

**CLIFTON PARK WATER AUTHORITY
BOARD MEETING**

**Tuesday, November 15, 2016
7:00 PM**

AGENDA

Privilege of the Floor

Old Business

- Tank Inspections at Knolltop, Miller and Blue Spruce
- Preserve Test Well
- Union Negotiations

New Business

- Bond Covenant Resolution
- SCWA Interconnect Improvements
- Berryfarm Well Issues

Other Business

- Approve Minutes of October 11, 2016 Meeting

Budgetary Cost Estimate

Knoll Bruno Road (Knoll Top) 300,000 Gallon Hydropillar Coating Rehabilitation

11/9/2016

Item	Quantity	Unit	Unit Price	Subtotal
Interior Wet Paint System				
Blast per SSPC-SP-10	8,100	SF	\$7.00	\$56,700.00
One Coat Prime at 3 mils (94H20)	8,100	SF	\$4.40	\$35,640.00
Stripe Coat Weld Seams (N140)	1	LS	\$10,000.00	\$10,000.00
One Coat Finish 25 mils (FC22)	8,100	SF	\$11.25	\$91,125.00
				\$193,465.00
Interior Dry Paint System				
Blast per SSPC-SP-10	2,160	SF	\$8.00	\$17,280.00
One Coat Prime at 3 mils (94H20)	2,160	SF	\$6.40	\$13,824.00
Stripe Coat Weld Seams (N140)	1	LS	\$2,000.00	\$2,000.00
One Coat Finish 25 mils (FC22)	2,160	SF	\$13.25	\$28,620.00
				\$61,724.00
Exterior Painting - Dry Paint System				
Spot Power Tool Clean	1,560	SF	\$7.00	\$10,920.00
Spot Prime Coat at 3 mils (94H20)	1,560	SF	\$5.00	\$7,800.00
Two Coats Roller Applied 2 mils each (includes powerwashing exterior)	15,600	SF	\$8.00	\$124,800.00
				\$143,520.00
Miscellaneous				
Anniversary Inspection	1	LS	\$5,000.00	\$5,000.00
Tank Disinfection and Testing	1	LS	\$2,500.00	\$2,500.00
				\$7,500.00
General Conditions				
Insurance & Bonds	1	LS	\$10,000.00	\$10,000.00
Mobilization/Demobilization	1	LS	\$10,000.00	\$10,000.00
PM and Supervision	1	LS	\$15,000.00	\$15,000.00
General Conditions	1	LS	\$15,000.00	\$15,000.00
				\$50,000.00
Construction Subtotal				\$456,209.00
Contingency 10%				\$45,791.00
Total				\$502,000.00
Engineering				\$60,000.00
Total Project				\$562,000.00

Utility Service Group

Roger Linder

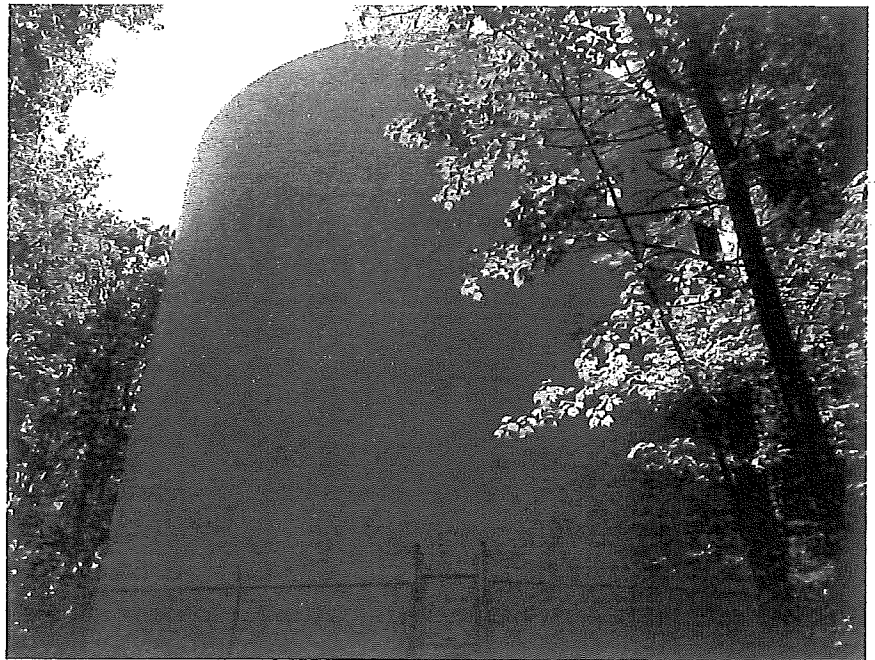
585-645-2208

rlinder@utilityservice.com

Utility
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Blue Spruce Reservoir 2,000,000 Gallon Ground Storage Tank Inspection Report

