



**Vincent Saplenza, P.E.**  
*Commissioner*

**Paul V. Rush, P.E.**  
Deputy Commissioner  
Bureau of Water Supply  
prush@dep.nyc.gov

59-17 Junction Boulevard  
Flushing, NY 11373  
T: (845) 340-7800  
F: (845) 334-7175

November 8, 2019

Li Huang, P.E.  
New York City Department of Health and Mental Hygiene  
Environmental Sciences & Engineering  
42-09 28<sup>th</sup> Street, 14<sup>th</sup> Floor CN# 56  
Long Island City, NY 11101

Patrick Palmer  
New York State Department of Health  
Bureau of Water Supply Protection, NYC Watershed Section  
Empire State Plaza, Corning Tower, Room 1198  
Albany, NY 12237

Katie Lynch  
United States Environmental Protection Agency  
Clean Water Division - New York City Water Supply Protection Program  
290 Broadway, 24<sup>th</sup> Floor  
New York, New York 10007-1866

**RE: Monthly Water Quality Report for October 2019**

Dear Ms. Huang, Mr. Palmer and Ms. Lynch:

Enclosed, please find the New York City Water Quality report for the month of **October 2019**. There was no well pumpage to distribution in the Groundwater System this month. Croton water was not feeding into distribution in the first half of October; it started feeding into distribution on October 16, 2019. In addition to the following list of compliance reports, a disc of electronic files containing compliance and non-compliance data for this month is enclosed with this report.

- Raw Water Fecal Coliform Report
- Raw Water Turbidity Report
- Distribution Microbiological Compliance Reports
  - Summary
  - Positive Samples
  - Resamples
- Chlorine Residual Reports
  - Entry Point Online
  - Entry Point Daily Minimum
  - Heterotrophic Plate Count
  - Monthly Summary
- Distribution Turbidity Reports
  - Distribution Turbidity Report
  - Source Water > 1.49 NTU Table
- Color Entry Point Report

- Fluoride Reports
  - Fluoride Entry Point Report
  - Distribution Fluoride Report
- Quarterly Disinfection By-products Report

The reports are summarized as follows:

## FAD REQUIREMENTS

### **1. Raw Water Fecal Coliform Concentrations (Section 141.71(a)(1)):**

**Requirements met.** The Delaware Aqueduct effluent from Kensico Reservoir exhibited fecal coliform concentrations in water prior to disinfection at levels less than or equal to 20 CFU/100 mL in at least 90% of the samples collected in the six-month period from May 1, 2019 to October 31, 2019. The six month running percentage of samples collected with fecal coliform concentrations >20 CFU/100 mL was 0.00% for the Catskill/Delaware System for this time period.

### **2. Raw Water Turbidity (Section 141.71(a)(2)):**

**Requirements met.** The raw water leaving Kensico Reservoir via the Delaware Aqueduct in compliance samples collected at DEL18DT, just prior to disinfection, exhibited turbidity levels less than or equal to 5 NTU on an ongoing basis during the month. The highest reported turbidity value was 1.0 NTU on the Catskill/Delaware System for the month.

### **3. Entry Point Chlorine Residual (Section 141.71(b)(1)(iii) and 141.72(a)(3)):**

**Requirements met.** As required, continuous monitoring for free chlorine residual was maintained at the distribution entry points throughout the month and at no time did the concentration fall below 0.2 mg/L for more than four hours. The minimum daily free chlorine residual value for entry point readings for the Catskill/Delaware System from sites 1S03 (Tunnel 1) was 0.49 mg/L, 1S03A (Tunnel 2) was 0.86 mg/L, and 1S03B (Tunnel 3) was 0.39 mg/L.

The Croton Filtration Plant was online and continuously feeding the Croton Low Service entry point from 12:19 PM on October 16, 2019 through October 31, 2019. The Croton High Service entry point was offline in October 2019. When High Service Pumps are off, distribution Tunnel 3 water intermittently back feeds through the High Service tunnel to the Low Service entry point to meet the distribution demands. The minimum daily free chlorine residual value for Croton entry point readings from site 1SCL1 (Low Service) was 0.51 mg/L.

### **4. Distribution System Disinfection Residuals (Section 141.71(b)(1)(iv) and 141.72(a)(4)):**

**Requirements met.** All free chlorine residuals measured at compliance sites within the distribution system during the month were greater than or equal to 0.01 mg/L except for one sample that equaled 0.0 mg/L.

A total of 1358 distribution samples were tested for free chlorine residual this month. For all distribution sites free chlorine residual ranged from 0.00 mg/L to 1.19 mg/L, and averaged 0.59 mg/L for the month.

**5. Trihalomethane Monitoring / HAA5 Monitoring (Section 141.71(b)(6)):**

**Requirements met.** The results for the third quarter of 2019 were included in the report dated September 10, 2019 (for the August 2019 reporting period).

**6. Total Coliform Monitoring (Section 141.71(b)(5)):**

**Requirements met.** The results of monthly coliform monitoring performed in the distribution system are enclosed. A total of 825 compliance samples were tested for total coliform during this period. HPC were all  $\leq 500$  CFU/mL, equivalent to a measurable free chlorine residual. Zero percent of the samples had an undetectable free chlorine residual or HPC  $> 500$  CFU/mL. This meets the requirements that a free chlorine residual be maintained at representative points in the distribution system, and that no more than 5% of the free chlorine residual samples be undetectable in any two months. During the month, there were three (3) samples that tested positive for total coliform, and all samples were negative for *E. coli*.

