

DATE: August 3, 2020

TO: Clean Water Services Advisory Commission Members
and Interested Parties

FROM: Mark Jockers, Government & Public Affairs Director

**SUBJECT: REMINDER AND INFORMATION FOR AUGUST 12, 2020, CWAC
MEETING**

This is a reminder that a Clean Water Services Advisory Commission (CWAC) meeting is scheduled for **Wednesday, August 12, 2020.**

In support of best practices for preventing the spread of the coronavirus, CWS is making the following changes to the format of the August meeting:

- The meeting will be held virtually using the Webex platform.
 - Webex offers the option to connect to video, slides and audio via a device with internet access, or an audio-only connection through any telephone line.
 - CWAC members should watch for an email containing Webex connection details.
 - Interested parties should register for this meeting by August 11 by following the instructions on the [website](#).
- The meeting will begin at 5:30 p.m. Please plan to establish your connection to the meeting 10-15 minutes before the start time to allow the meeting to begin promptly.
- Dinner will not be provided.

The CWAC meeting packet will be mailed to Commission members on Monday, August 3, and posted to the [CWAC section](#) of the Clean Water Services' website.

Please call or send an email to Stephanie Morrison (morrison@cleanwaterservices.org; 503.681.5143) by August 7 to advise about your attendance at this meeting.

Enclosures in this packet include:

- August 12 Meeting Agenda and Materials
- July 8 Meeting Notes

Clean Water Services Advisory Commission

August 12, 2020

AGENDA

5:30 p.m. Welcome & Introductions

5:35 p.m. Review/Approval of Meeting Notes of July 8, 2020

5:40 p.m. Nondomestic Waste Ordinance Update: Comments Received and Next Steps

Staff will provide an update on comments received so far through the public process and seek additional input and discussion.

- Bob Baumgartner, Regulatory Affairs Director
- Joy Ramirez, Environmental Services Supervisor

Requested action: *Informational*

6:10 p.m. CARES Act Utility Billing Assistance Program

Staff will provide a report on a temporary utility billing assistance program that will be launched this month in collaboration with Community Action in Washington County. The program will provide assistance to water, sewer and/or stormwater customers who live in Washington County and have been impacted by the coronavirus.

- Mark Jockers, Government & Public Affairs Director

Requested action: *Informational*

6:25 p.m. Invitation for public comment

6:35 p.m. Announcements

6:40 p.m. Adjourn

Next Meeting: September 9, 2020

NONDOMESTIC WASTE ORDINANCE: COMMENTS RECEIVED & NEXT STEPS

August 12, 2020

CWAC Meeting
Bob Baumgartner, Regulatory Affairs Director
Joy Ramirez, Environmental Services Supervisor



STATUS

- Produced draft ordinance
- Briefed Board, received charge to work with our Clean Water Advisory Commission (CWAC) on the public process
- CWAC presentations- May 13, August 12, Sept. 9
- Talking with environmental and community representatives
- On website for public review (<http://cleanwaterservices.org/for-business-industry/pretreatment/regulating-nondomestic-discharges/>)



REMINDER: DOMESTIC VS. NONDOMESTIC WASTE



Domestic Wastewater: Comes from "bodily processes" or household-type activities like bathing, washing, or food preparation. Permit not necessary to discharge domestic wastewater such as toilet and sink water from a home, shower water at a hotel or dishwater from an office lunchroom.

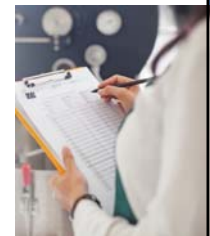


Nondomestic Wastewater: Not regular sewage due to volume or character of water. Can contain substances like industrial chemicals, pesticides, rags, paints, excessive oil and grease. Permit and pretreatment may be required before this type of wastewater goes into sanitary system.