Clifton Park Water Authority, Clifton Park, NY



Prepared For:

Mr. Donald Austin

Clifton Park Water Authority

661 Clifton Park Center Road

Clifton park, NY 12065

Inspection Performed August 4, 2016

TANK DATA

TANK NAME:	Blue Spruce Reservoir				
TANK DESIGN:	Ground Storage	CONSTRUCTION TYPE:		Welded Steel	
LOCATION:	Blue Spruce Ln				
	CITY:	Clifton Park		STATE:	NY
CAPACITY:	2,000,000 gallons	HEIGHT:	60'	DIAMETER:	~75'
BUILDER:		YEAR:		CONTRACT #	
EXT. COATING:	Acrylic Polyurethane	LEAD:	6,100	CHROMIUM:	38
INT. COATING:	Epoxy	LEAD:	410	CHROMIUM:	7
INSPECTOR(S):	MA Service Center		DATE:	August 4, 2016	

SUMMARY

In August, 2016, Utility Service Group (USG) conducted an ROV Inspection on the Blue Spruce 2,000,000 gallon tank. The purpose of the inspection was to determine the condition of the coatings and structure, and to evaluate the tank for compliance with current sanitation guidelines, safety and security regulations, and guidelines in accordance with the AWWA, OSHA, and related state and federal agencies. The information contained herein is as accurate as could be obtained by USG personnel at the time of the inspection.

The subject tank is currently in very good structural and sanitary condition with no immediate remedial work from a structural standpoint on the tank itself. Missing grout and some spalling of concrete was noticed at the base of the tank which should be addressed.

The installation of a PAX Mixer is recommended to reduce ice and thermal stratification, as well keep chlorine residuals consistent in the tank.

Heavy staining and rust on some of the interior structures was noticed. A chemical washout would help this situation along with the removal of biofilm. From there, the interior coating can be better analyzed to determine the estimated life span of the existing system.

EXTERIOR COATING RECOMMENDATIONS

The exterior shell coating is in good condition and still providing adequate protection. There are some areas of delamination that can be addressed in the future before the issue spreads and results in a larger project.

INTERIOR COATING RECOMMENDATIONS

A washout and chemical clean is recommended to remove existing staining. From there, a better analysis could be completed on the condition of the interior coating. Some structural members have begun to show some signs of rust. This has resulted in additional stains down the interior walls.

STRUCTURAL RECOMMENDATIONS

No structural upgrades are needed at this time on the tank itself. The spalling of concrete and missing grout at the base of the tank should be addressed.

SANITARY RECOMMENDATIONS

It is recommended the vent at the top of the tank is replaced. No additional sanitary upgrades are needed.

SAFETY & SECURITY RECOMMENDATIONS

There is graffiti on the side of the tank. However, this seems to be rather old. A ladder gate is recommended for safety.

Utility Service Group

Roger Linder, Water Systems Consultant

585-645-2208

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Utility
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Knolltop Tank 300,000 Gallon Hydropillar Inspection Report

Clifton Park Water Authority, Clifton Park, NY



Prepared For:

Mr. Donald Austin

Clifton Park Water Authority

661 Clifton Park Center Road

Clifton Park, NY 12065

Inspection Performed August 4, 2016

TANK DATA

TANK NAME:	Knolltop Tank				
TANK DESIGN:	Hydropillar	CONSTRUCTION TYPE:		Welded Steel	
LOCATION:	Castle Pines Rd				
	CITY:	Clifton Park		STATE:	NY
CAPACITY:	300,000 gallons	HEIGHT:	125'+	DIAMETER:	44'
BUILDER:	PDM	YEAR:	1995	CONTRACT #	
EXT. COATING:	Styrenated Acrylic	LEAD:	57	CHROMIUM:	53
INT. COATING:	Epoxy	LEAD:	5	CHROMIUM:	33
INSPECTOR(S):	MA Service Center		DATE:	August 4, 2016	

SUMMARY

In August, 2016, Utility Service Group (USG) conducted an ROV Inspection on the Knolltop 300,000 gallon tank. The purpose of the inspection was to determine the condition of the coatings and structure, and to evaluate the tank for compliance with current sanitation guidelines, safety and security regulations, and guidelines in accordance with the AWWA, OSHA, and related state and federal agencies. The information contained herein is as accurate as could be obtained by USG personnel at the time of the inspection.

The subject tank is currently in very good structural and sanitary condition with no immediate remedial work from a structural standpoint.

