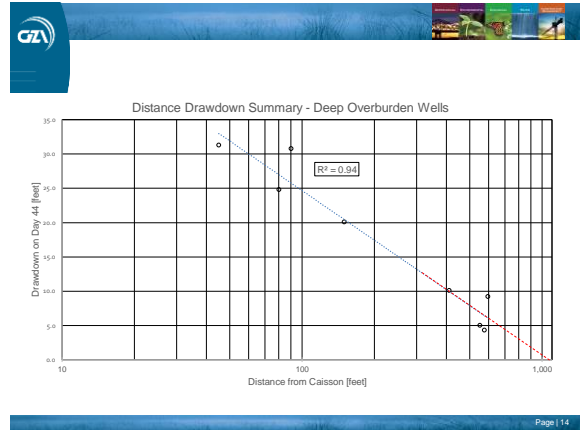
- 8-Hour Step Drawdown Test** (May 20, 2016)
- 30-Day Warm Water Condition Withdrawal Test** (August 1 - 30, 2016)
- 44-Day Cold Water Condition Withdrawal Test** (January 4, 2017 - February 16, 2017)

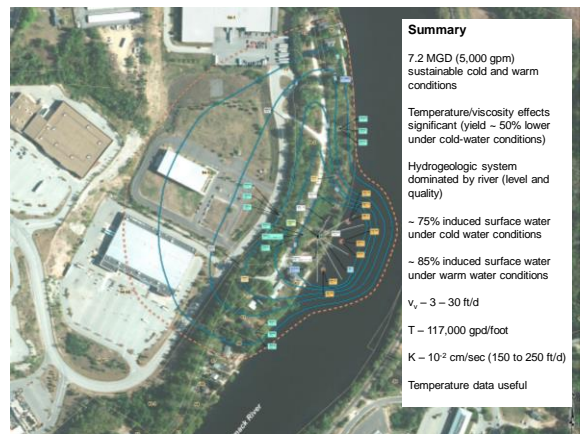
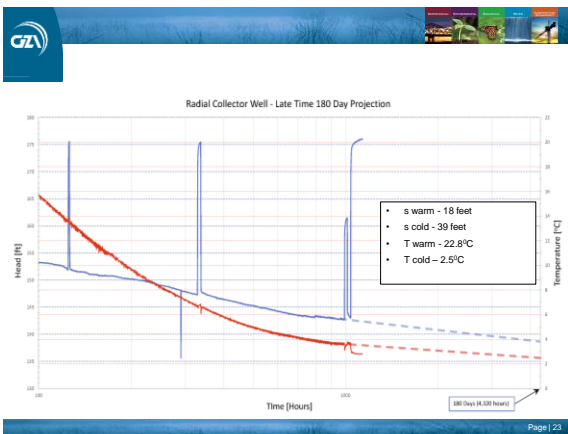
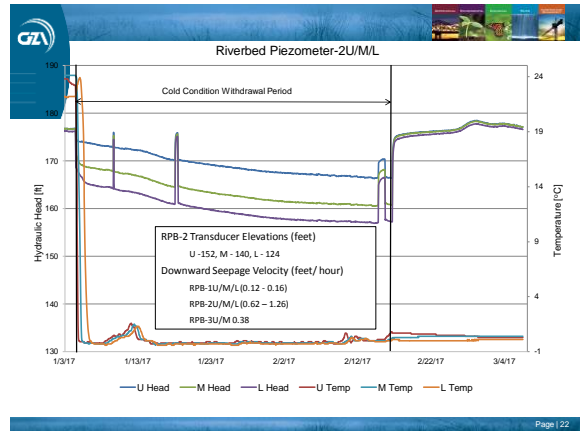
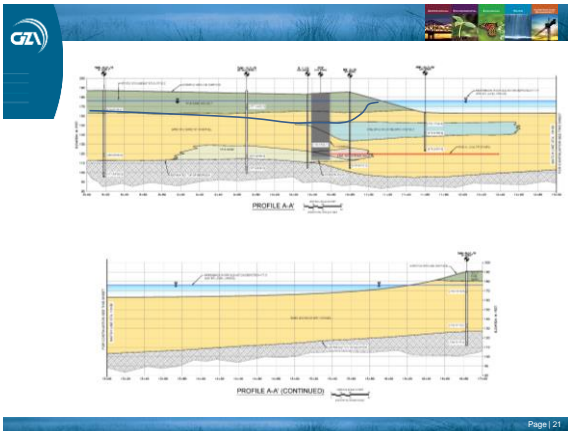
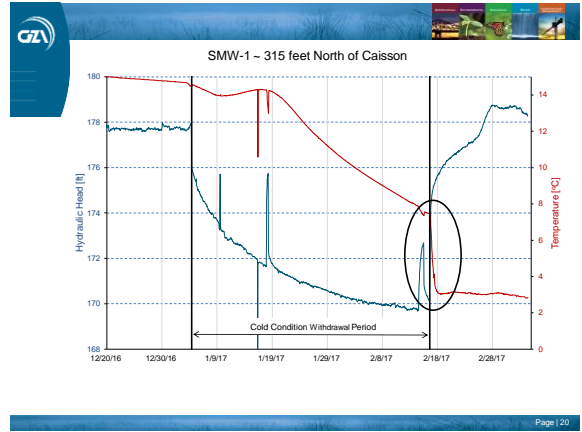
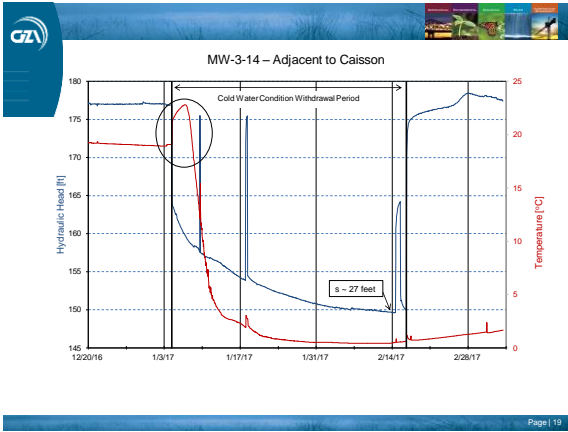
New Hampshire Large Withdrawal Permitting

- Groundwater Withdrawals \geq 57,600 GPD
- Preliminary Application – includes proposed withdrawal testing program at maximum proposed volume (7.2 MGD/5,000 gpm)
- Withdrawal Testing
- Final Report
- Public Hearings

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