REMINDER: WHAT'S IN THE ORDINANCE

- Definitions
- Discharge limitations
- Pretreatment & hauled waste
- Waste discharge permit requirements
- Permit modifications & transfers
- Enforcement: penalties, orders and hearings



COMMENTS RECEIVED SO FAR

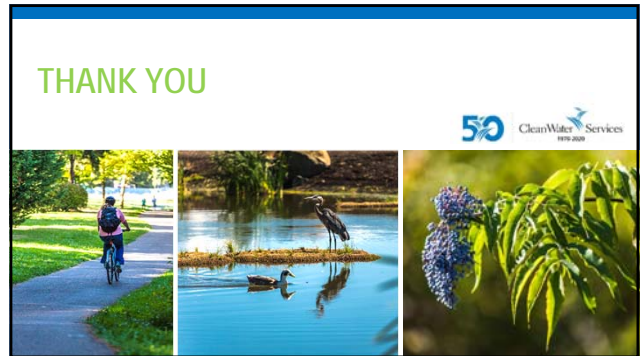
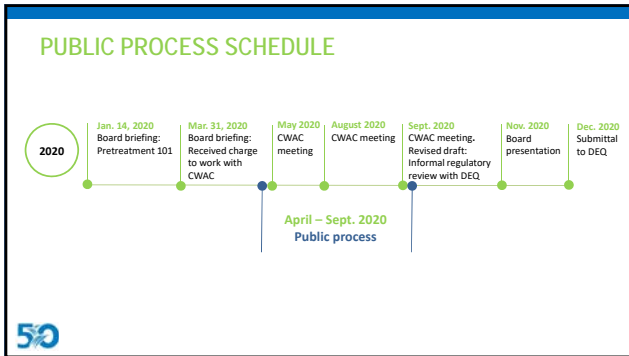
- Are penalties (\$5,000 per day per violation) high enough to deter noncompliance?
- Please provide the ability to require minimum maintenance schedules on FOG (fats, oils, greases) treatment systems.
- Please provide for regulation of chlorinated discharges (pools, etc.).
- How will risk to human life caused by prohibited discharges be monitored?
- How will emerging pollutants that are not currently regulated be addressed in the ordinance?
- The ordinance is well-written, clear and easy to understand.



INPUT FROM INDUSTRIES SO FAR

- Individual notifications sent to current permitted industries
- Feedback received:
 - Will the draft ordinance change my permit classification? (*Answer: No*)
 - Will the permit change? (*Answer: Permits will be reissued with updated language but requirements will not change.*)





REGULATING NONDOMESTIC DISCHARGES



Industrial Pretreatment

Unlike water from your toilet or kitchen sink, wastewater from certain types of industrial facilities has to be pretreated to remove particular pollutants before they go into a wastewater treatment facility.

Clean Water Services and local industries need to know what pollutants are present and what pretreatment is needed to protect public health, infrastructure and treatment facilities. Effective treatment prevents these pollutants from going into local rivers and streams.

Permits

There are many industries in Washington County, including high tech, chemical manufacturing, brewing and other fermented beverage production, food processing, laboratories, dentists and auto shops. A permit may be required for some users to discharge materials into the wastewater system, depending on each unique situation.

Clean Water Services screens significant industrial users and other users that discharge pollutants to determine if a permit is necessary. The permit considers the type of discharge and establishes treatment, monitoring and reporting requirements for each situation. The regulation and permitting process is based on federal and state rules. Clean Water Services currently permits 195 active industries with different types of wastewater discharge permits. This is just one of the different types of permits that Clean Water Services issues.



Domestic and Nondomestic Waste

An industrial discharge permit is not necessary to discharge domestic wastewater such as toilet and sink water from a home, shower water at a hotel or dishwater from an office lunchroom. Nondomestic wastewater, due to its volume or character, is not regular sewage. Nondomestic wastewater can contain substances like industrial chemicals, pesticides, rags, paints, and excessive oil and grease. A permit and pretreatment may be required before this type of wastewater goes into the sanitary system.

For nondomestic wastewater, Clean Water Services will determine which facilities need a permit, based on federal rules and potential impacts to the system.



REGULATING NONDOMESTIC DISCHARGES



New Ordinance

Clean Water Services has created a new draft ordinance, which combines elements of existing older rules, to update and clarify requirements relating to domestic and nondomestic wastewater. The ordinance is focused on the type of wastewater being discharged rather than the type of facility where wastewater originates. The ordinance includes newer federal streamlining rules and encompasses additional types and sources of wastewater that may flow into the sanitary system that were not explicitly described by the older rules. It's aligned with federal and state regulatory standards, as well as national pretreatment program standards.

