



Date: 11/6/2020

To: Mitchell Gayer

From: David Ekstrand  
Kadeem Hill  
Veronica Kero, CIH, P.E.

Re: **(NJIT NEWARK CAMPUS WASTEWATER DISCHARGE SARS-CoV-2 SAMPLING & PCR ANALYSIS) WEEKLY DATA SUMMARY FOR 11/2/2020-11/4/2020** {Omega Project #: 20-1177}

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Attachment(s):

- *Prestige EnviroMicrobiology Laboratory Analysis Reports for samples collected 11/2-11/4/2020*
- *Sample Trends*

Project Overview:

In order to proactively predict potential escalation of COVID-19 cases in occupied campus dormitory buildings, 24-hour composite wastewater (WW) discharge sampling is being performed, followed by 3<sup>rd</sup> party laboratory analysis in accordance with the published method cited on the attached laboratory analysis report using the approved CDC EUA Kit.

Weekly Data Summary:

| WW Discharge Sampling Location | 24-hr Sampling Date Range | 2019-nCoV (N1 Protein) | Cycle Threshold Value <sup>3</sup> (N1 Protein) | 2019-nCoV (N2 Protein) | Cycle Threshold Value <sup>3</sup> (N2 Protein) | Conc. (Copies of RNA/mL) |
|--------------------------------|---------------------------|------------------------|---|------------------------|---|--------------------------|
| Oak-11                         | 11/2-11/3/2020            | ND                     | ND  | ND                     | ND  | NA                       |
| Cypress-10*                    | 11/2-11/3/2020            | Positive               | 33.74   | Positive               | 34.02   | 180                      |
| Laurel E-08*                   | 11/2-11/3/2020            | Positive               | 37.65   | Positive               | 36.93   | 48                       |
| Laurel M-10*                   | 11/2-11/3/2020            | Positive               | 37.32   | Positive               | 38.89   | 44                       |
| Redwood – 09                   | 11/3-11/4/2020            | ND                     | ND  | ND                     | ND  | NA                       |
| GRK Honors – 11                | 11/3-11/4/2020            | ND                     | ND  | ND                     | ND  | NA                       |

### Local Trending:

According to *covidactnow.org* online database for Essex County:

#### **Active or imminent outbreak.**

Essex County is either actively experiencing an outbreak or is at extreme risk. COVID cases are exponentially growing and/or Essex County's COVID preparedness is significantly below international standards.

Essex Infection Rate 11/2-11/4/20: 1.14 to 1.12% (decreasing)

Essex Positivity Rate 11/2-11/4/20: 4.8% (increasing)

NJ Positivity Rate: 6.2%

Essex Daily New Cases Per 100k: 26.9 to 28.7 (increasing)

### Discussion of CT Score

The cycle threshold (Ct) refers to the number of cycles in an RT-PCR assay needed to amplify viral RNA to reach a detectable level. The Ct value can thus indicate the relative viral RNA level in a specimen (with lower Ct values reflective of higher viral levels).

Since the assessment of covid-19 in sewers is an ongoing developing project the following is intended as a guideline only.

### Omega Recommendations:

| CT Value      | RNA/L                   | Occupant Risk   | Recommendation   |
|---------------|-------------------------|---|--|
| >40           | <2,000                  | None Detected – No Risk identified above normal for the surrounding area. | No Action  |
| 39.99 – 37.5  | 2,001 – 20,000          | Low   | Voluntary COVID-19 Testing for occupants   |
| 37.4 – 32.59  | 20,001 – 200,000        | Moderate  | Non-Voluntary COVID-19 testing for all dorm occupants.   |
| 32.58 - 29.11 | 200,001 – 1,999,999     | High  | Non-Voluntary COVID-19 testing for all dorm occupants. Occupant isolation until test results are received.                         |
| 29.1 – <26.49 | 2,000,000 - >20,000,000 | Very High   | Occupant isolation for a minimum of a week. Non-Voluntary COVID-19 testing for all dorm occupants at the start and end of the week |

Please note, there is an inverse relationship between CT values and RNA/L.

