

KPU



Your Community, Your Utility

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TRANSMITTAL MEMORANDUM

TO: The Honorable Mayor and City Council

FROM: Karl R. Amylon, General Manager

DATE: November 11, 2020

RE: **Project Status Reports of the KPU Division Managers – October 2020**

Attached for City Council review are the project status reports of the KPU division managers for the month of October 2020. Should the City Council have questions regarding the division managers' reports, staff can respond accordingly.

MANAGER'S REPORT
SALES, MARKETING & CUSTOMER SERVICE DIVISION
October 2020

Verizon wireless new phone sales in October decreased for two significant reasons: primarily due to the delay of the iPhone launch to late October, but also because people are struggling to pay their bills, and cannot afford an expensive new phone. Most new customers to Verizon were customers who ported from AT&T, and did not purchase new phones, but kept their old devices. AT&T's service has suffered state-wide during the pandemic, resulting in failed calls and poor connectivity; this has resulted in more people contacting KPU to find out how to move their service to Verizon.

KPU's combined active and vacation-hold internet accounts for October remained flat to September. Internet accounts remain 3% higher than the same time last year, a reflection of the need for people to have internet for remote work, school, and entertainment. Standalone, no-phone internet subscribers increased by 2% over the prior month, as some customers cut the phone line in an attempt to save money. Some customers removed TV to save money during the crisis, resulting in KPU's net TV subscribers to decline by 1%.

Division Manager Kim Simpson, took over primary responsibility for the Covid-19 EOC Public Information Office for the month of October while PIO Officer Kacie Paxton focused on the local and upcoming national election. Work consisted of daily media releases, social media posts, flyers, traveler handouts, and videos for the EOC. Media was focused on options for voting for the house-bound/quarantined, Mask wearing, Flu Vaccine, CARES act funding, Drive up and Airport Testing. Kim also answered the hotline questions for the Covid Traveler Testing hotline.

Much of the KPUTV Film work consisted of special meetings including City Council Port meetings, as well as Candidate forums for the State House. These meetings were livestreamed to Prime.gov, YouTube, Facebook and KPUtv. Additional filming included the KAAHC art feature, the Ketchikan Flea Market vendors, Taste of Southeast: Shortribs, and Kayhi Volleyball. Additional work was done on the KPU Fiber project from Prince Rupert to Ketchikan, and B-roll, background images were filmed for the Ketchikan CARES commercial for the Alaska Municipal League. KPUtv partnered with First City Players to produce an on-line version of Divas and

Divos. Performances were pre-recorded and put together to create a full performance that was streamed through the First City Player's special paywall to subscribers.

MANAGER'S REPORT

ELECTRIC DIVISION

October 2020

Electric Shop and Meters

- Meters. During the month, there were twenty-three (23) meter exchanges/installs:
 - Eight (8) changes from manual meters to RFN (Radio Frequency Node) meters.
 - Four (4) changes from PLC (Power-Line Carrier) meters to RFN meters.
 - No changes from RR (Radio Read) meters to RFN meters.
 - One (1) PLC meter exchanges.
 - No change from manual meters to PLC meters.
 - Three (3) manual meter exchanges.
 - No changes from PLC meters to RR meters.
 - (7) New Installs
- Operations. Investigated, performed troubleshooting, and made repairs for Berth 2 statue lights, Bethe transformer oil temperature gauges, Beaver Falls generator brushes, Beaver Falls generator No. 4 (BFG4) exciter fan controls, BFG4 speed switches, BFG3&4 cycle monitors Bailey 34.5kV North breaker controls, Bailey Generator No. 2 (BAG2) bypass pump, BAG3 fuel tank monitoring system, Ketchikan Generator No. 4 (KPG4) excitation system and brushes, KPG5 rotor conductor repair, and Intake No. 1 generator selector switch. Installed new fiber connection and hardware for back-island breaker, new power for COVID testing shelter, Silvis tunnel valve disconnect, Whitman AC/DC inverter. Performed annual inspection of High Mountain communications facility. Continued the metering upgrade for the Yukon system with Eaton/Cooper. Service disconnects/reconnects, meter disconnects and reconnects, system print updates and station readings.
- SCADA. Investigated, performed troubleshooting, and made repairs for Ketchikan Plant backup server, Number 1 Intake UPS, printing systems at Bailey Operations, and vehicle 18 radios. Upgraded headquarters Wifi system, North Point Higgins generators 1 & 2 security system, Silvis security system, and monitoring displays at Bailey Powerplant. Modifications to Silvis SCADA rack/cabinet. Performed Whitman Powerhouse camera site survey. SCADA file server maintenance, system password verifications, and NTP server configurations. Supported SCADA upgrade meetings. Coordinated and worked with the electric shop on SCADA networks. Continuing training in the SCADA system. Records management activities and SCADA upgrade planning.
- Water Department. Investigated, performed troubleshooting, and made repairs to Ammonia Plant GFCI and Carlanna Pump Station heater.
- Harbors. Cleared nine (9) harbor trouble tickets and investigated, performed troubleshooting, and made repairs for harbor floats/lights and Thomas Basin grid power. Coordinating electrical upgrades for Float No. 8-10.