- A sample collected on 10/8/2019 from Site 59350 (sample station, in front of 1824 south side of Victory Boulevard, Staten Island, between Raymond Avenue and Lester Street, 12 inch) was positive for total coliform. Repeat sampling on 10/10/2019 was coliform negative at all locations.
- A sample collected on 10/30/2019 from Site 43650 (sample station, east side of Whitestone Expressway (service road), Queens, first sampling station north of Higgins Street, 12 inch) was positive for total coliform. Repeat sampling on 11/1/2019 was coliform negative at all locations.
- A sample collected on 10/31/2019 from Site 24650 (sample station, north side of Linden Blvd Brooklyn, first sampling station east of Bristol Street, 12 inch) was positive for total coliform. Repeat sampling on 11/2/2019 was coliform negative at all locations.

**OTHER WATER QUALITY MONITORING****7. Microbiological Monitoring:**

Coliform monitoring at distribution sites near first service connections, in response to source water having a turbidity  $> 1.49$  NTU, was not required this month, but all of these samples were negative for total coliform.

The analyses of 533 distribution Operational samples resulted in four (4) samples testing positive for total coliform. No *E. coli* were detected.

The analyses of 248 Pre-Finished samples resulted in five (5) samples testing positive for total coliform. No *E. coli* were detected.

The analyses of 620 Autosampler Pre-finished samples resulted in nine (9) samples testing positive for total coliform. No *E. coli* were detected.

**8. Distribution Turbidity Monitoring:**

For distribution sites turbidity ranged from 0.11 to 2.08 NTU and averaged 0.65 NTU for the month. This meets the MCL of 5 NTU for the monthly average of all distribution samples.

**9. Color Monitoring:**

The MCL of 15 units for color was met at each Catskill/Delaware entry point for the month. Daily analyses of entry point samples (108 samples in total), produced monthly average color values of six (6) units for site 1S03 (Tunnel 1), seven (7) units for sites 1S03A (Tunnel 2) and 1S03B (Tunnel 3), and four (4) units for site 1SCL1 (Croton Low Service).

**10. Volatile Organic/TTHM/HAA5 Monitoring:**

**Monthly Results:** Twenty-two (22) distribution and three (3) entry point samples were collected for volatile organic contaminant (VOC) analysis. All VOC samples from distribution sites and entry points were below detection. Twenty-two (22) TTHM distribution samples were collected ranging from 24 µg/L to 54 µg/L. Three (3) TTHM entry point samples were collected ranging from 28 µg/L to 43 µg/L. Twenty-two (22) HAA5 distribution samples were collected ranging from 24 µg/L to 41 µg/L. Three (3) HAA5 entry point samples were collected ranging from 25 µg/L to 32 µg/L.

**11. Semivolatile and Other Organic Chemicals/parameters:**

EPA Method 525.3 monitoring for 112 compounds of specified and unspecified organic parameters was conducted on October 15, 2019 at the three (3) Catskill/Delaware entry points (1S07, 1S03A, and 1S03B), at the Croton Low Service entry point (1SCL1) and Croton High Service entry point (1SCH3) which represented distribution Catskill/Delaware water, and six (6) distribution points. All semi-volatile organic contaminant samples from distribution sites and entry points were below detection limits.

**12. Fluoride Monitoring:**

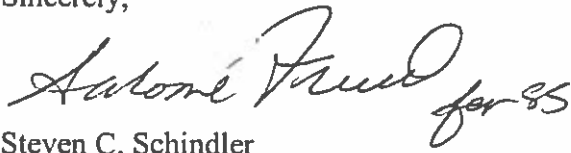
Daily analyses of entry point samples (108 samples in total), produced monthly average fluoride levels of 0.69 mg/L for sites 1S03 (Tunnel 1), 1S03A (Tunnel 2), 1S03B (Tunnel 3), and 1SCL1 (Croton Low Service). The fluoride levels at the entry points did not exceed the MCL of 2.2 mg/L at any time during the month.

**13. Other Monitoring:**

Monitoring for Taste and Odor (T&O) compounds, Geosmin, 2-Methylisoborneol (MIB), 2,4,6-Trichloroanisole (TCA), 2-isobutyl-3-methoxy pyrazine (IBMP), and/or 2-isopropyl-3-methoxy pyrazine (IPMP), was conducted in October on 56 Croton water samples from New Croton Reservoir and Jerome Park reservoir. Results, including pending results from September, ranged from ND to 10 ng/L for Geosmin, ND to 3.7 ng/L for MIB, and 2 ng/L for TCA, IBMP and IPMP. Contract laboratory reports of available data are included as pdf files on the disc of electronic files enclosed with this report.

Please feel free to contact me at (845) 340-7701 if you would like to discuss any of this information in greater detail.

Sincerely,



Steven C. Schindler  
Director, Water Quality

**Enclosure**

cc:

Mr. Andrew Brunsten, Inspector General for NYCDEP  
Mr. Kenneth Kosinski, NYSDEC  
Mr. David Kvinge, Westchester County Water Agency (by email only)  
Mr. Huan Li, NYCDOHMH  
Ms. Millie Magraw, Westchester County Water Agency  
Mr. Trevor McProud, NYCDOHMH  
Mr. Andy Tse, NYSDOH (by email only)  
Mr. Steven Zahn, NYSDEC – Region 2

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### Microbiological Reports:

Summary of Coliform Compliance Samples  
Coliform Positive Compliance Samples  
Coliform Resample for Positive Compliance Samples  
Summary of Coliform Operational Samples