The new ordinance does not regulate stormwater which is outside of the sanitary collection system, sources or activities related to erosion, or domestic wastewater from any type of facility. The ordinance does regulate wastewater from industrial facilities and other nondomestic sources to protect public health and infrastructure.

The ordinance defines domestic waste differently than the previous ordinance to focus on regulating discharges that are problematic. It includes new regulation of certain discharges, specifically dental discharges, to keep up with current regulation. It requires documenting equipment maintenance to demonstrate effective performance for industries such as those working with fats, oils and greases and offers increased opportunities for users to bring hauled wastes to Clean Water Services. The new ordinance is designed to increase transparency, reduce inconsistencies and improve clarity by organizing the pretreatment rules into a single ordinance rather than distributed between ordinances and rules. These changes make the ordinance more efficient and effective.

The new ordinance provides tools to ensure continued protection of our community, workers, environment and infrastructure. It also more clearly provides for aspects of the local program that allows Clean Water Services to provide protection beyond what the federally required system covers.

Clean Water Services would like to hear your thoughts on the new ordinance.

To provide input go to <http://cleanwaterservices.org/NDW>.



Who's affected?

Industries that currently have industrial wastewater discharge permits with Clean Water Services will experience no real operational changes, but will see minor changes in their permit language to reflect the new ordinance. Some industries may qualify for a new type of control mechanism under the new ordinance. This will take advantage of federal streamlining rules to protect the environment and reduce the burden on business operations.



Everything we do at Clean Water Services aims to protect public health while enhancing the natural environment of the Tualatin River Watershed.

Clean Water Services

2550 SW Hillsboro Highway
Hillsboro, Oregon 97123
503.681.3600
cleanwaterservices.org

Clean Water Services Advisory Commission

Date: July 8, 2020

Location: The meeting was conducted on Webex

MEETING NOTES

Attendance

Attending the meeting from CWAC:

- Tony Weller (Homebuilder-Developer), Commission Chair
- Mike McKillip (District 3/Rogers), Commission Vice Chair
- Art Larrance (At-Large/Harrington)
- John Jackson (Agriculture)
- Lori Hennings (Environmental)
- Terry Song (Business)
- Molly Brown (District 2/Treese)
- David Waffle (Cities/nonvoting)
- Diane Taniguchi-Dennis (Clean Water Services Chief Executive Officer / nonvoting)

Absent:

- Nafisa Fai (District 1/Schouten)
- Andy Duyck (District 4/Willey)
- Matt Wellner (Homebuilder-Developer)
- Stu Peterson (Business)

Attending the meeting from Clean Water Services:

- Mark Jockers, Government & Public Affairs Director
- Gerald Linder, General Counsel
- Nora Curtis, Utility Operations & Services Managing Director
- Ken Williamson, Research & Innovation Director
- Chris Faulkner, Water Resources Program Manager
- Damon Reische, Planning & Development Services Division Manager
- Chris White, Public Involvement Coordinator
- Shannon Huggins, Public Involvement Coordinator
- Anne MacDonald, Senior Water Resources Program Manager
- Stephanie Morrison, Office Manager
- Jody Newcomer, Technical Editor & Communications Specialist

Attending the meeting from the public:

- Dale Feik, Chair of Washington County Citizen Action Network and Project Director of Hillsboro Air & Water

1. CALL TO ORDER

Tony Weller called the meeting to order at 5:35 pm.

Ms. Morrison announced the meeting is being recorded and recognized all attendees. She reviewed the features and functions of the platform.

2. REVIEW/APPROVAL OF MEETING NOTES

There were no comments regarding the notes from the meeting on May 13, 2020. The notes were approved.

3. SUB-BASIN PLANNING PRIORITY SCREENING

- Chris Faulkner, Water Resources Program Manager

Staff provided an update on the results of the sub-basin planning prioritization methodology screening presented at the March meeting and discuss next steps.

The Board charged CWAC to provide feedback on a prioritization methodology. The intent is to figure out where and when CWS can do stormwater strategy planning in in-fill areas.