Both interior and exterior coatings should be addressed as described within this report to maintain the integrity of the tank. By performing spot repairs and an overcoat on the exterior, money will be saved in the future by avoiding an exterior blast in the near future.

The installation of a PAX Mixer is recommended to reduce ice and thermal stratification, as well keep chlorine residuals consistent in the tank.

The dry riser and the dry area of the bowl are both in need of attention. Each area should be sandblasted and coated as described within this report.

EXTERIOR COATING RECOMMENDATIONS

All exterior surfaces should first be completely pressure washed in order to remove all soiling, chalking as well as any other surface contamination that may exist. All areas of corrosion, loose or damaged coating should then be Power Tool Clean in accordance with SSPC-SP #3 and SSPC-SP#11 standards with special attention to feathering back the peripheral areas surrounding the spot cleaned areas to sound tight material. As a minimum consideration, all areas cleaned to bare metal should then receive one (1) spot coat of a surface tolerant modified urethane primer applied at 2.5 to 3.5 mils. These areas, as well as all areas of exposed intermediate coat should then receive one (1) coat of a surface tolerant epoxy applied at 4.0 to 6.0 mils. All exterior surfaces should then receive one (1) full coat of an Acrylic Polyurethane finish coat applied at 2.5 to 5.0 mils.

INTERIOR COATING RECOMMENDATIONS

Areas of the wet interior are showing evidence of rust at and above the water line. An interior rehabilitation should be planned for in the coming years. This system will consist of abrasive blast cleaned to SSPC-SP#10 Near White Metal Grade followed by the application of an NSF approved two (2) coat zinc/epoxy coating with the finish coat of epoxy consisting of a 100% solids material applied at a minimum dry film thickness of 25.0 mils.

The base area of the interior dry area is in good shape. The interior dry area of the bowl, and the dry riser are both in need of sandblasting and recoating with an epoxy system. Both surface rust and a small degree of pitting was evident.

STRUCTURAL RECOMMENDATIONS

No structural upgrades or alterations are needed at this time.

SANITARY RECOMMENDATIONS

No sanitary upgrades are needed. The screen on the vent at the top of the tank has a small void but not enough for birds to enter.

SAFETY & SECURITY RECOMMENDATIONS

A cable safety climb should be added in areas where they are not present on the interior ladder.

Utility Service Group

Roger Linder, Water Systems Consultant

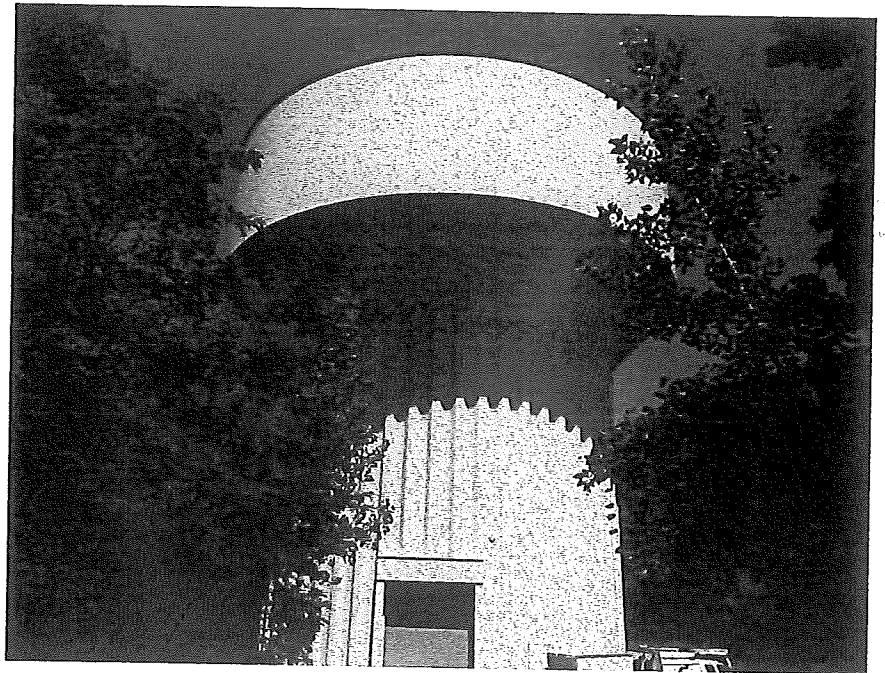
585-645-2208

rlinder@utilityservice.com

Utility
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Miller Road Tank 1,500,000 Gallon Hydropillar Inspection Report

Clifton Park Water Authority, Clifton Park, NY



Prepared For:

