



Date: 8/14/2020

To: Don Vaughan
Nick LaChance

From: Josh Davis

CC: Taylor DeOgburn
Bob Gallo

Subject: White Rock Pressure Reduction Valve Test

Four Pressure Reduction Valves (PRVs) were installed at the White Rock Water System in 1992 due to large elevation changes throughout the system; the system ranges in elevation from 615' to around 325'. Before PRVs were installed, the pressure at the low point (45 Rocky Point Dr.) was 171 psi with a pump house discharge pressure of 45 psi.

In 1992, the pressures were tested at 9 different houses to determine the effectiveness of each PRV. These locations were selected to provide a picture of the water pressure throughout the distribution system. These same houses were tested on June 18, 2020 to determine the condition of each PRV. Table 1 compares the pressure readings from 1992 and 2020. The table also provides the approximate elevation at each location. Figure 1 shows a layout of the distribution system and the location of each PRV.

Based on the results shown, it appears that neither of the two PRVs at the top of the system are working. The down stream sample locations are both 20 psi higher than the houses upstream of the PRVs in question; they are also over 25 psi higher when compared to the pressure recorded in 1992. That 25 psi difference is observed throughout the system downstream of the two PRVs when comparing the 1992 and 2020 pressure readings.

Given the low reading at 45 Rocky Point Dr (65 psi at the bottom of the system), additional pressure readings were collected on August 5, 2020. Pressures were recorded at an additional six locations and are included in both Table 1 and Figure 1. When collecting the reading at 44 Rocky River Point Drive, the home owner stated that he had a pressure regulator inside his home. The pressure regulator had gauges on either side, 120 psi coming from the distribution system and 70 after the regulator.

Based on this information, it is assumed that both 45 and 46 Rocky Point Drive also have pressure regulators inside their house. Unfortunately, neither homeowner was present to confirm.

In conclusion, the pressures in the system have increased by over 25 psi in some locations in the distribution system compared to when the PRVs were first installed. Based on the readings throughout the system, it is apparent the PRVs 1 and 2 have failed. The system now has several houses with pressures well over 100 psi. It is recommended that PRVs 1 and 2 be replaced and the other three monitored annually.



Table 1 – Pressure Variations Throughout the Distribution System

Address	Approx. Elevation	Location	1992 Data (psi)	2020 Data (psi)
12 Shore View Drive	540	Upstream PRV #1	60	60
22 Rocky Point Drive	510	Downstream PRV #1	54	80
34 Rocky Point Drive	430	Upstream PRV #4	86	110
38 Rocky Point Drive	405	Downstream PRV #4	80	101
45 Rocky Point Drive*	350	Bottom of System (Downstream PRVs 4/3)	66	65
6 Surrey Drive	440	Upstream PRV #3	74	104
23 Surrey Drive	370	Downstream PRV #3	84	105
7 Old Coach Road**	515	Downstream PRV #2 Upstream PRV #5	52	80
2 Surrey Coach Lane	440	Downstream PRV #5		65
4 West Gate Drive	420	Dead End Rd (Downstream PRVs 5/3)	78	71
17 Rocky Point Drive	525	Downstream PRV #4		60
39 Rocky Point Drive	370	Downstream PRV #4		90
43 Rocky Point Drive	340	Downstream PRV #4		90
44 Rocky Point Drive	350	Downstream PRV #4		70/120***
46 Rocky Point Drive	340	Downstream PRV #4		50
1 Oak Ridge Road	410	Upstream PRV #2		90