(NYC\_Micro\_Summary\_Compliance\_201910.xls)  
(NYC\_Micro\_Compliance\_Positives\_201910.xls)  
(NYC\_Micro\_Compliance\_Resamples\_201910.xls)  
(NYC\_Micro\_Operational\_201910.pdf)  
(NYC\_Micro\_Summary\_Operational\_201910.xls)  
(NYC\_Micro\_Operational\_201910.pdf)  
(NYC\_Micro\_Operational\_Positives\_201910.xls)  
(NYC\_Micro\_Operational\_201910.pdf)  
(NYC\_Micro\_Operational\_Resamples\_201910.xls)  
(NYC\_EP\_Coliform\_For\_Source\_Turb\_GT\_149\_201910.snp)  
(NYC\_Monthly\_Alldata\_201910.xls|Micro)

Coliform Positive Operational Samples

Coliform Resample for Positive Distribution Operational Samples

Distribution Coliform Monitoring when Source Water Turbidity exceeds 1.49 NTU  
All Microbiological Results

**Free Chlorine Residual (FCR) Reports:**  
Entry Point FCR On-Line Monitoring Results

Daily Minimum FCR at Entry Points

FCR and Heterotrophic Plate Count (HPC) Compliance Samples  
FCR and HPC of Operational Samples

(Entry\_Shaft\_Ci2\_Onln\_201910\_Fig.pdf)  
(Croton\_Entry\_Point\_Ci2\_201910\_Fig.pdf)  
(Entry\_Shaft\_Ci2\_Onln\_201910\_Tbl.pdf)  
(Croton\_Entry\_Point\_Ci2\_201910\_Tbl.pdf)  
(NYC\_Micro\_Summary\_FCR\_&\_HPC\_Compliance\_201910.xls)  
(NYC\_Micro\_Summary\_FCR\_&\_HPC\_Operational\_201910.xls)  
(NYC\_Micro\_Operational\_201910.pdf)  
(NYC\_FCR\_Monthly\_Summary\_201910.xls)  
(NYC\_FCR\_Monthly\_Alldata\_201910.xls)

Summary of FCR of Distribution Samples (Monthly)  
FCR of all Distribution Sites

### Turbidity Reports:

Summary of Turbidity of Distribution Samples  
Turbidity of all Distribution Sites

(NYC\_Turbidity\_Monthly\_Summary\_201910.xls)  
(NYC\_Turbidity\_Monthly\_Alldata\_201910.xls)

### Color Reports:

Color for Entry Point Samples

(Entry\_Point\_Color\_Monthly\_201910.xls)

### Fluoridation Reports:

Summary of Fluoride Levels of Distribution Samples  
Fluoride Daily Entry Point Report for Surface Water Systems  
Fluoride of all Distribution Sites

(NYC\_Fluoride\_Monthly\_Summary\_201910.xls)  
(Entry\_Point\_Fluoride\_Monthly\_201910.xls)  
(NYC\_Fluoride\_Monthly\_Alldata\_201910.xls)

**Volatile Organic Contaminant (VOC) and Disinfection By-products (DBP) Reports:**

Total Trihalomethanes (TTHM) & VOC Monthly Report  
Semivolatiles of EPA Method 525 Report  
Halocetic Acids (HAA5) Monthly Report

(NYC\_TTHM\_&\_VOC\_Rpt\_201910.xls)  
(NYC\_SOC\_Rpt\_201910.xls)  
(NYC\_HAA5\_Monthly\_Rpt\_201910.xls)  
(829917\_T&O\_Sample\_20190926.pdf, 830338\_T&O\_Sample\_20190930.pdf, 830720\_T&O\_Sample\_20191001.pdf, 831854\_T&O\_Sample\_20191007.pdf, 832155\_T&O\_Sample\_20191008.pdf, 833769\_T&O\_Sample\_20191015.pdf, 833955\_T&O\_Sample\_20191017.pdf, 835945\_T&O\_Sample\_20191028.pdf, 834827\_T&O\_Sample\_20191021.pdf)

Taste & Odor Sampling Reports from EEA Lab

Summary of EPA Organic Method Reports

(NYC\_VOC\_525\_HAA5\_Rpt\_201910.pdf)

### Inorganic (IOC), Specified Organic (SOC), Metals Monitoring:

All parameters for October 2019  
Mercury results from EEA LAB

(NYC\_Monthly\_Alldata\_201910.xls)  
(832198\_Monthly\_Hg\_20191001.pdf)

***RAW WATER FECAL COLIFORM CONCENTRATIONS***  
***(FAD Requirement)***





**NYCDEP Division of Watershed Water Quality Operations**  
**Catskill/Delaware System Raw Water Fecal Coliform Compliance Report**

Hawthorne Laboratory, ELAP Lab ID No. 10771  
 15 Skyline Drive, Hawthorne, NY 10532

Deputy Chief: David Robinson  
 914-345-4973

Catskill/Delaware Public Water System at Shaft 18 (DEL18DT) - Raw Water				Period: 08/17 To: 10/19
Date	Number of Fecal Coliform Samples Examined per Month	Number of Fecal Coliform Samples with >20 colonies per 100 mL	Percent of Monthly Fecal Coliform Samples with >20 colonies per 100 mL	Percent of Monthly Fecal Coliform Samples with >20 colonies per 100 mL for Previous Six Months
8-17	31	0	0.00	0.00
9-17	30	0	0.00	0.00
10-17	31	0	0.00	0.00
11-17	30	0	0.00	0.00
12-17	31	0	0.00	0.00
1-18	31	0	0.00	0.00
2-18	28	1	3.57	0.55
3-18	31	0	0.00	0.55
4-18	30	0	0.00	0.55
5-18	31	0	0.00	0.55
6-18	30	0	0.00	0.55
7-18	31	0	0.00	0.55
8-18	31	0	0.00	0.00
9-18	30	2	6.67	1.09
10-18	31	2	6.45	2.17
11-18	30	0	0.00	2.19
12-18	31	0	0.00	2.17
1-19	31	0	0.00	2.17
2-19	28	0	0.00	2.21
3-19	31	0	0.00	1.10
4-19	30	0	0.00	0.00
5-19	31	0	0.00	0.00
6-19	30	0	0.00	0.00
7-19	31	0	0.00	0.00
8-19	31	0	0.00	0.00
9-19	30	0	0.00	0.00
10-19	31	0	0.00	0.00