Mr. Donald Austin

Clifton Park Water Authority

661 Clifton Park Center Road

Clifton Park, NY 12065

Inspection Performed August 3, 2016

TANK DATA

TANK NAME:	Miller Road Tank				
TANK DESIGN:	Hydropillar	CONSTRUCTION TYPE:		Welded Steel	
LOCATION:	Miller Rd				
	CITY:	Clifton Park		STATE:	NY
CAPACITY:	1,500,000 gallons	HEIGHT:	'	DIAMETER:	'
BUILDER:		YEAR:		CONTRACT #	
EXT. COATING:	Acrylic Polyurethane	LEAD:	8	CHROMIUM:	11
INT. COATING:	Epoxy	LEAD:	8	CHROMIUM:	36
INSPECTOR(S):	MA Service Center		DATE:	August 3, 2016	

SUMMARY

The subject tank is currently in very good structural condition with no immediate remedial work required. At least 75% of the coatings along the interior surfaces of the water chamber are still providing an adequate degree of protection to the underlying steel surfaces.

Rust was evident around the interior near the water line. This is many times attributed to ice scraping against the coatings during the winter months. This can be remedied by the installation of a PAX Active Mixer which will decrease ice and water stratification, and improve chlorine residuals.

The interior dry portion has a fair amount of surface rust throughout and an overcoat of the system should be considered in the coming years.

The exterior coating is in good shape and no major coating work is needed at this time. It is anticipated that the exterior coatings along the referenced surfaces will continue to provide an acceptable level of protection for several more years without any degradation or increase in scope of work necessary to rehabilitate these surfaces.

EXTERIOR COATING RECOMMENDATIONS

No major exterior coating work is needed at this time. There is a bit of mildew growth at the base of the tank in which the tank could be pressure washed. Any spot repairs as needed should then be power tool cleaned in accordance with SSPC-SP#3 and SSPC-SP #11 standards with special attention to feather back the peripheral areas surrounding the spot cleaned areas to sound tight material. As a minimum consideration, all areas cleaned to bare metal should then receive one (1) spot coat of surface tolerant modified urethane primer applied at 2.5 to 3.5 mils. These areas, as well as areas of exposed intermediate coat should then receive one (1) coat of surface tolerant epoxy applied at 4.0 to 6.0 mils. All exterior surfaces should then receive one (1) full coat of an Acrylic Polyurethane finish coat applied at 2.5 to 5.0 mils. The finish color to match the existing color scheme along both the main plate surfaces and any existing logos.

INTERIOR COATING RECOMMENDATIONS

Areas of the wet interior are showing evidence of rust at and above the water line. An interior rehabilitation should be planned for in the coming years. This system will consist of abrasive blast cleaned to SSPC-SP#10 Near White Metal Grade followed by the application of an NSF approved two (2) coat zinc/epoxy coating with the finish coat of epoxy consisting of a 100% solids material applied at a minimum dry film thickness of 25.0 mils.

The dry interior coating is showing signs of degradation in some areas. It is recommended that this system be power washed, spot repaired, and overcoated in the coming years to maintain the integrity of the coating. The interior coating will match that of the existing epoxy coating.

STRUCTURAL RECOMMENDATIONS

No structural upgrades are needed at this time.

SANITARY RECOMMENDATIONS

A screen was missing on the end of the overflow. A fine mesh screen was added at the time of inspection

A couple of bolts were loose on the flange of the roof vent. Others were rusted. These bolts should be tightened and/or repaired to protect the sanitary integrity of the tank.

SAFETY & SECURITY RECOMMENDATIONS

No upgrades needed at this time.

November 9, 2016

Reference: CPWA Vischer Ferry Nature Preserve Well #7 Sieve Analyses

Attached are the sieve results and well log for the above referenced well. My recommendation would be as follows:

Ten feet of 18-Inch Pipe Size 130 slot screen from 20-30'.

Finest layer within proposed interval is 18-20'. Using a D70 of about .03 for this layer and a multiplier of 5 the gravel pack would be 1/4" x 1/8" with a 0.130-inch slot size screen. The theoretical transmitting capacity of 10' of 130 slot screen is 10' x 97 gpm/ft. = 970gpm. Well Screen Submittal Data for 130 slot screen is also attached. The formation consists of an abundance of coarse material including cobbles and boulders so I believe this is a rather conservative recommendation.