*Assumed house has Pressure Regulator Installed

**Water was turned off at 7 Old Coach Road; 6 Old Coach Road was used instead.

***House has pressure regulator after meter. 120 psi coming into house / 70 psi throughout the house.

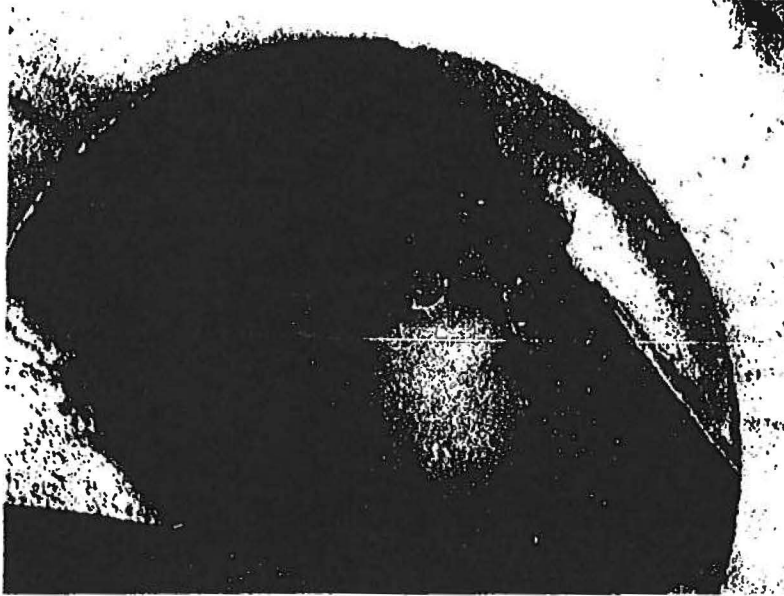


Figure 1 – White Rock Distribution System Pressure Readings





PRV #1

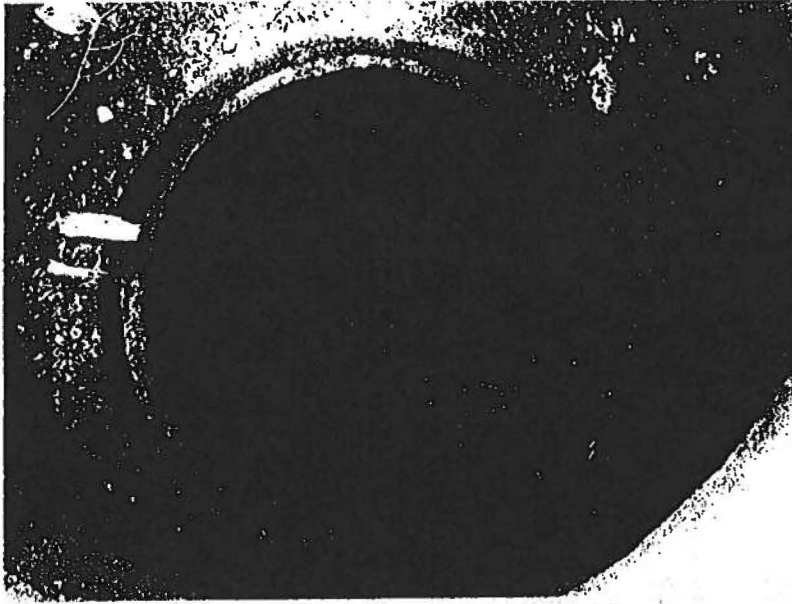


PRV #2





PRV #3



PRV #4





PRV #5



Capital Spending 3-year forecast

Project	Year	Lakeland Water	White Rock	Tioga Gilford	Tioga Belmont	Lakeland Sewer	Yearly Total
Replace Filtration and Media Equipment	2021			20,000			
Storage Tank Installation	2021				40,000		
Installation of Isolation Valves	2021				10,000		
Replace Filtration and Media Equipment	2022				15,000		
Tank Lining	2021		50,000				
Installation of Isolation Valves	2021		45,000				
Installation of Pressure Reducing Valves	2021		30,000				
2021 Total							210000
Upgrade Arsenic Treatment System	2022		30,000				
Replace Generator Transfer Switch	2022					3000	
SCADA Upgrades	2022	10000					
Pumping Equipment Upgrades	2022	20000					
Add System Blowoffs	2022			20000			
2022 Total							83000
Install SCADA	2023		15000				
Install SCADA	2023				10000		
System Mapping	2023	5000		5000	5000		
Update Station Panel & Controls	2023					20000	
2023 Total							60000

Please note, project scheduling or proposed capital expenditures may change due to unanticipated events.