- Telecommunications. Coordinated Highliner demarcations and cameras. Performed Mountain Point CO generator load test.

Outages and Events

- On Saturday October 3, 2020, at 7:52 AM, an outage affected electric services in Ketchikan caused by a loss of generation from Southeastern Alaska Power Agency (SEAPA). A SEAPA generator at Swan Lake tripped offline due to a synchronizing issue, causing loss of generation in the SEAPA system. The sudden loss of approximately 6.0 MW of generation and frequency control caused system instability, resulting in load shedding in Ketchikan. KPU and SEAPA operators quickly identified the issue and KPU immediately began power restoration. Initially 3,665 customers were affected by the outage. Within fifty-one (51) minutes, all power was restored.
- On Sunday, October 4, 2020, at 6:24 PM, an outage affected electric services fed from the Ward Cove Feeder No. 1. A failed 12.47kV insulator on a power pole located near 3400 Tongass Highway caused the outage; the failed insulator caused a phase-to-ground fault and pole fire that the Ward Cove Feeder cleared. KPU operators and crews quickly identified the issue and immediately began power restoration and repairs. Initially 294 Customers were affected by the outage. Within forty-one minutes, power was restored to all Customers.
- On Friday October 16, 2020, at 8:32 PM, an outage affected electric services in Ketchikan caused by a fault event in Petersburg. A major electrical fault caused an electrical equipment failure in a Petersburg facility; this caused a loss of frequency stability in the KPU/SEAPA system. The instantaneous fault of approximately 2.0 MW caused system instability, resulting in load shedding in Ketchikan. Four KPU system feeders opened during the event causing power outages. KPU and SEAPA operators identified the issue and KPU immediately began power restoration. Initially 2,128 customers were affected by the outage. Within twenty-six minutes, power was restored to all customers.
- On Sunday October 25, 2020, at 6:15 PM, an outage affected all electric services north of Ketchikan and parts of Gravina Island. This outage was caused by an avian contact with the 34.5kV system near Lewis Reef Substation. The avian contact caused protective relaying at Baily Powerplant to open the 34.5kV North Tie Breaker disconnecting power from three substations: Lewis Reef, North Point Higgins, and Ward Cove. No equipment was damaged during the event. KPU operators and crews identified the issue and immediately began power restoration. The power restoration process took additional time due to the nature of the outage. Initially 1,811 customers were affected by the outage. Within one hour and thirty-one minutes, power was restored to all customers.

Powerhouse & Fleet Maintenance

- Beaver Falls Project
 - Conducted Silvis dam survey
 - Brushed access road
 - Brushed & removed trees near penstocks #3 & #4
 - Silvis Generator/Powerhouse
 - Adjusted wicket gates
 - Repaired speed switch
 - Serviced bearing oiler
 - Sandblasted Howell Bungler valve components
 - Removed No. 1 Intake trash rack
 - Cycled Lower Silvis Lake head gate
 - Conducted Silvis dam survey
 - Rebuilt Beaver Falls Generator No. 3 governor & speed switches
- Bailey Generator No. 3 (BAG3)
 - Reviewed delivery of replacement cylinder components
- Bailey Generator No. 4 (BAG4)
 - Replaced two (2) cylinder heads
 - Machined & ground two (2) spare cylinder heads
- Bailey Tank Farm
 - Barge delivery of fuel
 - Conducted oil spill boom deployment exercise
- Ketchikan Powerhouse
 - Repaired Ketchikan No. 3 cooling water leak
 - Conducted annual services on units No. 3 & No. 4
 - Completed annual valve cycles & cycled KTN Lake head gate
- Whitman Powerhouse
 - Completed annual valve cycles

Regulatory and Dam Safety

- Filed Plan and Schedule to address 2019 Owner's Dams Safety Program independent audit recommendations
- Prepared and filed Ketchikan Lakes 2019 Dam Safety Surveillance and Monitoring Report; annual FERC project review/inspection.
- Distributed monthly Whitman tailrace biotic monitoring report to fish management agencies.
- Prepared and filed report of Whitman Creek minimum instream flow deviation that occurred on September 21.
- Annual agency consultation for the Beaver Falls project

SEAPA

- The next regular board meeting is scheduled for December 10, 2020 via videoconference; due to current Covid-19 conditions, meetings are via videoconference.
- For additional information please visit SEAPA's web site at: <https://www.seapahydro.org/>

Transmission & Distribution Work

- Completed reconstruction of overhead primary circuit on Collins Road/Court, including replacing four (4) primary poles.



