

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

August 19, 2016

Mr. Christopher Martin, Town Administrator
10B West State Street, 2nd Floor
Granby, MA 01033

Re: Granby – DWP
PWS ID# 1111006
Granby Jr./Sr. High & East Meadow Schools
BRP WS 13 Approval to Site a Source and
Conduct Pumping Test
Notice of Decision – BRP WS 13
Transmittal #X271132

Dear Mr. Martin:

Please find attached the following information:

- Notice of Decision – BRP WS 13 Approval to Site a Source and Conduct Pumping Test (Conditional Approval)

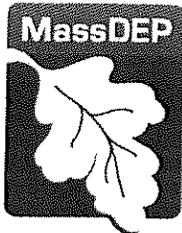
Please note that the signature on this cover letter indicates formal issuance of the attached document. If you have any questions regarding the conditional approval, please contact Kimberly Longridge (at 413-755-2215 or Kimberly.Longridge@state.ma.us) or me (at 413-755-2148 or Deirdre.Doherty@state.ma.us).

Respectfully,

Deirdre Doherty
Drinking Water Program/Municipal Services Chief
Bureau of Water Resources

cc: Vernon Kokosa, Sanborn, Head & Assoc., Inc., 1 Technology Park Drive, Westford, MA 01886
Sheryl Stanton, Superintendent of Schools, 387 East State Street, Granby, MA 01033
John Sullivan, Director of Facilities, 10B West State Street, Granby, MA 01033
Stuart Harkins, WhiteWater, Inc., 253B Worcester Road, Charlton, MA 01507
Granby Board of Health, 215B West State Street, Granby, MA 01033
Paul Nietupski, MassDEP-WERO Wastewater Program (e-copy)
Bruce Bouck, MassDEP-Boston (e-copy)

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Notice of Decision
BRP WS 13 - Site Exam and Pumping Test Proposal
Conditional Approval
Granby Jr./Sr. High and East Meadow Schools
PWS ID #1111006

On June 10, 2016, the Massachusetts Department of Environmental Protection (MassDEP) Drinking Water Program (DWP) received the following submittal prepared by Sanborn, Head & Associates, Inc. (SHA) on behalf of the Town of Granby (Town) for the Granby Jr./Sr. High and East Meadow Schools (Schools).

*Application for New Source Approval (BRP WS 13) for Proposed Water Supply Well
Granby Elementary, Junior and Senior High Schools
Granby, Massachusetts
June 7, 2016*

The above submittal, which also included a BRP WS 13 permit application, proposes the site and elements of a pumping test for a new non-transient, non-community (NTNC) public water system (PWS) source for the Schools (PWS ID #1111006). SHA revised the proposed well location and consequently submitted a permit application amendment to MassDEP via electronic mail on July 19, 2016. The permit application, amendment and July 11, 2016 site visit are summarized herein.

Background Information

The Schools are located on the north side of Route 202 (East State Street), approximately one mile east of the center of Town. The High School was constructed in 1962, and the East Meadow School was later built in 1965. Based on information currently posted on the Granby public schools website, the combined student population at the Schools is 615± students. The remaining public school population, consisting of 245 kindergarten through grade 3 students, is enrolled at the Town's West Street School (PWS ID #1111014).

The Town is proposing to re-locate the student and staff population from West Street School to East Meadow School. To accommodate this plan, the East Meadow School building will be renovated and expanded. The Town also wishes to install a new PWS source. Currently, a single 8-inch diameter, 24-foot deep gravel-developed PWS well, Well #1 (Source ID #1111006-01G), serves the Schools. The well was installed in the front lawn area in 1960, approximately 300 feet southeast of the High School's main entrance. Well #1 provides water to the High School building, East Meadow School building and concession stand in the athletic field area. An on-site pond is used for irrigating the grounds.

The Schools also maintain an emergency PWS source, Well #2 (02G), 100± feet east of Well #1. Well #2, an 8-inch diameter, 28-foot deep gravel-developed well installed in 1988, formerly served as the primary source of water for East Meadow School. Prior to 1988, a 30-foot deep gravel-packed well located behind the school building was used until aldicarb, the insecticide found in the product Temik, was detected in water samples. Refer to the "Wellhead Protection" section for additional information on the Temik contamination.

In a February 18, 2000 letter issued to the Superintendent of the Granby Public Schools, MassDEP assigned an authorized daily water withdrawal rate of 7,598 gallons per day (gpd) to both Wells #1 and #2 using historic meter data. According to data provided in Annual Statistical Reports, average daily water usage during the 2005 to 2014 school months has generally ranged from 3,200 to 3,800 gpd. The lowest and highest maximum daily withdrawal volumes reported for those years, 11,540 and 18,164 gpd, respectively, exceed the withdrawal allowance of 7,598 gpd.

