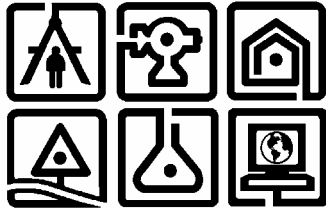


February 2010



## WATER SUPPLY APPLICATION ENGINEER'S REPORT

Burnt Hills Ballston Lake Water District No. 2  
Connection to Saratoga County Water Authority  
East Line Road Metering/Chlorination/  
Pump Station  
Town of Ballston  
Saratoga County, New York

*Prepared for:*

TOWN OF BALLSTON  
323 CHARLTON ROAD  
BALLSTON SPA, NY 12020

*Prepared by:*

C.T. MALE ASSOCIATES, P.C.  
50 Century Hill Drive  
Latham, New York 12110  
(518) 786-7400  
FAX (518) 786-7299

*C.T. Male Project No: 08.8544*

**WATER SUPPLY APPLICATION  
ENGINEER'S REPORT  
BURNT HILLS BALLSTON LAKE WATER DISTRICT NO. 2**

**TABLE OF CONTENTS**

	<u>Page</u>
1.0 INTRODUCTION .....	1
2.0 WATER SYSTEM DESCRIPTION .....	2
3.0 PROPOSED IMPROVEMENTS .....	3
4.0 WATER DEMAND, QUALITY AND SUPPLY .....	6
5.0 ESTIMATE OF COST .....	7

APPENDIX

EXHIBIT A:	LOCATION MAP AND PLANS OF PROPOSED CONNECTION
EXHIBIT B:	CONSTRUCTION COST ESTIMATE AND AMORTIZATION SCHEDULE
EXHIBIT C:	WATER SUPPLY CONTRACT BETWEEN BHBLWD#2 AND SCWA
EXHIBIT D:	PROJECT JUSTIFICATION
EXHIBIT E:	WATER CONSERVATION PROGRAM FORM
EXHIBIT F:	NYSDOH APPLICATION FOR APPROVAL OF PLANS

FIGURES

FIGURE 1:	EXISTING SYSTEM MAP
FIGURE 2:	EXISTING CONDITIONS PRESSURE CONTOUR MAP
FIGURE 3:	EXISTING CONDITIONS AVAILABLE FIRE FLOW MAP
FIGURE 4:	FUTURE CONDITIONS - SCWA CONNECTION PRESSURE CONTOUR MAP
FIGURE 5:	FUTURE CONDITIONS - SCWA CONNECTION AVAILABLE FIRE FLOW MAP

## 1.0 INTRODUCTION

The Burnt Hills Ballston Lake Water District No. 2 (BHBLWD#2), serving the Town of Ballston, Saratoga County, New York, proposes to purchase a portion of its finished water needs from the Saratoga County Water Authority (SCWA).

The proposed connection to the SCWA, to enable the taking, includes a new metering/chlorination/pump station near the southwest corner of East Line Road and NYS Route 67 in the Town of Ballston along with connections to a 16" main and a 12" main on East Line Road to facilitate the movement of water into the BHBLWD#2 system. These facilities would be built in the next 12 months to allow the BHBLWD#2 to use the SCWA supply in the second half of 2010. A location map and plans showing the proposed connection to the SCWA system are included in the Appendix of the report under Exhibit A.

The connection is also to be used to deliver water to the Clifton Park Water Authority system via the existing 16" main on East Line Road as discussed on the CPWA Water Supply Application Engineering Report for WSA#112811 (NYSDEC Permit #S-4124-00086100048).

## **2.0 WATER SYSTEM DESCRIPTION**

The existing BHBLWD#2 system obtains its water from the Town of Glenville through the Lake Hill Road Pump Station at the southern end of the Town. This facility currently supplies the distribution system which consists of a network of 6", 8" and 12" pipes and two elevated storage tanks with a combined capacity of 900,000 gallons. A map of the distribution system showing the existing system and the proposed location of the new facility is enclosed as Figure 1.