WATER RESOURCES



**RESOLUTION #____, 2016 – RESOLUTION ON THE ADEQUACY OF THE RATES TO
SUFFICIENTLY COMPLY WITH THE RATE COVENANT**

WHEREAS, the Clifton Park Water Authority has completed a review, taking into consideration the completion of any uncompleted water projects and issuance of future series of bonds if necessary to finance the completion of such water projects, of its financial condition for the purpose of estimating whether the net revenues for fiscal year 2016 will be sufficient to comply with the rate covenant contained in subsection (b) of the section 7.12 of the water system revenue bond resolution adopted November 16, 1993. Now, therefore be it

RESOLVED, that the Clifton Park Water Authority has estimated that its net revenues for fiscal years 2015 and 2016 will be sufficient to comply with the rate covenant contained in the subsection (b) of section 7.12 of the water system revenue bond resolution adopted November 16, 1993, and it is further

RESOLVED, that the Clifton Park Water Authority Board of Directors hereby authorizes a copy of this resolution, certified by its chairman, an authorized officer, setting forth a reasonably detailed statement of the actual and estimated revenues, operating expenses, aggregate debt service, and any other estimates or assumptions upon which such determination was based to be filed with the bond trustee.

Roll Call Vote:

Mr. Gerstenberger	-
Mr. Ryan	-
Mr. Peterson	-
Mr. Taubkin	-
Mr. Butler	-

C.T. MALE ASSOCIATES

Engineering, Surveying, Architecture & Landscape Architecture, P.C.

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October 18, 2016

Donald J. Austin, Jr., Administrator
Clifton Park Water Authority
661 Clifton Park Center Road
Clifton Park, New York 12065

Re: CPWA/SCWA Eastline Road Interconnect Capacity Increase
CTMA Project No. 16.6051

Dear Mr. Austin:

As per your request, we prepared additional modeling to assess potential for increasing the capacity of the CPWA/SCWA interconnect at Eastline Road in the Town of Ballston.

Prior Reports/Studies:

A discussion of increasing the interconnect capacity was provided in the report entitled "Clifton Park Water Authority, 2016 Capital Projects for Improved System Operations," last revised March 7, 2016. The 2016 report discussed Project 9: the future SCWA interconnect capacity upgrade. The report concluded that in order to enable the SCWA interconnect to supply the CPWA with up to 5 MGD, several improvements would be necessary. The Capital Project plan noted that significant pump station upgrades (both at Eastline Road and a new pump station at Round Lake Road), and transmission main upgrades would be needed to supply 5 MGD to the CPWA. In addition to flows supplied to the CPWA, the Eastline Road pump station and 16-inch transmission main also supply the Town of Ballston. At full build out of projects in the Town of Ballston off Eastline Road, the peak day demand will be 633 gpm (0.9 mgd). Based upon the analysis provided in the Capital Project plan, it was determined that supplying the CPWA with 5 MGD would result in significant upgrades needed and may not be reasonable.

Model Conditions

A skeletonized water model in H20Map was created to model the Eastline Road/Longkill Road area of the Town of Ballston and CPWA. The model includes the 16-inch transmission mains from the SCWA interconnect at Eastline Road/Route 67 to Jonesville, where the 20-inch main begins near the intersection of Route 146A and Kinns Road, a total of 6 miles of pipe. The model was created using the complete hydraulic models for both systems. The purpose of the skeletonized model was to determine the hydraulic impact of the CPWA increasing demand from the Eastline Road interconnect, and what improvements are

1910 - 2010
years

C.T. MALE ASSOCIATES

Date: October 18, 2016

To: Don Austin, CPWA

Re: CPWA/SCWA Eastline Interconnect Capacity Increase

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necessary to increase the interconnect's capacity. In the skeletonized model, water demands were taken off the 16-inch main at locations in which smaller distribution mains supply water to the adjacent neighborhoods. The demands applied to the system are during a peak summer day. The total demand from developments off Eastline Road in the Town of Ballston is 633 gpm or 0.9 mgd. The total demand from users off Longkill Road in the Town of Clifton Park is 689 gpm or 1 mgd.

The "end" of the model (Junction J-20) is where the 16-inch main connects with the 20-inch main at Route 146A and Kinns Road. The demand supplied to this junction represent water from the SCWA entering the main portion of the CPWA system. The intent of the SCWA capacity upgrades is to provide the most water possible to this point in the CPWA system.

Results

Table 1 describes the impact on the system pressures as the demand supplied in the model at Junction J-20 is increased. Table 1 provides for a chart of head losses at different locations along the 16-inch main, which allows the CPWA to see how increasing the demand impacts system head losses. The hydraulic grade line estimates are assuming the current hydraulic grade line of the system at the Eastline Road pump station discharge of elevation 564.