Mr. Faulkner reviewed the methodology and the prioritization data including hydromodification risk level, potential single family units, existing impervious cover and building rate.

The team ranked 43 basins to determine composite scores and rank basins. The rankings shown in the prioritization results table also reveal opportunities to implement targeted strategies. The average size of each basin is about 4,000 acres.

Prioritization planning is just a piece of a larger effort. This is an initial screening to help allocate internal resources for additional work. CWS will adjust as new opportunities and information arise.

The next step is second-tier analysis to look for hotspots. Is there potential development near a high-risk stream? Is it an area where there's a lot of impervious cover? Are there other stormwater management tools to consider? How can we coordinate internally? We're getting a lot of experience leading planning efforts with partners.

QUESTIONS, COMMENTS

Have you been surprised by any of the findings?

Some of the individual scores were surprising, but overall, we knew what basins merited a closer look.

Were you able to look at impervious effect versus total impervious area.

We didn't make a distinction at this level, but we may do that in the second-tier analysis.

4. UPDATE ON TRACKING CORONAVIRUS IN SEWAGE

- Dr. Ken Williamson, Research & Innovation Director

Oregon has reported at least 10,817 cases since Feb. 29. CWS is sampling in Washington County and the number of cases continues to increase. Hillsboro and Forest Grove have significant numbers. Washington County adds about 10 to 15 new cases a day, but those rates are going up. We have not flattened the curve; we will have more cases.

Dr. Williamson reviewed the anatomy of a virus. The spikes of the coronavirus connect to the cells in the body. They create an entry into the cells and replicate itself. RNA is enclosed inside. When we test the virus, we break the outside envelope of the virus using small glass beads. The RNA spills out into the test solutions and is replicated. Fluorescent markers with a specific sequence of RNA are attached. The fluorescence is measured by PCR, or polymerase chain reaction, which can quantify the number of viruses in wastewater. We're dealing with virus fragments, not live viruses. There's no indication a person could get infected from wastewater.

It's difficult to determine how many virus are shedding from an infected individual; shedding rates vary dramatically and they change with time. The highest shedding rates occur immediately after a person is infected. We look at trend occurrence where we can identify that the virus is present. We look at changes in trends, how a change in public policy could bring numbers down. We have yet to see a downward trend in sewer surveillance in the United States. We also look at community prevalence and the ability to compare comparable communities and policies in place.

New Haven study: A study in New Haven measured viral concentration and the number of hospital admissions in March and April. Researchers found about 1,000 viruses for each new case. This number can be used in models. The viral number measurement is fairly inexpensive — about \$100-\$150. An individual swab test is about the same price. We can get an indicator for an entire community for the same cost as a swab test for one individual.

OSU collaboration: The research collaboration with OSU continues. We wanted to compare samples to the Biobot study and improve sampling and analysis techniques. We're comparing every technique used to concentrate the virus, prepare samples and analyze and seeing how we can optimize the methods that give us the best numbers. There is no virus standard. We're participating in a national study with WRF to come up with an established technique.

We're also looking at micro-sewersheds, areas that drain to a select manhole. We have experience sampling in the sewershed tracing discharges from industries in the system.

We've sampled 23 sites (hospitals, food industries, jail, nursing homes, retirement communities, low-income communities) for five weeks. We're just beginning to get the full data set. We're considering reducing the number of sites by about half and increase the sampling frequency to multiple times a week. It's easier to interpret data with more frequent samples.

What we've learned

- The highest levels of the virus were associated with food processing plants where a known outbreak occurred. Downtown Hillsboro, including a hospital and a low-income neighborhood, also had high levels. Finally, there were high levels in Forest Grove in low-income neighborhoods. There is a class association for the outbreaks.

- Sample processing and concentration is difficult and time consuming. One technician can process 25 samples a day. Sample extraction technique is difficult. We experimented with different media such as sand, glass beads and we tried different mechanical methods. We hoped to do this step with a robot, but the robot system doesn't work with wastewater because of the levels of viscosity. The sample analysis step is difficult because of the risk of contamination. If there is any level of contamination in the laboratory or in the processing, we have to repeat the sample. We learned we physically have to separate the three steps to reduce contamination to negligible numbers.
- Field sampling is difficult. Standard samplers don't work in low-flow situations. A composite sample over a 24-hour period is essential to get a good, representative sample. There is wide spatial and temporal variability. We're learning that we'll probably have to sample more often than once a week to get the statistical data we need.
- We ran into more problems than we anticipated, but we're working them out. We hired an environmental engineer with expertise in wastewater viruses to manage the laboratory extractions and analysis.