*D.W. Robinson*

*11/4/19*

Reported by: David Robinson, Deputy Chief, Hawthorne Water Quality Operations 11/1/2019

***RAW WATER TURBIDITY***  
***(FAD Requirement)***



# NYCDEP Division of Watershed Water Quality Operations

## Water Systems Operation Report - Catskill/Delaware System

Hawthorne Laboratory, ELAP Lab ID No. 10771  
15 Skyline Drive, Hawthorne, NY 10532

Deputy Chief: David Robinson  
914-345-4973

Catskill/Delaware Public Water System at Shaft 18 (DEL18DT) - Raw Water Period: October, 2019

Date	Turbidity (NTU)						Total Coliform (Colonies per 100 mL)	Fecal Coliform
	12 AM	4 AM	8 AM	12 PM	4 PM	8 PM		
10/1/19	0.50	0.55	0.60	0.50	0.50	0.70	E140	E1
10/2/19	0.70	0.80	0.80	0.85	0.70	0.75	E50	<1
10/3/19	0.80	0.75	0.65	0.70	0.65	0.75	E20	E2
10/4/19	0.75	0.70	0.75	0.60	0.75	0.75	<20	<1
10/5/19	0.65	0.70	0.75	0.75	0.75	0.75	E10	E3
10/6/19	0.75	0.80	0.80	0.80	0.85	0.75	E40	E3
10/7/19	0.85	0.80	0.80	0.70	0.75	0.60	<20	E4
10/8/19	0.65	0.65	0.60	0.70	0.75	0.70	E30	<1
10/9/19	0.80	0.80	0.70	0.80	0.80	0.80	E20	E1
10/10/19	0.80	0.80	0.80	0.85	0.70	0.75	E40	E3
10/11/19	0.80	0.85	1.0	0.80	0.85	0.85	E20	<1
10/12/19	0.60	0.55	0.60	0.60	0.60	0.65	E40	<1
10/13/19	0.65	0.65	0.60	0.60	0.60	0.65	E10	E1
10/14/19	0.55	0.55	0.55	0.70	0.70	0.70	E10	E2
10/15/19	0.70	0.60	0.70	0.55	0.60	0.60	E200	<1
10/16/19	0.60	0.60	0.60	0.60	0.65	0.65	E20	E1
10/17/19	0.65	0.70	0.65	0.65	0.65	0.65	E60	E7
10/18/19	0.60	0.65	0.70	0.60	0.65	0.65	E30	E4
10/19/19	0.65	0.65	0.65	0.65	0.65	0.70	E80	E7
10/20/19	0.65	0.65	0.70	0.65	0.65	0.65	E180	E5
10/21/19	0.65	0.60	0.65	0.80	0.80	0.55	E80	E5
10/22/19	0.55	0.70	0.75	0.60	0.60	0.65	E120	E6
10/23/19	0.60	0.60	0.65	0.80	0.60	0.65	E60	E5
10/24/19	0.65	0.65	0.65	0.65	0.65	0.65	E40	E1
10/25/19	0.60	0.80	0.70	0.60	0.65	0.65	E70	<1
10/26/19	0.65	0.65	0.60	0.75	0.75	0.65	E20	E1
10/27/19	0.70	0.60	0.75	0.65	0.65	0.70	E60	E2
10/28/19	0.65	0.70	0.70	0.65	0.65	0.60	E40	E6
10/29/19	0.65	0.70	0.65	0.65	0.60	0.70	E50	E5
10/30/19	0.65	0.70	0.75	0.60	0.65	0.60	E60	E4
10/31/19	0.65	0.60	0.65	0.65	0.65	0.65	E120	E4

.: Aqueduct Shutdown, CONF: Confluent Growth (+ indicates positive coliform growth), LE: Lab Error, FE: Field Error,  
E: estimated count based on non-ideal plate, >=: plate count may be biased low based on heavy growth, >: observed count replaced with dilution based value

1. Does a raw water turbidity M & R violation exist?  Yes  No
2. Does the turbidity reading exceed 5 NTU at any time?  Yes  No  
*If yes, check for MCL violation, and notify state by the end of the next business day.*
3. Minimum number of microbiological samples required per week: 5
4. A daily microbiological sample is required every day the raw water turbidity exceeds 1 NTU.

Additional Comments:

*David Robinson*

*11/4/19*

Reported by: David Robinson, Deputy Chief, Hawthorne Water Quality Operations

11/1/2019

All results that fall within the scope of the NELAP program meet that program's requirements unless stated in the qualifiers addendum printed at the end of this report.

Report Printed on 11/01/2019 4:43 pm



# NYCDEP Division of Watershed Water Quality Operations

## Water Systems Operation Report - Qualifiers and Methods Addendum

Hawthorne Laboratory, ELAP Lab ID No.-10771  
15 Skyline Drive, Hawthorne, NY 10532

Deputy Chief: David Robinson  
914-345-4973

### Data Qualifiers and Additional Notes

Period: October, 2019

Date/Time	Site	Analytes Affected	Qualifier
10/4/19 10:27	DEL18DT	Total Coliform	QC blank contamination
10/24/19 09:08	DEL18DT	Total Coliform	QC blank contamination. 1 Non sheen on end blank