### 3.0 WATER DEMAND, QUALITY AND SUPPLY

BHBLWD#2 currently purchases all of its water from the Town of Glenville under a contract which requires it to purchase a minimum of 36,500,000 gpy (100,000 gpd).

In 2008, the BHBLWD#2 used 117,122,000 gallons of water, with an average daily usage of 321,000 gpd. The peak daily demand for the system was 449,000 gpd and occurred in 2006. The BHBLWD#2 system had 1,905 service connections in 2008.

Present finished water facility in the BHBLWD#2 system currently meets all NYSDOH standards. Re-chlorination is performed at the Lake Hill Road Pump Station to boost the chlorine residual prior to distribution. Approximately 35 psi to 120 psi pressure is currently maintained throughout the service area.

The proposed taking of 200,000 gpd by the BHBLWD#2 from the SCWA at the East Line Road facility will give the district a new source of supply at the northern end of its system, which is of high quality. Schematic plans of the proposed facility are included in Appendix A. Currently, the only significant reliable source of supply to the district is the connection to the Town of Glenville system at the southern end of the Town. An emergency connection does exist within the Village of Ballston Spa, but it is not capable of delivering water under normal circumstances to the Town because the pressure datum of the Village is about 70 feet lower than the Town's.

A hydraulic model of the Burnt Hills-Ballston Lake Water District was prepared using the computer program H2OMap by MWHSOft. The model is an extension of the model prepared for the Draft Generic Environmental Impact Statement for the Town of Ballston in 2006. Additions to the model include development that has occurred in the Town in the 4-year period since then, as well as the future interconnect with the SCWA.

Two scenarios within the BHBLWD#2 were modeled. The first scenario was the existing condition, under which the water district is serviced by the Town of Glenville via an interconnect and pump station at Lake Hill Road. The system floats off the two tanks within the system. Figure 1 includes a map of the existing system. The proposed 16" water main on Eastline Road from Chapel Hill Boulevard south to Round Lake Road, and the proposed 8" water main on Round Lake Road to service the proposed 99 lot development by Brooks Heritage are included in the existing conditions assessment,

since construction of this water main will commence in the spring of 2010. No other proposed development is included in the existing conditions model. Figure 2 shows pressure contours within the system during an average day, under which the tanks are within a few feet of being full. The existing pressures range from 60-90 psi for the majority of the system, with the highest pressures located along Route 67 near Curtis Lumber and Stewart's at 120 psi. Pressures between 40-100 psi are acceptable for normal operating conditions. System pressures of 120 psi are high, but there are individual pressure reducing valves on all water service connections, so the pressure in all structures is reduced. The pressure along East Line Road and the Chapel Hill Subdivision ranges from 90-100 psi.

Figure 3 shows the available fire flow contours under existing conditions. The definition of available fire flow is the flow available in the water main such that the pressure anywhere in the system is above 20 psi. The available fire flow should be no less than 500 gpm in rural areas and no less than 1,000 gpm in areas of dense development and commercial areas. The model indicates that the water district can provide adequate fire flow throughout the system.

A model of the proposed interconnect between the BHBLWD#2 and the SCWA was also prepared. The hydraulic grade line of the SCWA system will range from 477 feet to 513 feet, depending on the level of the SCWA system's tank. The normal operating condition will be around 488 feet. A pump station is needed to boost the SCWA system pressure to fill the BHBLWD#2 tanks, which have a full level of 564 feet. The model included proposed development in the Town that has appeared before the Planning Board. Some of the major projects included in the model are: Stonebridge PUDD, Mourningkill Drive Subdivision, the Round Lake Road PUDD and several condominium and apartment complexes on Route 50. In the future, the Clifton Park Water Authority (CPWA) will purchase water from the SCWA, and that connection will be made on the 16" main at the intersection of Eastline Road and Round Lake Road. For modeling purposes, this connection is modeled with 350 gpm of demand. Under future conditions, the majority of the water district will float off the two water storage tanks and the proposed pump station. All users off the 16" Eastline Road connection will be serviced directly from the SCWA, at a lower hydraulic grade line and pressure. Figure 4 shows pressure contours under the future system during an average day, under which the BHBLWD#2 tanks are within a few feet of being full. The pressures in

the majority of the system will remain unchanged from existing conditions. The pressure will be approximately 10 psi higher immediately downstream of the pump station (on Route 67 near Curtis Lumber). This is acceptable due to the presence of individual pressure reducing valves on all service connections. The pressure will be lower on the east side of Ballston Lake, along Eastline Road, and will range from 60-80 psi.