Table 1- Headloss

		At Eastline/Round Lake Roads		At Main Street/Jonesville		At J-20/Route 146A	
<u>Total Flow (MGD)</u>	<u>Total Flow (MGD) to CPWA</u>	<u>HGL (ft)</u>	<u>Head Loss¹ (ft)</u>	<u>HGL (ft)</u>	<u>Head Loss² (ft)</u>	<u>HGL (ft)</u>	<u>Head Loss³ (ft)</u>
2.5	1.6	545	19	538	7	536	2
3.5	2.6	524	44	505	19	497	8
4	3.1	511	57	485	26	472	13
4.5	3.6	496	72	462	34	443	19

- ¹ The headloss at Eastline Road/Round Lake Roads is the headloss in the 16" main between the SCWA interconnect at this location.
- ² The headloss at Main Street/Jonesville is the headloss in the 16" main between Round Lake Road and Main Street.
- ³ The headloss at J-20 is the headloss in the 16" main between Main Street and Route 146A.

Table 1 shows that as the demand for water by the CPWA increases, the headloss in the main increases. At 4.5 mgd total, which is 3.6 mgd total delivered to the CPWA system and 1.25 mgd (1,800 gpm) to Route 146A/Kinns Road at the 20-inch main, the hydraulic grade

C.T. MALE ASSOCIATES

Date: October 18, 2016

To: Don Austin, CPWA

Re: CPWA/SCWA Eastline Interconnect Capacity Increase

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line at Main Street in Jonesville is below the CPWA system's normal hydraulic grade line of 484. This indicates that if the CPWA were to need more than 3 mgd, then the hydraulic grade line leaving the Eastline Road pump station would need to increase.

The most that the discharge pressure can increase at the Eastline Road pump station is by 22 feet, which would leave pressures at Eastline Road and Route 67 near 145 psi. This pressure would only be seen by a small number of customers. If the discharge setting at the pump station was increased by 22 feet to an elevation of 586, then under a 4.5 mgd total flow scenario (see Table 1), the hydraulic grade line in the CPWA at Main Street in Jonesville would be elevation 484. The pressure at Route 146A and Kinns Road would be 19 feet less, which is acceptable for this operational condition. In reality, the CPWA does have system hydraulic grade lines less than 484 (tanks full) during peak summer months. It is anticipated that the SCWA interconnect would only need to deliver these high flows during the peak summer months.

Cost Estimate

In order to upgrade the Eastline Road pump station to provide for a total of 4.5 mgd (3,125 gpm) to Eastline Road, the pump station will need to be upgraded. The existing pump station contains two pumps, each with 400 gpm rated capacity. These pumps will need to stay in the pump station after the upgrades, since they function at these lower flow rates to supply the Town of Ballston during non-peak (winter) times during the year. The pump station has space for one additional pump.

In order to increase the capacity to provide 4.5 mgd (3,125 gpm) to Eastline Road, two additional pumps must be added to feed the high demands to Eastline Road and the CPWA. Each pump should be able to provide 3,125 gpm at 116 feet of head. Two pumps are needed in order to provide a backup pump.

One of the 3,125 gpm pumps can fit into the existing pump station. The second pump can be located on the western side of the existing pump station in a hot box. The other option would be to construct an expansion of the existing pump station to the west to house both of the 3,125 gpm pumps. The second option is likely the most practical, since it would keep the existing smaller pumps, piping, electrical equipment and chemical feed equipment operating as it is today. By constructing an expansion to the pump station for the two larger pumps, limited modifications to existing equipment would be necessary. For cost estimation purposes, the option of expanding the existing pump station will be assumed, since this will likely be a more practical alternative.

C.T. MALE ASSOCIATES

Date: October 18, 2016

To: Don Austin, CPWA

Re: CPWA/SCWA Eastline Interconnect Capacity Increase

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Table 2: Cost Estimate

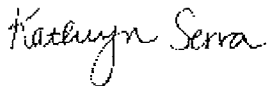
Description	Quantity	Units	Unit Price	Total Cost
3,125 gpm VFD Pumps	2	EA	\$75,000	\$150,000
Expansion of Pump Station	1	LS	\$450,000	\$450,000
Electrical Upgrades Eastline Road PS	1	LS	\$50,000	\$50,000
Subtotal				\$650,000
General Conditions (15%)				\$97,500
Engineering, Legal, Construction Administration (20%)				\$130,000
Contingency (20%)				\$130,000
Total				\$1,008,000

This cost estimate is less than the options outlined in the Capital Project plan that address the upgrades to the SCWA interconnect.

Please feel free to call me at 786-7651 should you have any questions in this matter.