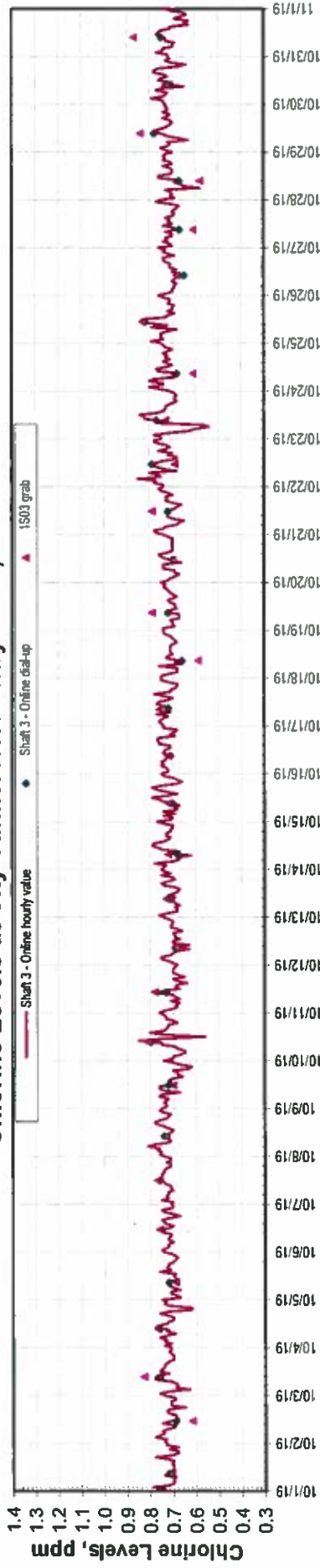
### Analytical Methods

Coliform, Fecal	-	SM 9222D (2006)
Coliform, Total	-	SM 9222B (2006)
Turbidity	-	SM 2130B (01)

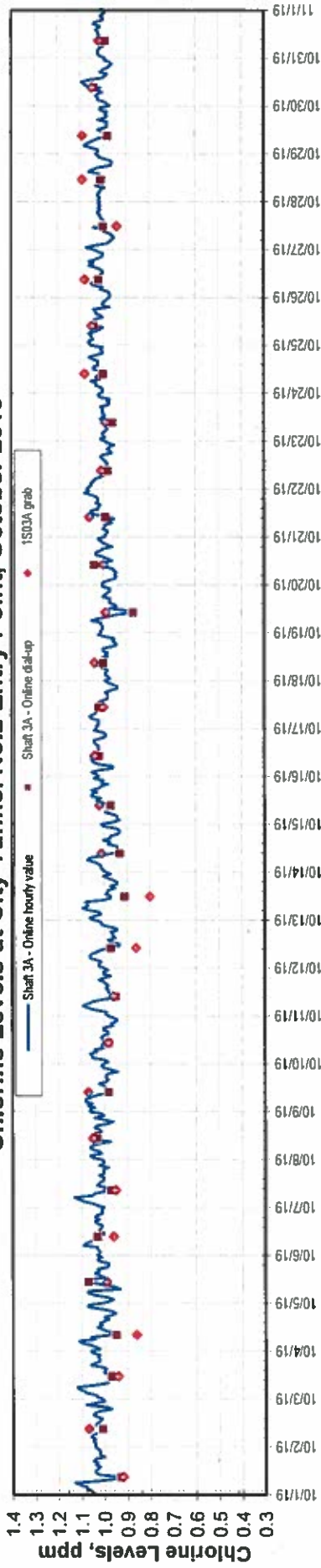
***ENTRY POINT CHLORINE RESIDUAL***  
***(FAD Requirement)***

### City Tunnel Entry Point Residual Chlorine Continuous Monitoring Results

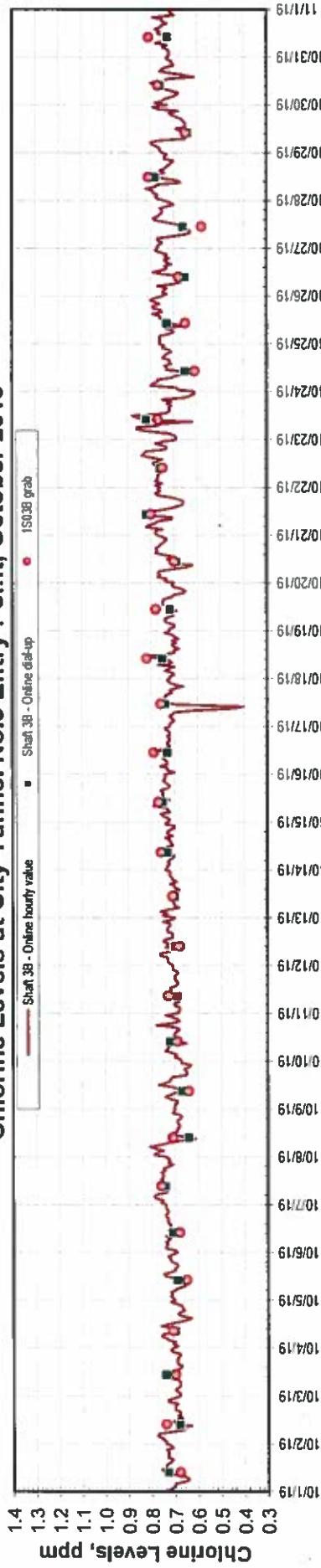
#### Chlorine Levels at City Tunnel No.1 Entry Point, October 2019



#### Chlorine Levels at City Tunnel No.2 Entry Point, October 2019



#### Chlorine Levels at City Tunnel No.3 Entry Point, October 2019



Note: Continuous monitoring of free chlorine residual (FCR) at distribution entry points was maintained. FCR was maintained at or above 0.2 ppm at all times. Since 3/10/19, all online dial-up readings were recorded in Eastern Daylight Saving Time.