The available fire flow (Figure 5) is largely unchanged under this future condition, since the tanks will provide fire flow to the majority of the system. The available fire flow will be vastly improved on the east side of Ballston Lake, due to the future SCWA interconnect.

#### 4.0 PROPOSED IMPROVEMENTS

The proposed project consists of a facility located at the southwest corner of the intersection of NYS Route 67 and East Line Road adjacent to the Stewart's Shop. The facility would be in an easement on County owned property. The connection to the SCWA system would be at an existing 16" tee and valve. A 16" water line from the connection would run into a metering/chlorination/pumping station with a 16" meter and strainer in the basement, and a chemical feed point for chlorination after the meter. Flow would then be split with a 16" main exiting the station and running to the south to an existing 16" main on East Line Road. This main serves the southeast corner of the Town of Ballston as is also the main feed to the CPWA system.

A 12" main would split off from the station 16" basement main. It would run to a pump header in the above ground portion of the station. Booster pumps equipped with VFD's on this header would increase system pressure and discharge to a 12" line which would run down into the basement of the building and then out to connect to the existing 12" main on East Line Road. This line would feed all areas in the BHBLWD#2 along NYS Route 67 and west of Ballston Lake.

The new station would be equipped with an emergency transfer switch and generator outlet allow for the connection of a portable emergency generator as backup power. It would also have supervisory control and data acquisition (SCADA) equipment to enable remote operation by the BHBLWD#2 and remote monitoring by the BHBLWD#2 and SCWA.

Installation of the proposed facilities will enable the BHBLWD#2 to obtain an additional source of supply. The new facilities will enable a portion of the water system to be served without pumping, with higher available fire flows. The new pump station would have variable speed drives which would allow more efficient pumping. The proposed facilities will make the water system more reliable during an emergency and give the system access to an economical, high quality source of additional water.



**5.0 ESTIMATE OF COST**

The total estimated cost of the BHBLWD#2 connection to the SCWA is as follows:

Metering/Chlorination/Booster Pump Station and Connection to SCWA Water Main	\$471,000
Land Acquisition (1)	\$0
CONSTRUCTION (2)	\$471,000
CONSTRUCTION CONTINGENCY (10%)	\$46,600
ENGINEERING	\$68,400
ESTIMATED PROJECT COST	\$586,000
ESTIMATED PROJECT COST WITH CAPITAL CONTRIBUTION BY CPWA (3)	\$400,000

(1) Easement from County at no cost.

(2) Construction Cost Estimate in Exhibit B.

(3) The BHBLWD#2 is negotiating with the CPWA for a capital cost contribution for the construction of the facility since it will be used as a connection to the CPWA system. For budget purposes their contribution is assumed to be one third of the total project cost less the price of the pumps, or about \$186,000.

The cost to the BHBLWD#2 for the connection, when bonded over 20 years at 3.25%, is estimated to be \$27,646 per year.