Sincerely,

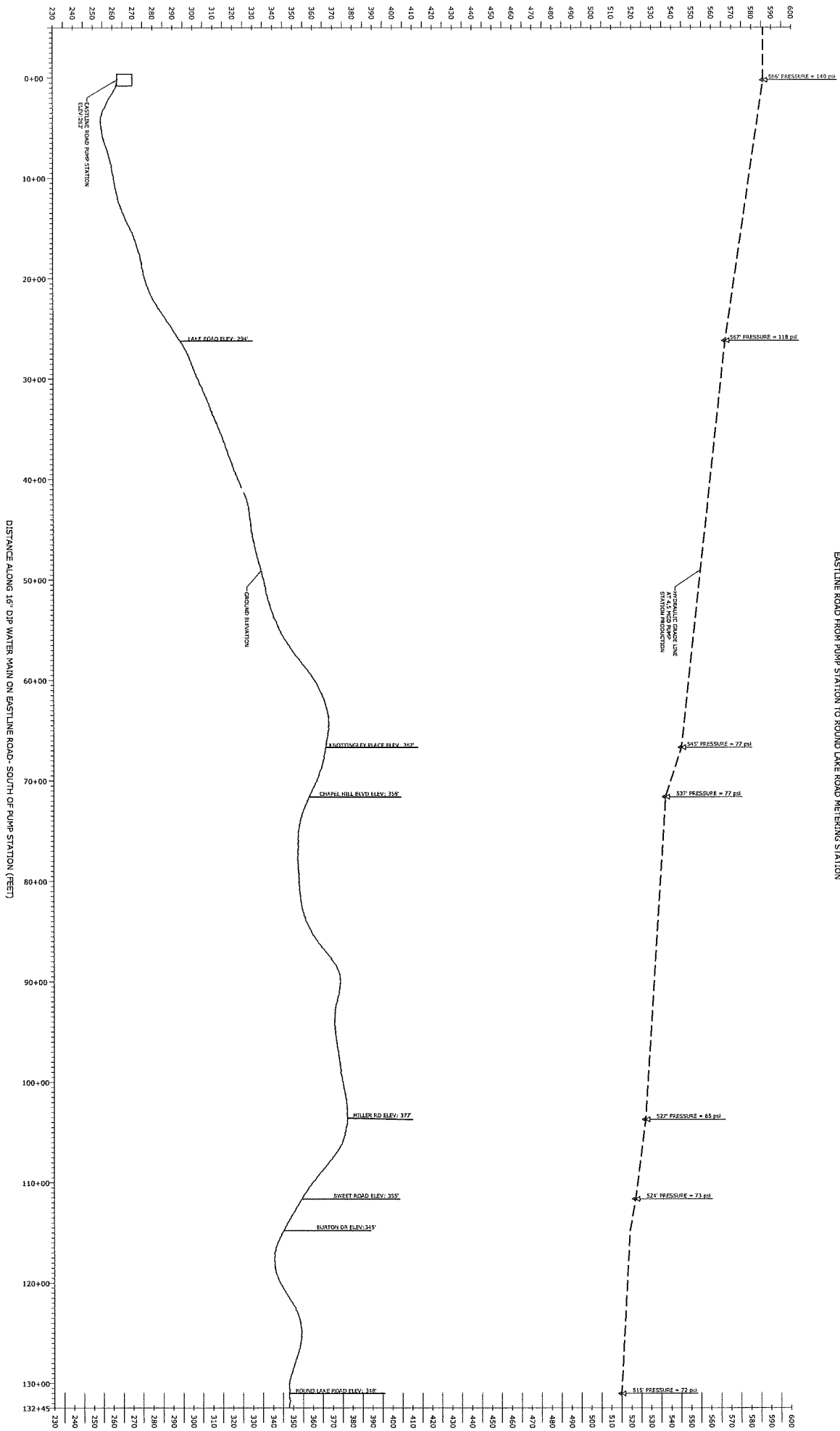
C.T. MALE ASSOCIATES, P.C.

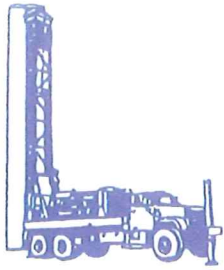


Kathryn Serra, P.E.
Project Engineer

cc: Ed Vopelak, P.E.