**Decrease** in RNA/mL in Laurel Main from last week, but newly detected in Laurel Extension and Cypress.

Based on the results of the testing performed on 11/2 to 11/4/2020, occupants of Laurel Hall and Cypress Hall are at **moderate risk**.

### Summary

Depending upon NJIT policies Omega recommends:

- All occupants should be re-tested for COVID-19. <sup>(1)</sup>
- Isolate occupants until negative results are received.
- For confirmed cases, students should be removed from shared rooms and quarantined in single rooms
- Notify occupants of an increased risk in the building. Remind occupants of symptoms to be aware of.
- Encourage further adherence to standard precautions (mask, social distancing, and personal hygiene).
- Discourage unnecessary social interactions both in the building and elsewhere on campus until negative test results are received.
- Consider installing a temperature checking camera at residence halls entrances and requiring students to undergo a temperature check before entering the building.

<sup>(1)</sup> Current information indicates that wastewater testing may reveal the presence of Covid-19 4 or 5 days prior to clinical tests or the development of symptoms. If feasible, NJIT may want to encourage occupants to take two tests, approximately 4 days apart.

Results Summary Table

| Date Collected        | Sample # | Results Summary |
|-----------------------|----------|-----------------|
| <b>Oak Bldg. Trap</b> |          |                 |
| 8/25-26               | Oak-01   | ND              |
| 9/1-2                 | Oak-02   | ND              |
| 9/8-9                 | Oak-03   | ND              |
| 9/14-9/15             | Oak-04   | ND              |
| 9/21-9/22             | Oak-05   | ND              |
| 9/28-9/29             | Oak-06   | ND              |
| 10/5-10/6             | Oak-07   | ND              |
| 10/12-10/13           | Oak-08   | ND              |
| 10/19-10/20           | Oak-09   | ND              |
| 10/26-10/27           | Oak-10   | ND              |
| 11/2-11/3             | Oak-11   | ND              |

| Greek Houses Manhole                                |                 |                               |
|---|-----------------|-------------------------------|
| 8/25-26   | Greek-01        | ND                            |
| 9/2-9/3   | Greek-02        | ND                            |
| 9/9-10  | Greek-03        | ND                            |
| 9/15-16   | Greek-04        | ND                            |
| 9/22-23   | Greek-Honors-05 | ND                            |
| 9/28-29   | Greek-Honors 06 | ND                            |
| 10/6-10/7   | Greek Honors-07 | ND                            |
| 10/13-10/14   | Greek Honors-08 | ND                            |
| 10/20-10/21   | Greek Honors-09 | ND                            |
| 10/27-10/28   | Greek Honors-10 | ND                            |
| 11/3-11/4   | Greek Honors-11 | ND                            |
| Honors Manhole                                      |                 |                               |
| 9/1-2   | Honors-01       | ND                            |
| 9/8-9   | Honors-02 VOID  | Insufficient Water for Sample |
| 9/14-9/15   | Honors 3 VOID   | Insufficient Water for Sample |
| Laurel Main Bldg. Trap (M) and Laurel Extension (E) |                 |                               |
| 8/26-27   | Laurel M-01     | ND                            |
| 9/1-2   | Laurel M-02     | ND                            |
| 9/8-9   | Laurel M-03     | ND                            |
| 9/14-9/15   | Laurel E-01     | ND                            |
| 9/21-22   | Laurel E-02     | ND                            |
|   | Laurel M-04     | ND                            |
| 9/28-29   | Laurel E-03     | ND                            |
|   | Laurel M-05     | ND                            |
| 10/5-10/6   | Laurel E-04     | ND                            |
|   | Laurel M-06     | ND                            |
| 10/12-10/13   | Laurel E-05     | ND                            |
|   | Laurel M-07     | Positive                      |
| 10/19-10/20   | Laurel E-06     | ND                            |
|   | Laurel M-08     | Positive                      |
| 10/26-10/27   | Laurel E-07     | ND                            |
|   | Laurel M-09     | Positive                      |
| 11/2-11/3   | Laurel E-08     | Positive                      |
|   | Laurel M-10     | Positive                      |