Collins Road Primary Work – “Cut and Kick” pole replacement

- Continued extending overhead three-phase circuit toward Ketchikan Lakes gates in advance of the larger-scale underground power & communication circuit to Fawn & Ketchikan Lake dams, setting three (3) poles.



Ketchikan Lakes Road Overhead Extension

- Installed two (2) new poles for Olson Marine



Olson Marine

- Replaced a primary pole on Williams Road
- Replaced a primary/transformer pole along North Tongass Highway
- Replaced fifteen (15) 35kV insulators, while energized, on the sub-transmission circuit coming into town from Beaver Falls



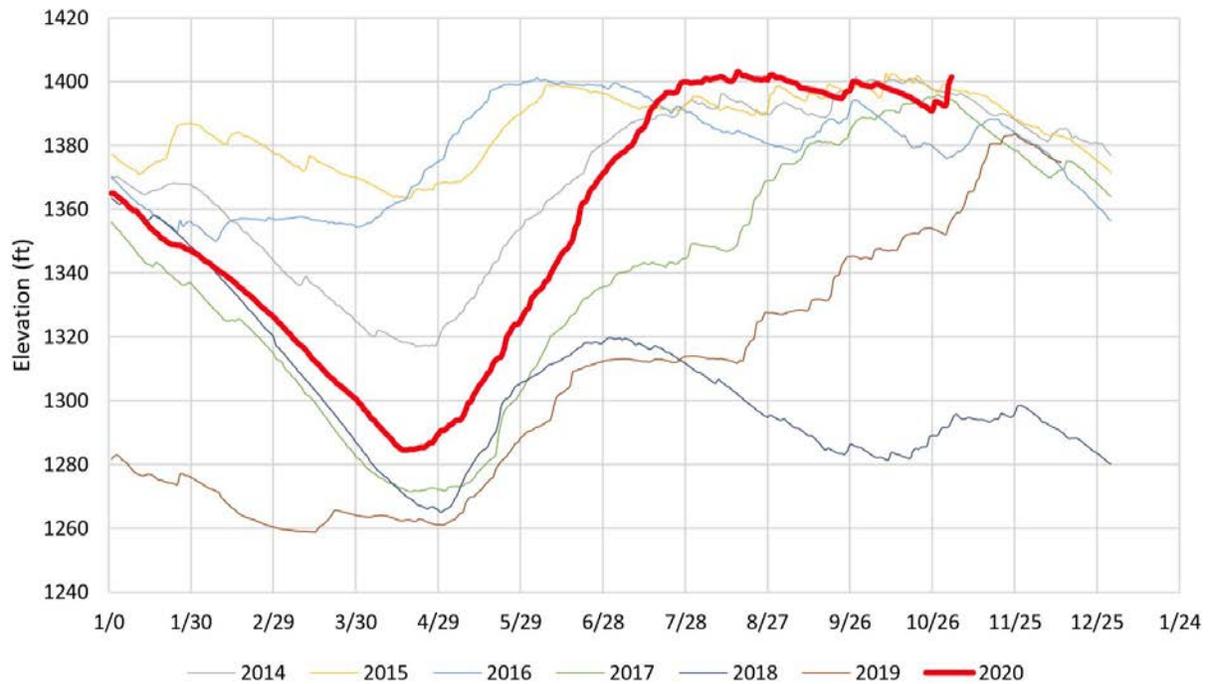
Replacing Insulators

- Installed two new service poles for North Tongass Vol. Fire Department

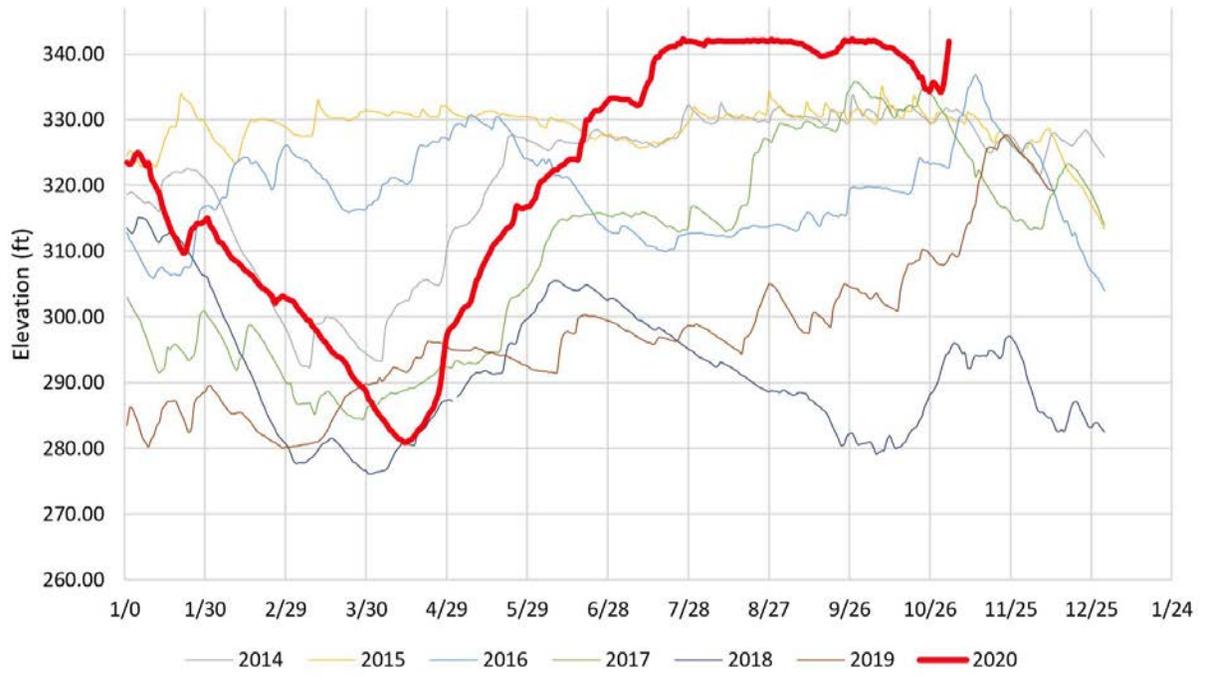
Water Management/Diesel Supplement

- Cooler temperatures brought electric loads up some for the month of October. The increases were exactly what they should be for an average October, finishing the month at 14.3 GWh.
- Precipitation for the month of October was a little lighter than average in town but closer to average for the Silvis/ Beaver Falls water shed. Some 12 inches fell around Ketchikan Powerhouse, with more than 20 falling at Beaver Falls. The norm is 22 inches. The rains were enough to hedge drafting and maintain high lake levels for the time being.
- Diesel generation for the month was limited to only short system restoration runs necessary to recover from several unplanned outages. Diesel generation for October was 22.5 MWh.
- Lake levels and “net” generation are shown in a separate report.

Tyee Lake Levels



Swan Lake Levels