INCREASE SCWA INTERCONNECTION CAPACITY AT EASTLINE ROAD:
HYDRAULIC GRADE LINE & PRESSURE PROFILE - PROPOSED WITH EASTLINE ROAD PUMP STATION EXPANSION
EASTLINE ROAD FROM PUMP STATION TO ROUND LAKE ROAD METERING STATION



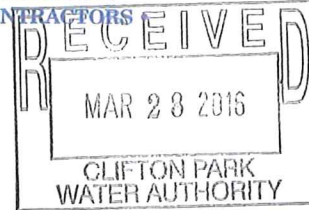


Smith Well Drilling

Water Well Contractors

- WELL DRILLING • TEST DRILLING • WELL & PUMP REPAIRS • PUMP INSTALLATION •
- GROUND WATER INVESTIGATIONS • HYDRO-FRACTURING •
- INDUSTRIAL AND MUNICIPAL WATER SUPPLY CONTRACTORS

March 24, 2016



Clifton Park Water Authority
Don Austin, Manager
661 Clifton Park Center Road
Clifton Park, NY 12065

Re: Berryfarm 12" Well
Declining Production Video Survey

Dear Mr. Austin,

On March 8, 2016, Smith Well Drilling, Inc. inspected and performed a video survey of the above referenced well. The yield/flow has reportedly been declining and has caused the meter to plug with iron deposits.

Upon arrival of our service personnel, we found the well to be producing a discharge rate of 160 gpm, with a 42.4' pumping level. The static level was recorded at 6.15', thereby affording a drawdown of 36.25'. The specific capacity was determined to be 4.4 gpm/ft/dd, which is down as compared to our test results of July 12, 2010, when the specific capacity was 7.4 gpm/ft/dd, and at a flow rate of 230 gpm with a 40.6' pumping level. These tests indicate a 40% loss of specific capacity and a 30% loss of flow rate.

The well was in use during the course of the video inspection, as the camera was able to fit down through the pitless spool. Approximately 60% of the screen was clean and is evident of a sand pumping condition. The remaining 40% showed evidence of iron bacteria and iron deposits. It was determined that the lower half of the screen was pumping fine sand. In review of the original well screen design, it indicates various slot sizes of between .060 -.120 slot in 15' of screen. It is obvious the screen selection is too coarse for the formation, and therefore the fine sand migrates into the well bore and the adjacent formation is, therefore, plugging off. A properly designed and installed screen would provide a maximum transmitting capacity at a low entrance velocity, and thereby allow the sand to bridge against the screen – not migrate through it.



smithwelldrilling.com

PO BOX 585, NIVERVILLE, NY 12130 • 518-758-6142 • FAX 518-784-2765



After completing the video survey, we discussed our findings with Mr. Albert Smith, Design Engineer at Bilfinger/Johnson Screens of Brighton, Minnesota. He is in agreement with us that the highly varied and coarse slot size has led to the surrounding formation plugging off due to fine sand migration, which has eroded and compromised the screen. This condition would cause redevelopment to be unlikely and that replacement of the well is warranted, and the most suitable option.

Prior to contemplating replacement, we would recommend that a 6" exploratory test well be drilled in close proximity to the Berryfarm well. This well should only be constructed utilizing cable tool methods with a competent operator. By utilizing a 6" test well, drilled by cable tool methods, a larger and more representative formation sample can be obtained. This method allows us the ability to advance the casing and eliminate the separation of the finer and coarser formation materials that occur when using rotary drilling techniques. The cable tool method results in a better determination of the stratification and grain size of the formation, as well as allowing for a more accurate screen design. If necessary or warranted, a well screen can be installed and the aquifer can be pump tested and a determination of anticipated drawdown, yield, specific capacity and efficiency can be determined prior to the construction of the production well.

Based upon the geological samples obtained from the 6" exploratory well, we would perform a sieve analysis to ascertain the proper size and type of screen, as well as determine and design the correct type of well. I have enclosed a copy of our previous correspondence, from August 2, 2010, which provides for further insight as well as reiterating our recommendation for replacement of this well.

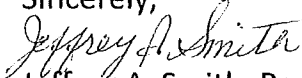
The costs associated with the construction of one (1) 6" exploratory test/observation well, utilizing cable tool methods, are as follows:

<u>Item Description</u>	<u>Est. Quantity</u>	<u>Unit Cost</u>	<u>Total Est. Cost</u>
Mobilization/demobilization of NYSDEC licensed/certified crew and equipment	1	\$1,200	\$1,200
Drill rig/operator, per day	4	\$ 500	\$2,000
6" steel cased test drilling	70'	\$ 40	\$2,800
Sieve Analysis	4	\$ 100	\$ 400
Total Anticipated Cost			\$6,400

The above costs do not reflect the installation of a test screen, as we don't feel a screen is necessary at this time.

I appreciate the opportunity to provide you with this analysis and recommendation for your existing production well. Please feel free to contact me with any questions you may have or if I can be of any further assistance.

Sincerely,


Jeffrey A. Smith, Pres.
MGWC

JAS:maw

Enc.