| <b>Cypress Bldg.</b> |             |          |
|----------------------|-------------|----------|
| 9/1-9/2              | Cypress-01  | ND       |
| 9/8-9/9              | Cypress-02  | ND       |
| 9/14-9/15            | Cypress-03* | Positive |
| 9/21-9/22            | Cypress-04  | ND       |
| 9/28-9/29            | Cypress-05  | ND       |
| 10/5-10/6            | Cypress-06  | ND       |
| 10/12-10/13          | Cypress-07  | ND       |
| 10/19-10/20          | Cypress-08  | ND       |
| 10/26-10/27          | Cypress-09  | ND       |
| 11/2-11/3            | Cypress-10  | Positive |
| <b>Redwood</b>       |             |          |
| 9/9-9/10             | Redwood-01  | ND       |
| 9/15-9/16            | Redwood-02  | ND       |
| 9/22-9/23            | Redwood-03  | ND       |
| 9/28-29              | Redwood-04  | ND       |
| 10/6-10/7            | Redwood-05  | ND       |
| 10/13-10/14          | Redwood-06  | ND       |
| 10/20-10/21          | Redwood-07  | ND       |
| 10/27-10/28          | Redwood-08  | ND       |
| 11/3-11/4            | Redwood-09  | ND       |

## **ATTACHMENTS**

## *Prestige EnviroMicrobiology, Inc.*

### Analytical Test Report

Client: Omega Environmental Services, Inc., 280 Huyler Street, South Hackensack, NJ 07606

Client Project/Name: 20-1177

Sample date: 11-2-2020 & 11-3-2020

Submittal date: 11-3-2020

Sample received: 11-4-2020

Samples submitted by: David Ekstrand

Date analysis completed: November 4, 2020

Prestige Report number: 201104-01

### RT-PCR 2019-nCoV: Analysis of Water samples for the detection of SARS-CoV-2 Genetic Markers

| Prestige #<br>Client sample ID<br>Location | 2019-nCoV<br>(N1 Protein) | Cycle Threshold<br>(Ct) Value <sup>3</sup><br>(N1 Protein) | 2019-nCoV<br>(N2 Protein) | Cycle Threshold<br>Value <sup>3</sup><br>(N2 Protein) | Conc. (copies of<br>RNA/mL) |
|--|---------------------------|--|---------------------------|---|-----------------------------|
| 201104-01-001<br>Oak-11                    | ND                        | ND   | ND                        | ND  | NA                          |
| 201104-01-002<br>Cypress-10                | Positive                  | 33.74  | Positive                  | 34.02   | 180                         |
| 201104-01-003<br>Laurel-E08                | Positive                  | 37.65  | Positive                  | 36.93   | 48                          |
| 201104-01-004<br>Laurel-M10                | Positive                  | 37.32  | Positive                  | 38.89   | 44                          |

Report approved: \_\_\_\_\_



Theresa Lehman, MPH, Lab Director

Technical Manager: \_\_\_\_\_



Chin S Yang, Ph.D.

Analyst: Ching-Yi Tsai, Ph.D.

1. The samples in this report were received in good, acceptable conditions. Results relate only to the items tested.
2. Wastewater samples are processed following the protocol described in the article: Ahmed, W., et al. 2020. First confirmed detection of SARS-CoV-2 in untreated wastewater in Australia: A proof of concept for the wastewater surveillance of COVID-19 in the community. Science of the Total Environment 728. <https://doi.org/10.1016/j.scitotenv.2020.138764>
3. The primers and probes in 2019-nCoV CDC EUA Kit are designed for the detection of the two SARS-CoV-2 genes that encode for the N1 and N2 proteins. The kit is manufactured and supplied by Integrated DNA Technologies and approved by the U.S. Centers for Disease Control and Prevention (CDC). Three controls, two positive controls for N proteins and one internal control for the RNA extraction process, are simultaneously run with the samples.
4. Cycle Threshold Value refers to the number of cycles required for the fluorescent signal to cross the detectable threshold in Reverse Transcriptase Polymerase Chain Reaction (RT-PCR); a lower cycle threshold value indicates a higher viral load.
5. ND = not detected, no genetic marker is detected within 40 PCR cycles. NA = not applicable. The detection limit is 10 copies/reaction.