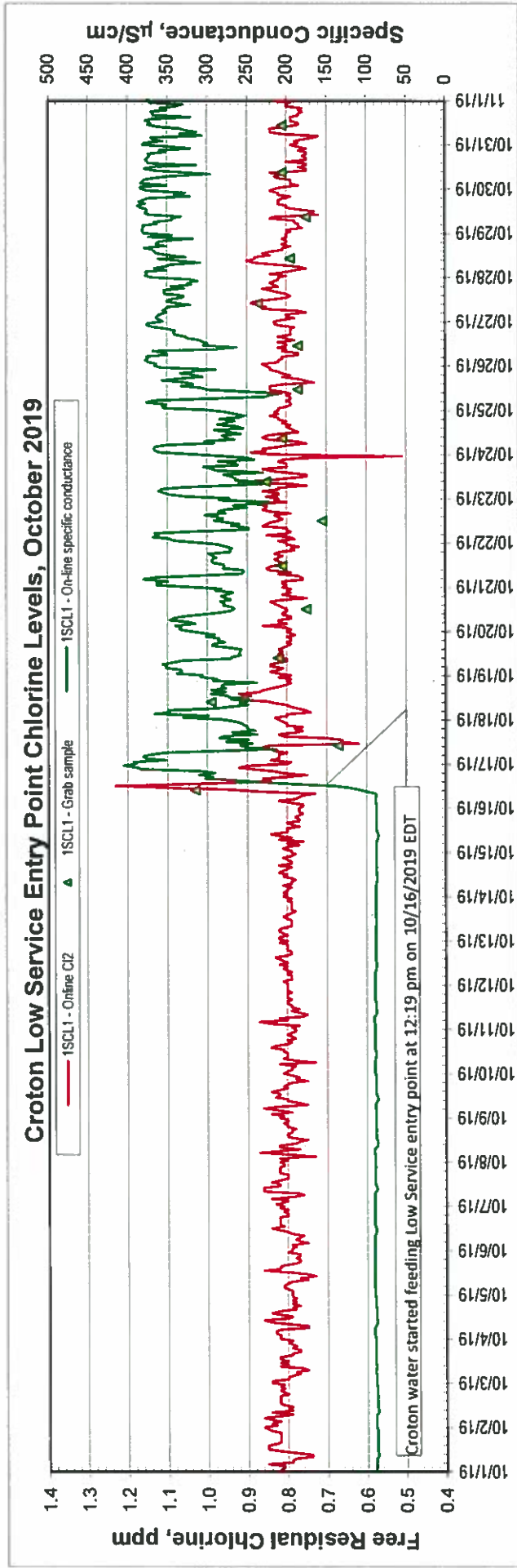
New York City Department of Environmental Protection  
Bureau of Water Supply

Daily Minimum Chlorine Readings Recorded at Tunnel Entry Shafts for Catskill/Delaware System

Tunnel No.1 (Catskill) at Shaft 3		Tunnel No.2 (Delaware) at Shaft 3A		Tunnel No.3 (Cat/Del) at Shaft 3B				
Date	MinCl_1DL	Remark 1	Date	MinCl_2DL	Remark 2	Date	MinCl_3DL	Remark 3
10/01/19	0.67		10/01/19	0.90		10/01/19	0.64	
10/02/19	0.63		10/02/19	0.96		10/02/19	0.59	
10/03/19	0.63		10/03/19	0.94		10/03/19	0.66	
10/04/19	0.60		10/04/19	0.94		10/04/19	0.62	
10/05/19	0.65		10/05/19	0.92		10/05/19	0.64	
10/06/19	0.66		10/06/19	0.99		10/06/19	0.68	
10/07/19	0.66		10/07/19	0.96		10/07/19	0.71	
10/08/19	0.65		10/08/19	0.96		10/08/19	0.61	
10/09/19	0.61		10/09/19	0.94		10/09/19	0.63	
10/10/19	0.54		10/10/19	0.93		10/10/19	0.64	
10/11/19	0.63		10/11/19	0.94		10/11/19	0.67	
10/12/19	0.60		10/12/19	0.92		10/12/19	0.69	
10/13/19	0.63		10/13/19	0.90		10/13/19	0.68	
10/14/19	0.59		10/14/19	0.89		10/14/19	0.69	
10/15/19	0.65		10/15/19	0.93		10/15/19	0.70	
10/16/19	0.68		10/16/19	0.96		10/16/19	0.70	
10/17/19	0.68		10/17/19	0.93		10/17/19	0.39	
10/18/19	0.63		10/18/19	0.94		10/18/19	0.67	
10/19/19	0.63		10/19/19	0.86		10/19/19	0.65	
10/20/19	0.63		10/20/19	0.94		10/20/19	0.61	
10/21/19	0.59		10/21/19	0.94		10/21/19	0.65	
10/22/19	0.67		10/22/19	0.96		10/22/19	0.68	
10/23/19	0.53		10/23/19	0.95		10/23/19	0.60	
10/24/19	0.60		10/24/19	0.99		10/24/19	0.58	
10/25/19	0.49		10/25/19	0.96		10/25/19	0.64	
10/26/19	0.63		10/26/19	0.96		10/26/19	0.59	
10/27/19	0.66		10/27/19	0.94		10/27/19	0.62	
10/28/19	0.52		10/28/19	0.95		10/28/19	0.65	
10/29/19	0.61		10/29/19	0.96		10/29/19	0.62	
10/30/19	0.61		10/30/19	0.94		10/30/19	0.61	
10/31/19	0.61		10/31/19	0.96		10/31/19	0.69	

Legend: MinCl\_1DL: Shaft 3's minimum chlorine level measured at the shaft and recorded at the location via data logger, in ppm.  
MinCl\_2DL: Shaft 3A's minimum chlorine level measured at the shaft and recorded at the location via data logger, in ppm.  
MinCl\_3DL: Shaft 3B's minimum chlorine level measured at the shaft and recorded at the location via data logger, in ppm.