Expanding research partnerships

OSU TRACE: CWS has collaborated with the OSU TRACE program in Corvallis, Bend and Newport. TRACE teams sample people over a two-day period; CWS conducts sewer surveillance to compare with spatial distribution of positive cases during the same period. TRACE can do about 600 swab tests in one weekend. TRACE is also leading a surveillance project on OSU campus for one year.

TRACE was asked to test in Newport after an outbreak occurred at a fish processing plant. Initially there were about 170 positive cases at the plant. Officials wanted to know how far it spread and how many cases there were. The CWS team divided the Newport sewershed into 26 micro-sewersheds and sampled each sewershed. TRACE sampled the entire city. The research team also worked with the Lincoln County Health & Human Services Department, which has historical data about the number of total positive cases in Newport. The first study was held June 20-21. TRACE is analyzing results and can report the number of positive asymptomatic and symptomatic cases, the number of positive symptomatic cases reported to Lincoln County versus time, and virus RNA copies/liter of wastewater. The data set is unmatched. The data has been shared with the Lincoln County Health & Human Services Department, which decided to repeat the sewer surveillance. Results will show whether the COVID-19 situation is improving in Newport.

We're also looking at the impact of nonresident populations on a given community. For example, the virus came to New York from Europe. We wanted to replicate that effect on a much smaller scale, so we're looking at the impact of tourists on Yachats and Depoe Bay. We started sampling in Yachats and Depoe bay about four weeks ago (early June). Lincoln County is sampling all the wastewater treatment plants in the county to see if it can track the virus from Newport to surrounding communities. The viral count in Newport wastewater plant is about twice that found in the New Haven data.

OHSU: The OHSU Foundation is funding a study with CWS and OHSU to trace the viral concentration in minority communities, which have higher infection rates. The Bureau of

Environmental Services will choose the communities with large minority populations in east Portland and conduct the sampling. A sewershed in Lake Oswego that doesn't have a large minority community will serve as the control group. This study will compare the infection rates and how the rates change over time.

Oregon Health Authority: OHA wants to expand influent testing in 41 major wastewater treatment plants in Oregon in the next two years to track the spread, recession and potential new waves of COVID-19 infections. CDC is funding the study and developing recommended protocols. This is expected to start in late July or early August. CWS will do the analysis.

Lewis and Clark College: Lewis and Clark wants to conduct sewer surveillance on campus in residential dorms, athletic facilities, the student center and the law school for the 2020-21 academic year. It's a promising study on the application of sewer surveillance.

QUESTIONS, COMMENTS

If you're looking at minorities, does it make sense to find a control group with a comparable income level? Are you looking at minorities or income levels?

The study will show the effectiveness of focusing sewershed sampling on at-risk communities; it doesn't identify differences between communities. You do have to show the minority areas need more surveillance, and the data so far shows economics make a huge difference in active cases.

How much data is being shared with Washington County Health and Human Services?

We share all the data we get, as soon as we can make sense of it. We're not doing the job of the HHS; we're doing a research project. We won't always be able to provide specific data useful for health professionals, though we probably did in Newport. We identified an area as small as 10 houses. We're learning so we can be quicker and apply at a larger scale.

Policy makers are probably leaning on your work. Thank you.

5. PUBLIC COMMENT (2 minutes)

Dale Feik, Chair of Washington County Citizen Action Network and Project Director of Hillsboro Air & Water, commented on an enforcement order against Washington County and the revision to the CWS pretreatment ordinance.

The Oregon Land Conservation and Development Commission issued an enforcement order against Washington County for its lack of compliance with statewide land use planning goals designed to protect significant natural resources. The commission also went a step further and imposed an injunction of the county, prohibiting it from processing applications for developments in designated wildlife habitat areas until it comes into compliance with state law by adopting new and enforceable regulations to protect the resources. By LCDC order, the county has until May 1, 2021, to come into compliance. How does this factor into this subbasin strategy?