Application Summary

A site visit was conducted on July 11, 2016 to review the proposed well location for the Schools and surrounding land uses. Ms. Kimberly Longridge of MassDEP’s DWP met with Mr. Vernon Kokosa of SHA and Mr. Kent Walker of SHA during the site visit. Additional information regarding the proposed well and pumping test is provided in the following sections.

Proposed Well – SHA’s submittal indicates that the shallow overburden aquifer at the site has limited saturated thickness and a history of Temik contamination. For these reasons, the proposal includes the installation of bedrock well. SHA also acknowledged that a bedrock well at The MacDuffie School (Source ID #1111001-01G) has an authorized withdrawal rate of approximately 9,400 gpd and is located within the same bedrock formation as the proposed well.

The proposed source consists of a 6- or 8-inch diameter, 200- to 600-foot deep bedrock well. The well casing will extend at least 15 feet into unweathered bedrock. While SHA’s proposal indicates that well construction will involve drilling a larger hole to accommodate the grout seal, the annulus size was not identified. Also, the proposal lacks information concerning the proposed grout seal material and upper depth. Chapter 4 of MassDEP’s Guidelines for PWSs (Chapter 4) includes well construction requirements.

SHA proposes to install the well approximately 1,170 feet north of the High School. Originally, the plan was to locate the well within a wooded area containing the 100-foot wetland buffer zone to bordering vegetated wetlands surrounding Ingraham Brook. At the July 11, 2016 site visit and within the permit application, SHA identified a revised location for the proposed well approximately 30 feet to the south, outside the 100-foot buffer zone and within a grassy area just beyond the northernmost baseball field. **Due to athletic fields in the area, MassDEP discussed/reminded SHA at the site visit of the prohibition of pesticides, herbicides and fertilizers in Zone I.**

Using average student and staff populations for 2012 to 2016 and Massachusetts Title 5 flow estimates, SHA is seeking a withdrawal rate of 14,908 gpd, or 10.4 gallons per minute (gpm) for a 24-hour period. A breakdown of the water use projections is provided below in Table 1.

Table 1 – Water Use Projections

Type of Establishment	Population		Design Flow (gpd/person)	Projection (gpd)
	Student	Staff		
Elementary School	476	65	8*	4,328
	541			
Secondary/Middle School	473	56	20**	10,580
	529			
Total				14,908

Notes:

*With cafeteria, but no gymnasium with showers.

**With cafeteria, gymnasium and showers.

Proposed Pumping Tests – Using a temporary submersible pump, a step-drawdown test will be conducted once static water levels are collected for a 10-day period. The minimum one-hour long steps will be completed at rates of 6.9 gpm, 13.8 gpm, 20.7 gpm and 27.6 gpm based on a prolonged pumping test rate of 13.8 gpm, which is 133½ of the approval rate being sought. However, as indicated during the site visit on July 11, 2016, MassDEP will accept rates that are 50%, 100%, 150% and 200% of the requested pumping rate of 10.4 gpm (5 gpm, 10 gpm, 16 and 21 gpm).

The water level in the well will be allowed to recover to at least 95% of the drawdown before initiating the constant rate pumping test. A meter will be installed to obtain instantaneous flow measurements. SHA's report indicates that water pumped from the well during the step-drawdown and constant rate pumping tests will be discharged to the irrigation pond located just outside the Zone I. A temporary plywood splash pad and hay bales will be installed at the discharge point to prevent erosion. MassDEP notes that pumping tests conducted in or near vegetated wetlands, or other environmentally sensitive areas, may require filing a Notice of Intent with the Granby Conservation Commission.

Following recovery from the step-drawdown test, the well will be pumped for 48 hours at a rate of 13.8± gpm. Water level data will be collected in the well at 5-minute increments for the first two hours and hourly thereafter, at a minimum, until pump shutdown. During the recovery period, water level readings will be collected at least every five minutes for the first two hours, once every 10 minutes for the next 100 minutes, and twice per day thereafter. SHA is planning to collect readings for a duration equivalent to the pumping period or until 95% recovery is achieved, whichever is longer.