C. T. MALE ASSOCIATES, P.C.

Edwin L. Vopelak, Jr., P.E.  
Principal

## **APPENDIX**

**EXHIBIT A**

**LOCATION MAP AND PLANS OF PROPOSED CONNECTION**

**EXHIBIT B**

**CONSTRUCTION COST ESTIMATE AND AMORTIZATION SCHEDULE**

C. T. MALE ASSOCIATES, P.C.

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BHBLWD#2 EAST LINE ROAD/METERING/CHLORINATION/PUMP STATION

Pay					
1	Mobilization/Demobilization	1	LS	—	\$10,000
2	Site Clearing	1	LS	—	\$1,000
3	Construction Photographs	10	EA	—	\$200
4	Maintenance and Protection of Traffic	1	LS	—	\$1,000
5	Environmental Protection	1	LS	—	\$1,000
6	Test Pits	10	CY	—	\$300
7	Site Work and Exterior Piping	1	CY	—	\$70,000
8	Pre-cast Concrete Basement with Meter, Piping and Appurtenances	1	LS	—	\$80,000
9	Metering/Chlorination/Pump Station Building and Accessories	1	LS	—	\$230,000
10	Electric Service	1	LS	—	\$2,000
11	SCADA Equipment and Controls	1	1	—	\$60,000
12	Chlorination Equipment and Chlorine Analyzer	1	LS	—	\$12,000
13C	Skid-mounted Pumps and Controls	3	EA	—	\$30,000
14	General Restoration	1	LS	—	\$5,000
	Total Construction Cost				\$471,000

**EXHIBIT C**

**WATER SUPPLY CONTRACT BETWEEN BHBLWD#2 AND SCWA**

**EXHIBIT D**  
**PROJECT JUSTIFICATION**

**EXHIBIT D - PROJECT JUSTIFICATION**

**BHBLWD#2 CONNECTION TO SCWA SYSTEM**

6 NYCRR Part 601 Public Water Supply Regulations (Item 7 of Water Supply Application, Supplement W-1) requires that the applicant provide justification that the following statutory conditions are or will be satisfied:

- A. The plans proposed by the applicant are justified of supply necessity.
- B. The plans take proper consideration of other sources of supply which are or may become available.
- C. The plans provide for proper and safe construction of all work connected therewith.
- D. The plans provide for the proper sanitary control of the watershed and proper protection of supply.
- E. The plans provide for adequate water supply.
- F. The plans are just and equitable to the other municipal corporations and civil divisions of the state affected thereby and to the inhabitants thereof; particular consideration being given to their present and future necessities for sources of water supply.
- G. The plans make fair and equitable provisions for the determination and payment of any and all damages to persons and property, both direct and indirect, which will result from the acquisition of said lands or the execution of said plans.
- H. The plans, in accordance with local water resource needs and conditions, include a description of an adequate near-term and long-range water conservation program.



The following is the Applicant's response justifying the proposed project.

A. Public Necessity

The proposed project provides an additional source redundancy for the BHBLWD#2 and also improves system reliability during future water main breaks.

B. Consideration of Other Sources of Supply

The BHBLWD#2 currently obtains its water from the Town of Glenville water system. Connection to the SCWA system provides an additional source of supply that is lower in cost than water from Glenville. Additionally, the SCWA supply is of better quality (less hard) than Glenville.

C. Proper and Safe Construction

The existing facilities were or will be installed in accordance with approved plans and specifications. The facilities being proposed will achieve proper and safe integration of the system without extended interruption of service to existing customers and will be constructed in accordance with all Federal, State and local requirements.

D. Sanitary Control and Supply Protection

The protection of the SCWA water supply will be maintained by the SCWA up to its connection with the BHBLWD#2. All applicable NYSDEC and NYSDOH rules and regulations will be followed. The BHBLWD#2 will operate under the conditions of the water supply permit issued for this new source of supply.

E. Adequate Water Supply

The BHBLWD#2 system will have adequate water supply to meet average and peak day demands with its largest pump out of service.

F. Equitable to Other Municipal Corporations and Civil Divisions

The existing water supply system presently provide water service to customers

within a portion of the Town of Ballston.

G. Fair and Equitable Provisions for Payment

The costs of connection to the SCWA system will be borne by the BHBLWD#2.

H. Water Conservation

A Water Conservation Program form has been completed by the applicant is included with this application as Exhibit C.

**EXHIBIT E**  
**WATER CONSERVATION PROGRAM FORM**

**EXHIBIT F**

**NYSDOH APPLICATION FOR APPROVAL OF PLANS**

**FIGURES**