### Croton Distribution Entry Point Residual Chlorine Continuous Monitoring Results



Note: Continuous monitoring of free chlorine residual (FCR) at distribution entry points was maintained. FCR was maintained at or above 0.2 ppm at all times. Since 3/10/19, all online readings, grab and online dial-up readings were recorded in Eastern Daylight Saving Time.



New York City Department of Environmental Protection  
Bureau of Water Supply

Daily Minimum Chlorine Readings Recorded at Croton Distribution Entry Points

Low Service			High Service		
Date	MinCl_1SCL1	Remark 1	Date	MinCl_1SCH3	Remark 2
10/01/19			10/01/19		
10/02/19			10/02/19		
10/03/19			10/03/19		
10/04/19			10/04/19		
10/05/19			10/05/19		
10/06/19			10/06/19		
10/07/19			10/07/19		
10/08/19		No Croton water.	10/08/19		
10/09/19			10/09/19		
10/10/19			10/10/19		
10/11/19			10/11/19		
10/12/19			10/12/19		
10/13/19			10/13/19		
10/14/19			10/14/19		
10/15/19			10/15/19		
10/16/19	0.72		10/16/19		No Croton water.
10/17/19	0.60		10/17/19		
10/18/19	0.72		10/18/19		
10/19/19	0.76		10/19/19		
10/20/19	0.73		10/20/19		
10/21/19	0.67		10/21/19		
10/22/19	0.61		10/22/19		
10/23/19	0.51		10/23/19		
10/24/19	0.73		10/24/19		
10/25/19	0.71		10/25/19		
10/26/19	0.76		10/26/19		
10/27/19	0.73		10/27/19		
10/28/19	0.73		10/28/19		
10/29/19	0.72		10/29/19		
10/30/19	0.73		10/30/19		
10/31/19	0.56		10/31/19		

Legend: MinCl\_1SCL1: 1SCL1's minimum chlorine level measured and recorded at the location via data logger, in ppm.

MinCl\_1SCH3: 1SCH3's minimum chlorine level measured and recorded at the location via data logger, in ppm.

Note: Croton water fed to High Service time period was determined by specific conductance greater than 150 uS/cm.

***DISTRIBUTION SYSTEM DISINFECTION RESIDUAL***  
***(FAD Requirement)***

**REPORT**

**NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)**

**Residual Chlorine (mg/L) Distribution Samples**

October 2019

All Distribution Sites			
Samples	Min	Max	Average
1358	0.00	1.19	0.59

Hach DPD Method (analyte is not ELAP certified)

SAMPLE NUMBER	SAMPLE DATE	SAMPLE SITE	LOCATION TYPE	RESIDUAL CHLORINE	COMMENT
31023	10/19/19	13050	Regular	1.19	Max
29814	10/8/19	43950	Regular	0.00	Mini

A FCR is to be maintained at representative points in the distribution system and no more than 5% of the samples can be undetectable in any two months.

***TOTAL COLIFORM MONITORING***  
***(FAD Requirement)***

REPORT

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

Summary of Results for Microbiological Quality  
 Compliance Samples

10/1/2019 to 10/31/2019

Location	Number of Sampling Points	Number of Samples Collected	Number of Samples Tested	Number of Samples with Positive Coliform *	Number of Samples with Positive E. coli *	Percent of Samples with Positive Coliform **
Bronx	46	136	136	0	0	0.0%
Brooklyn	70	201	201	1	0	0.5%
Manhattan	57	170	170	0	0	0.0%
Queens ***	79	230	230	1	0	0.4%
Staten Island	29	88	88	1	0	1.1%
Ground Water Supply ***	-	-	-	-	-	-
Total	281	825	825	3	0	0.4%

\* As determined by Colilert Quanti-Tray-18 Method (SM 9223 B).

\*\* If more than 5.0 % of all monthly TCR compliance samples are positive for total coliform, a Level I Assessment must be conducted.

\*\*\* There was no groundwater sample this month because no well was in operation to distribution.

Supervisor: Rupe Agard Date: 11/7/19

Director: Neil Ben Date: 11/8/19





REPORT

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

Results for Microbiological Quality  
 Free Chlorine Residual and Heterotrophic Plate Count  
 Compliance Samples

10/1/2019 to 10/31/2019

Location	Number of Sampling Points	Number of Samples Collected	Number of Samples Tested (Free Chlorine Residual)	Number of Samples Tested (Heterotrophic Plate Count)	Number of Samples with Free Chlorine Residual *		Range of Heterotrophic Plate Count (CFU/mL) for Free Chlorine Residual of 0.00 mg/L **	Number of Samples with Free Chlorine Residual of 0.00 mg/L and HPC > 500	Percent of Samples with Free Chlorine Residual of 0.00 mg/L and HPC > 500 ***
					< 0.20 mg/L	0.00 mg/L			
Bronx	46	136	136	96	2	0	--	0	0.0%
Brooklyn	70	201	201	142	2	0	--	0	0.0%
Manhattan	57	170	170	127	13	0	--	0	0.0%
Queens †	79	230	230	171	31	1	<1	0	0.0%
Staten Island	29	88	88	65	8	0	--	0	0.0%
Ground Water Supply †	-	-	-	-	-	-	--	-	-
Total	281	825	825	601	56	1	<1	0	0.0%

\* Free chlorine residual is determined by Hach DPD Method (analyte is not ELAP certified).  
 \*\* Heterotrophic plate count is determined by method SM 9215 B, PCA medium, 35°C, 48hrs. HPC result ≤ 500 CFU/mL is equivalent to a measurable FCR.  
 \*\*\* No more than 5 % of FCR samples shall be undetectable in any 2 consecutive months.