The proposed well will be equipped with a pressure transducer to measure water levels. As the transducer will be equipped with a cable that is vented to the atmosphere, barometric pressure corrections will not be necessary. Static water level monitoring in the proposed well will be performed at least twice daily (minimum 8-hour increments) for a 10-day period, ending no more than five days prior to the start of the prolonged pumping test. SHA's submittal indicates that precipitation and barometric pressure data will be obtained from Westover Air Reserve Base/Metropolitan Airport in Chicopee, Massachusetts. **As discussed at the July 11, 2016 site visit, MassDEP requires that precipitation data be collected on-site.**

Water quality sampling and testing will be conducted during the 48-hour pumping test. SHA indicated that carbon dioxide analysis will be performed at the laboratory. **However, as discussed during the July 11, 2016 site visit, Chapter 4 requires that carbon dioxide readings be collected in the field.** Although not required, SHA is proposing to collect a sample from the well for uranium at the end of the test. **The minimum sampling requirements, according to Chapter 4, are presented in Table 2 on Page 7.**

Wellhead Protection – The Zone I and IWPA for an approvable yield of 14,908 gpd, or 10.4 gpm over a 24-hour period, are 276 feet and 731 feet, respectively. Pursuant to the Massachusetts Drinking Water Regulations at 310 CMR 22.21(3)(b), current and future land uses within the Zone I shall be limited to those land uses directly related to the provisions of the PWS or to other land uses which the PWS has demonstrated have no significant impact on water quality. MassDEP requires that all passive recreational activities have no significant adverse impact on drinking water quality.

All land within the proposed 276-foot Zone I is entirely owned by the Town of Granby. The Zone I consists of forested land, wetlands and athletic fields, including portions of the following: outfield areas for two baseball fields, infield area for one baseball field and a soccer field. A dirt road provides access to the athletic fields and proposed well site. The road was not blocked during the site visit, but signs displaying "Motor vehicle access limited to handicapped spectators with a valid permit during a sporting event" were observed at the road entrance. The IWPA encompasses additional athletic fields and off-site properties with wooded areas, wetlands and residential homes. On-site septic system components are located outside the IWPA.

Heating oil is stored on-site within three underground storage tanks that were installed in the 1960s and 1970s. The tanks are located near the School buildings, outside the proposed IWPA. Fuel oil was released to the site in June 2003 during a tank overflow at the East Meadow School. The incident was assigned Release

Tracking Number 1-14811 by MassDEP. Approximately five cubic yards of petroleum-impacted soil were excavated, and the release site was closed with a Class A-1 Response Action Outcome.

During an investigation in the mid-1980s, BSC Engineering determined that Temik applied to a former on-site potato field adversely impacted groundwater. The potato field was located approximately 500 feet north of East Meadow School, within the IWPA of the proposed well. A previous groundwater exploration project for the High School, completed by Tighe & Bond in 1960, revealed a 40 to 65-foot thick silty clay layer below the upper sand and gravel deposits at multiple test wells. SHA indicated that the silt and clay layer will inhibit contaminant migration from the shallower aquifer, which had been impacted by Temik, to the deeper bedrock aquifer. Furthermore, SHA stated that the proposed well will be sampled for aldicarb during the pumping test.

Environmental Data Resources, Inc. was contracted by SHA to complete an environmental database search. SHA noted documented releases that have occurred off-site and concluded that those incidents do not pose a significant threat to on-site soil and groundwater based on distance relative to the site, release quantity and/or anticipated groundwater flow direction.

Conditional Approval

The decision herein is based on the permit application submittal and all relevant information received by MassDEP to date. MassDEP, acting under the authority of Chapter 111, Section 17 of the Massachusetts General Laws and pursuant to MassDEP's authority under 310 CMR 22.04(7) to require that each supplier of water operate and maintain its system in a manner that ensures the delivery of safe drinking water to consumers, grants approval for the applicant to proceed with development of the new PWS well and subsequent pumping test activities pursuant to the requirements, conditions and comments listed below. All conditions are subject to enforcement, including revocation of the permit and penalties for each day permittee is in violation.

1. Prior to Commencing Production Well Installation

Submit the following documents to MassDEP for review:

- a) A proposed production well design schematic(s) to MassDEP for review, illustrating the components listed below. Unless a decision has been made about the well casing diameter, the submittal shall include a schematic for both the 6-inch diameter and 8-inch diameter construction scenarios.
 - Permanent well casing (diameter and height above grade)
 - Annular space between the outer diameter of the well casing and borehole (size and fill material)
 - Well cap
 - Well pump
 - Pitless adapter

All bedrock wells shall be cased and sealed a minimum 15 feet into competent and unweathered bedrock, and a minimum of 35 feet of borehole shall be maintained below the top of the pump. Refer to Chapter 4 for additional well construction requirements.

- b) A written explanation describing how the dirt access road to the well and athletic fields will be used, restricted and maintained in the future. The explanation shall address vehicle use and parking. Vehicle parking must be outside Zone I.
- c) Written maintenance procedures for the athletic fields and documentation that athletic facility staff have accepted those procedures. Pesticides, herbicides and fertilizers shall not be used or stored within Zone I, and pesticide application within an IWPA is regulated by provisions outlined in the Groundwater Protection Regulations (333 CMR 12.00). In the future, MassDEP may require the submittal of turf chemical records for the Schools and other documentation regarding turf maintenance with the Zone I and IWPA.