**Prestige EnviroMicrobiology, Inc.** Tel: 856-767-8300  
242 Terrace Boulevard, Suite B-1, Voorhees, New Jersey 08043

www.Prestige-em.com

Prestige Proj. #: 20104-01

### Chain-of-Custody and Analysis Request Form

Company Name: Omega Environmental Services Client Proj. #: 20-1177

Company Address: 280 Huyler St., S. Hackensack, NJ PO#:

Date Sampled: 10/2-3/20

E-mail: davide@omega-env.com/lab@omega-env.com

Contact Name: David Ekstrand Phone: 201-522-9879

| Sample ID                        | Location or source | Sample type | Area (inch <sup>2</sup> ) | Analysis requests<br>code or description | Turnaround time* | Notes or special instructions |
|----------------------------------|--------------------|-------------|---------------------------|--|------------------|-------------------------------|
| <u>OAK-11</u>                    |                    | Water       |                           | PCR for COVID19                          | Same Day         |                               |
| <u>CYPRESS <del>EOS</del> 10</u> |                    | Water       |                           | PCR for COVID19                          | Same Day         |                               |
| <u>LAUREL - EOS</u>              |                    | Water       |                           | PCR for COVID19                          | Same Day         |                               |
| <u>LAUREL - M10</u>              |                    | Water       |                           | PCR for COVID19                          | Same Day         |                               |
| .                                | .                  | Water       | .                         | PCR for COVID19                          | Same Day         | .                             |
|                                  |                    | Water       |                           | PCR for COVID19                          |                  |                               |
|                                  |                    | Water       |                           | PCR for COVID19                          |                  |                               |
|                                  |                    | Water       |                           | PCR for COVID19                          |                  |                               |
|                                  |                    | Water       |                           | PCR for COVID19                          |                  |                               |
|                                  |                    | Water       |                           | PCR for COVID19                          |                  |                               |
|                                  |                    | Water       |                           | PCR for COVID19                          |                  |                               |
|                                  |                    | Water       |                           | PCR for COVID19                          |                  |                               |

\*Indicate your request, either standard (3 business days), next day, same day or Saturday.

Samples Submitted by: (print) DAVID EKSTRAND Samples Submitted by: (sign) [Signature] Date submitted: 11/3/20

Received by: (sign & print) [Signature] Julie Yang Date & time received: 11/4/20 12:05 PM Delivered by: (Fedex, UPS, USPS, in person)

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Rev 05  
12-11-2019



## *Prestige EnviroMicrobiology, Inc.*

### Analytical Test Report

Client: Omega Environmental Services, Inc., 280 Huyler Street, South Hackensack, NJ 07606

Client Project/Name: 20-1177

Sample date: 11-3-2020 & 11-4-2020

Submittal date: 11-4-2020

Sample received: 11-5-2020

Samples submitted by: David Ekstrand


Date analysis completed: November 5, 2020

Prestige Report number: 201105-01

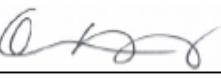
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|--|---------------------------|--|---------------------------|---|-----------------------------|
| 201105-01-001<br>Redwood-09                | ND                        | ND   | ND                        | ND  | NA                          |
| 201105-01-002<br>GRK Honors-11             | ND                        | ND   | ND                        | ND  | NA                          |

Report approved: \_\_\_\_\_

  
Theresa Lehman, MPH, Lab Director

Technical Manager: \_\_\_\_\_

  
Chin S Yang, Ph.D.

Analyst: Ching-Yi Tsai, Ph.D.

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Prestige Proj.#: 201105-01

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12-11-2019