† There was no groundwater sample this month because no well was in operation to distribution.

Supervisor: Rupe Agard Date: 11/7/19

Director: Walter Date: 11/8/19



***MICROBIOLOGICAL MONITORING***

**REPORT**

**NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)**

**Coliform Monitoring Results at Sample Sites near the First Service Connection  
When Source Water Turbidity Exceeds 1.49 NTU**

**October 2019**

Source water		Distribution site near first service connection			
Date Turb>1.49 NTU	System	Sample Date	Sample Site	Coliform *	E.coli *

No official four-hour turbidity readings from Cat-Del source water were greater than 1.5 NTU this month.

\* As determined by Colifert Quanti-Tray-18 Method (SM 9223B). Results expressed in "MPN /100mL."

***DISTRIBUTION TURBIDITY MONITORING***

**REPORT**

**NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)**

**Turbidity (NTU) Distribution Samples**

**October 2019**

All Distribution Sites			
Samples	Min	Max	Average
1358	0.11	2.08	0.65

Analytical Method SM 2130 B

SAMPLE NUMBER	SAMPLE DATE	SAMPLE SITE	LOCATION TYPE	TURBIDITY	COMMENT
30466	10/14/19	30750	Reg Stop	2.08	Max
31808	10/26/19	3SC26	Reg Stop	0.11	Min
32195	10/30/19	35350	Reg Stop	0.11	Min

The monthly average of all distribution samples is not to exceed 5 NTU.

***COLOR MONITORING***

REPORT

NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 BUREAU OF WATER SUPPLY DISTRIBUTION LABORATORY (NYSDOH ELAP #10770; USEPA #NY01351)

Color (U) for Distribution Entry Points  
 October 2019

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Catskill/Delaware 1S03 (Tunnel 1)	6	6	7	6	7	6	6	6	7	7	7	7	7	7	7	6	7	6	7	6	7	7	6	5	6	7	6	7	7	7	6
Catskill/Delaware 1S03A (Tunnel 2)	7	6	7	7	7	6	7	7	6	7	7	7	7	7	6	6	8	6	7	7	6	8	6	6	7	8	6	6	7	8	6
Catskill/Delaware 1S03B (Tunnel 3)	6	6	7	6	7	6	7	7	8	7	7	6	6	7	7	6	7	7	6	7	6	7	6	5	7	8	6	7	7	7	6
Croton System 1SCL1 (a)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	5	5	4	4	4	4	4	4	4	4	4	4
Croton System 1SCH3 (a)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Analytical Method SM 2120 B. Apparent color.

The average of two consecutive samples from the same site is not to exceed the MCL of 15 color units.

(a) Croton System online as of 10/17/19 at 1SCL1.

Entry Point	Samples	Minimum	Maximum	Average
Catskill/Delaware 1S03 (Tunnel 1)	31	5	7	6
Catskill/Delaware 1S03A (Tunnel 2)	31	6	8	7
Catskill/Delaware 1S03B (Tunnel 3)	31	5	8	7
Croton System 1SCL1 (a)	15	4	5	4
Croton System 1SCH3 (a)	-	-	-	-

Supervisor 

Date 11/08/19

Director 

Date 11/18/19

***FLUORIDE MONITORING***

REPORT

NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF WATER SUPPLY DISTRIBUTION LABORATORY (NYSDOH ELAP #10770; USEPA #NY01351)

Fluoride (mg/L) for Distribution Entry Points  
October 2019

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Catskill/Delaware 1S03 (Tunnel 1)	0.70	0.69	0.68	0.67	0.71	0.69	0.69	0.69	0.70	0.69	0.70	0.68	0.69	0.69	0.69	0.70	0.69	0.70	0.69	0.70	0.68	0.68	0.70	0.70	0.70	0.70	0.70	0.71	0.71	0.71	0.70
Catskill/Delaware 1S03A (Tunnel 2)	0.69	0.69	0.68	0.67	0.71	0.69	0.70	0.69	0.69	0.69	0.70	0.68	0.69	0.69	0.69	0.68	0.69	0.71	0.69	0.69	0.68	0.69	0.72	0.70	0.71	0.70	0.71	0.71	0.70	0.70	0.70
Catskill/Delaware 1S03B (Tunnel 3)	0.69	0.69	0.68	0.68	0.70	0.69	0.69	0.69	0.69	0.69	0.70	0.69	0.69	0.69	0.69	0.69	0.69	0.70	0.69	0.69	0.68	0.68	0.72	0.70	0.70	0.70	0.70	0.72	0.70	0.70	0.70
Croton System 1SCL1 (e)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	0.70	0.70	0.65	0.66	0.67	0.69	0.69	0.68	0.69	0.76	0.75	0.75	0.73	
Croton System 1SCH3 (e)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Analytical Method SM 4500 FC (97)  
The average of two consecutive samples from the same distribution entry point site is not to exceed the MCL of 2.2 ppm.  
(e) Croton System online as of 10/17/19 at 1SCL1.

Entry Point	Samples	Minimum	Maximum	Average
Catskill/Delaware 1S03 (Tunnel 1)	31	0.67	0.71	0.69
Catskill/Delaware 1S03A (Tunnel 2)	31	0.67	0.72	0.69
Catskill/Delaware 1S03B (Tunnel 3)	31	0.68	0.72	0.69
Croton System 1SCL1 (e)	15	0.61	0.76	0.69
Croton System 1SCH3 (e)	-	-	-	-

Supervisor  Date 11/08/19  
Director  Date 11/8/19