2. Prior to the Pumping Test Activities

- a) The PWS shall submit the following materials regarding the proposed PWS well for MassDEP's review:
 - A copy of the Well Completion Report.
 - Test pump depth setting.
 - Step-drawdown test data and graphs in electronic format.
 - Final selected pumping rate for the constant rate test.
- b) If the PWS considers well yield enhancement techniques, such as hydrofracturing, MassDEP shall be notified verbally or in writing. Results of the enhancement exercise shall be reported to MassDEP in writing.
- c) MassDEP shall be notified of the pumping test schedule at least one week prior to commencement.
- d) A rain gauge shall be used on-site to measure precipitation to the nearest one-hundredth of an inch. Measurements shall commence at least five days prior to startup of the constant rate pumping test and continue through the recovery period.

3. During the Constant Rate Pumping Test

- a) Accurate records of the pumping rate, precipitation and water levels must be maintained during the pumping and recovery periods of the constant rate pumping test.
 - The pumping rate for the proposed PWS well shall be measured and recorded every two hours.
 - Precipitation measurements shall be taken daily at the on-site rain gauge for the duration of the pumping and recovery periods, at a minimum.
 - Water level readings shall be recorded in the pumping well to the nearest ¼-inch (0.02 feet), at a minimum.
 - Water levels shall be taken in the pumping well at least every five minutes for the first two hours and once per hour thereafter. If the pumping test continues beyond 48 hours, water level measurements shall be collected every six hours until pump shutdown.
 - Recovery readings shall be recorded in the pumping well at the same frequency as drawdown readings, at a minimum, for as long as the pumping well was pumped or until the water level recovers 95% of drawdown, whichever occurs first.
- b) Water samples shall be collected and analyzed in the field in accordance with Chapter 4 and the sampling plan outlined in Table 2 on Page 7, at a minimum. In addition, samples shall be submitted to a Massachusetts-certified laboratory for the required analytical parameters.
- c) MassDEP must be contacted to discuss the proposed termination of the constant rate pumping test. Based on drawdown information submitted by the PWS or its representative, MassDEP will decide if the degree of stabilization is sufficient to allow the test to be terminated. Drawdown in the well shall meet the stabilization criteria of Chapter 4 otherwise the test duration will be lengthened. The approvable well yield is contingent upon the stabilized pumping test rate multiplied by a safety factor of 0.75, but may be restricted depending on the land area available for a conforming Zone I.

Table 2 - Required Water Quality Sampling Plan

<i>Analyses (see notes below)</i>	<i>Sampling Frequency*</i>
Field analyses	Beginning of test, after 24 hours and end of test
Secondary contaminants	One hour into the test and at end of test
Total coliform bacteria	Midpoint and end of the test
Inorganic chemicals (IOCs)	End of test
Volatile organic compounds (VOCs)	End of test
Radionuclides	End of test
Perchlorate	End of test
Nitrate	End of test
Nitrite	End of test
Synthetic organic compounds (SOCs)	End of test

Notes:

*Frequency is based on a 48-hour pumping test, and modifications may be necessary if test duration is extended.

Field analyses include pH, odor, specific conductance, carbon dioxide and temperature.

Secondary contaminants include total dissolved solids, color, odor, pH, total alkalinity (CaCO₃), hardness (CaCO₃), calcium, manganese, potassium, iron, magnesium, sulfate, chloride, silver, turbidity, aluminum, zinc and copper.

IOCs include arsenic, barium, cadmium, chromium, lead, mercury, selenium, fluoride, sodium, antimony, beryllium, nickel, thallium, cyanide and sulfate.

VOCs include all per 310 CMR 22.07B(1) and 22.07C(5).

Radionuclides include gross alpha activity, radium-226, radium-228 and radon. Uranium is required if gross alpha activity is greater than 15 picocuries per liter.

SOCs include all per 310 CMR 22.07(A)1.

Applicants have five years to complete MassDEP’s Source Approval Process. Any deviations from the conditions set forth in this conditional approval are subject to written MassDEP approval. Deviations without prior approval may result in action by MassDEP including, but not limited to monetary penalties and revocation of this approval. MassDEP reminds the applicant to comply with any additional federal, state and local regulations and ordinances pertinent to the project. This approval is subject to your receipt of and compliance with all other requirements.

If you have any questions regarding this matter, please contact Kimberly Longridge at (413) 755-2215 or Kimberly.Longridge@state.ma.us at your earliest convenience.