Ms. Curtis said CWS and Washington County are working together on the revision to the ordinance to ensure it's compatible with CWS ordinances, specifically regarding protection of natural resources. Teams from both organizations have been meeting weekly.

Regarding the pretreatment ordinance: Will the updated ordinance prevent pass-through of contaminants to sewage sludge, also known as biosolids?

Dr. Williamson said the pretreatment ordinance will preserve the ability to land apply biosolids. That's part of the pretreatment ordinance and local limits. Local limits consider the concentration of effluent and concentration material in biosolids.

6. ANNOUNCEMENTS

- The next CWAC meeting is August 12, 2020. It probably will be virtual. We will continue to solicit feedback to improve Webex process.

7. ADJOURNMENT

Mr. Weller adjourned the meeting at 6:55 pm.

(Meeting summary by Jody Newcomer.)

SUB-BASIN PLANNING PRIORITIZATION SCREENING

July 8, 2020

CWAC
Chris Faulkner
Water Resources Program Manager



PRESENTATION AGENDA

- Previous Meeting Recap
- Methodology Summary
- Prioritization Results Table
- Prioritization Results Map
- Next Steps



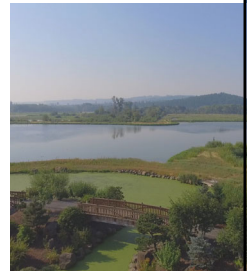
PREVIOUS MEETING RECAP

- Board charge
 - Provide feedback on prioritization methodology
- Prioritization intent
 - Provide an approach for CWS to sequence strategy development and analysis in largely in-fill areas within the UGB



METHODOLOGY SUMMARY

- Excludes established priority areas
- Compare Hydromod Risk with Land-Use Stressors
- Break each criteria into quintiles
- Rank each 1 (lowest) – 5 (highest)
- Create a composite score to determine priority watersheds
- Conduct 2nd-tier analysis on top XX watersheds



PRIORITIZATION DATA

- Hydromodification Risk Level
 - Existing dataset showing streams' risk of being impacted by hydromodification
- Potential Single Family Units
 - Reflects future impervious cover
- Existing Impervious Cover (%)
 - Provides a proxy for existing watershed health and potential impacts
- Building Rate
 - Average annual tax-lot creation based on data from 2011-2017, reflects potential immediacy of development

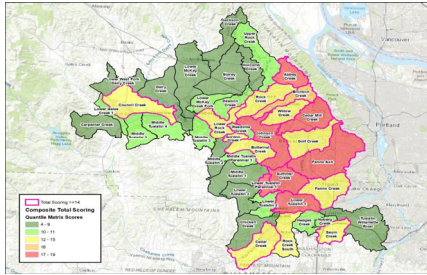


PRIORITIZATION RESULTS TABLE

CWS Watershed Name	Hydromod Risk	Potential S.F. Units	Existing Impervious Cover (%)	Building Rate	Composite Score
Watershed 1	1	2	3	4	2.5
Watershed 2	2	3	4	5	3.0
Watershed 3	3	4	5	1	3.5
Watershed 4	4	5	1	2	4.0
Watershed 5	5	1	2	3	4.5
Watershed 6	1	1	1	1	1.0
Watershed 7	2	2	2	2	2.0
Watershed 8	3	3	3	3	3.0
Watershed 9	4	4	4	4	4.0
Watershed 10	5	5	5	5	5.0
Watershed 11	1	2	3	4	2.5
Watershed 12	2	3	4	5	3.0
Watershed 13	3	4	5	1	3.5
Watershed 14	4	5	1	2	4.0
Watershed 15	5	1	2	3	4.5
Watershed 16	1	1	1	1	1.0
Watershed 17	2	2	2	2	2.0
Watershed 18	3	3	3	3	3.0
Watershed 19	4	4	4	4	4.0
Watershed 20	5	5	5	5	5.0
Watershed 21	1	2	3	4	2.5
Watershed 22	2	3	4	5	3.0
Watershed 23	3	4	5	1	3.5
Watershed 24	4	5	1	2	4.0
Watershed 25	5	1	2	3	4.5
Watershed 26	1	1	1	1	1.0
Watershed 27	2	2	2	2	2.0
Watershed 28	3	3	3	3	3.0
Watershed 29	4	4	4	4	4.0
Watershed 30	5	5	5	5	5.0

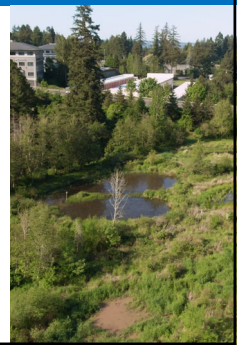


PRIORITIZATION RESULTS MAP



IMPORTANT REMINDERS

- CWS already working on strategies in multiple areas
- Opportunities will continue to be considered as they come up
- Further analysis may reshuffle "priorities"
- This work serves as an initial screen to help allocate internal resources for additional work
- CWS is always available to receive feedback and input on where strategy work might be useful



NEXT STEPS

- Conduct 2nd Tier Analysis
 - Highlight hotspots in priority CWS Planning Basins
 - Consider other stormwater management tools as appropriate
 - Coordinate internally on how other CWS Divisions might plug in
- Scoping for CWS planning



QUESTIONS?



TRACKING THE CORONAVIRUS IN SEWERSHEDS

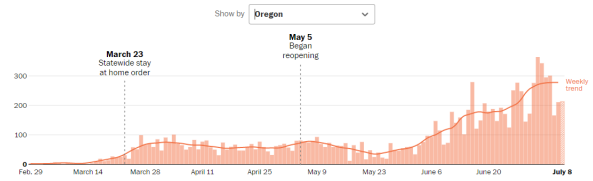
Dr. Kenneth Williamson, PhD, PE
Research & Innovation Director



CASES IN OREGON

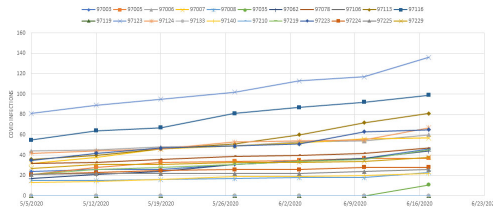
New reported cases per day in Oregon

At least 10,817 have been reported since Feb. 29.



CASES IN WASHINGTON COUNTY

TOTAL COVID INFECTIONS BY ZIP CODE IN WASHINGTON COUNTY

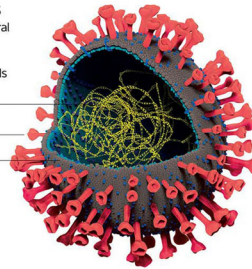


EXAMPLE OF GENES, RNA, REMNANTS OF INACTIVE VIRUS

Anatomy of a virus

The covid-19 virus has several features we may be able to target with drugs to break it down and stop it entering cells

RNA enclosed in protein
Spike protein
Lipid membranes

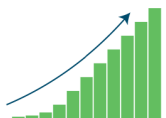


Marshall, M. "We're beginning to understand the biology of the COVID-19 virus." New Scientist, <https://www.newscientist.com/article/mg24632743500-vee-beginning-to-understand-the-biology-of-the-covid-19-virus/> (accessed March 19, 2020). Permission pending.

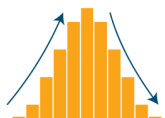


USE CASES

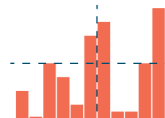
Trend Occurrence



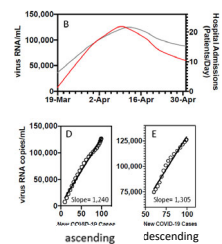
Changes in Trends



Community Prevalence



NEW HAVEN DATA



virus RNA, red
Admission, gray

Peccia,
2020



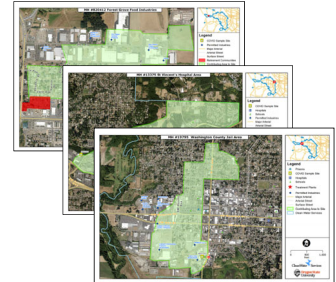
OSU/CWS COLLABORATIVE RESEARCH

- Two objectives:
 - Compare influent sample results to Biobot study, improve sampling and analysis techniques
 - Sample within selected areas of concern (micro-sewersheds) such as nursing homes, hospitals, food processing plants, prisons, schools, etc.
- Dr. Tyler Radniecki and Dr. Christine Kelly
- Funded by the National Science Foundation's Rapid Response Research (RAPID), Award No. 1519467, on April 27, 2020



SEWERSHED SAMPLING

- Targeted research at 23 sites
- Mix of land uses, business types and communities
 - Hospitals
 - Food industries
 - Jail
 - Nursing homes
 - Retirement communities
 - Low-income communities
- Weekly data for 1 year



WHAT WE HAVE LEARNED

- Highest levels associated with food processing plants where a known outbreak occurred
- Next highest in downtown Hillsboro, including hospital and low income neighborhoods
- Next highest in Forest Grove low income neighborhoods



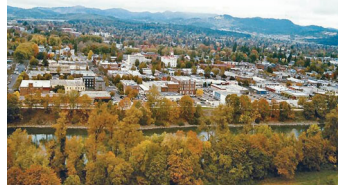
OTHER THINGS LEARNED

- Sample processing/concentration is difficult
- Sample extraction is difficult
- Sample analysis is difficult
- Field sampling is difficult
- Wide spatial and temporal variability exists

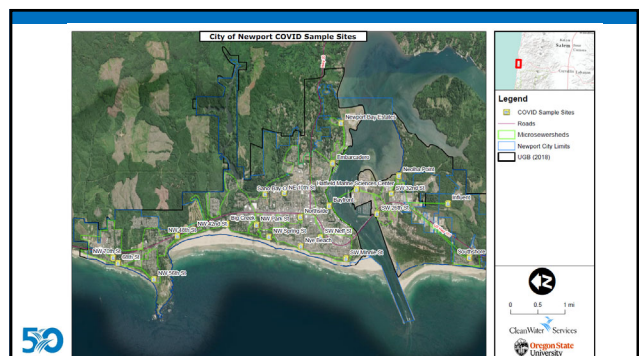


EXPANDING RESEARCH PARTNERSHIPS

- OSU Colleges of Public Health and Human Sciences, Science, Veterinary Medicine, and Agricultural Sciences - TRACE program
 - Conduct sewer surveillance for Corvallis, Bend, and Newport to compare with spatial distribution of positive cases
 - Conduct leading surveillance at OSU for one year



TRACE-COVID-19



NEWPORT STUDY

- Conducted by TRACE on June 20, 2020
- Involved nasal swab testing and sewer surveillance of micro-sewer sheds by composite samples (26)
- For each micro-sewer shed
 - Number of positive asymptomatic and symptomatic cases measured by TRACE on June 20
 - Number of positive symptomatic case reported to Lincoln County versus time
 - Virus RNA copies/liter of wastewater



IMPACT OF NON-RESIDENT POPULATIONS

- Wastewater influent sampling for Yachats and Depoe Bay (resident populations, 780 and 1,500, respectively)
 - Weekly sampling, Wed and Sat, June-September
 - Yachats- summer tourist numbers, ~3,000
 - Depoe Bay- summer tourist numbers, ~12,000
- Study has been expanded to include Siletz, Lincoln City, Toledo, Waldport



EXPANDING RESEARCH PARTNERSHIPS

- Oregon Health & Science University
 - Identify areas to conduct public health tracing (symptomatic and asymptomatic infections) in minority communities in Portland



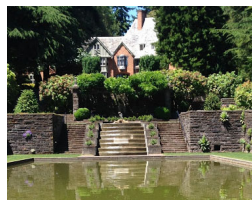
EXPANDING RESEARCH PARTNERSHIPS

- Oregon Health Authority
 - Expand influent testing in 41 wastewater treatment plants in Oregon over 30 months to track the spread, recession and any potential new waves of COVID-19 infections
 - CDC is developing recommended protocols



EXPANDING RESEARCH PARTNERSHIPS

- Lewis and Clark College
 - Conduct sewer surveillance on campus for 2020-21
 - Residential dorms, athletic facilities, student center, law school



THANK YOU