MANAGER'S REPORT
TELECOMMUNICATIONS DIVISION
October 2020
Operational Issues

TELECOMMUNICATIONS DIVISION MANAGER

Undersea Fiber Project

On October 29, 2020, KPUTel transferred all Internet traffic away from GCI's leased-network and onto KPUTel's new undersea fiber optic cable (KetchCan1).

Subsequently KetchCan1 (and all associated electronics) has performed flawlessly. Although our digital Microwave and GCI IRU remain in service (primarily for redundancy), the majority of KPUTel's off-island bandwidth/Internet transport is now obtained via the KetchCan1 undersea cable.

Accordingly, on November 9, 2020 (in keeping with formal termination of our long-term GCI lease) GCI will officially 'turn down'/turn off KPUTel's bandwidth/Internet connectivity – at which point the 'new normal' will officially be in-place. KPUTel will utilize KetchCan1 for high-speed broadband connectivity to the mainland and the greater Internet 'cloud'.

REGULATORY UPDATE

Summary

Alaska Communications System (ACS) announced a definitive agreement to be acquired by Macquarie Capital and GCM Grosvenor for \$300 million. ACS is a large telecommunication provider with services throughout the state of Alaska. If approved by stockholders and regulators, the transaction would result in ACS becoming a privately held company

Other regulatory issues of interest are as follows:

The Federal Communications Commission today announced that \$1,366,378 in E-Rate funding for 291 schools serving 220,584 students in 32 states and Puerto Rico has been committed so far during the Commission's second application window for funding year 2020. The FCC announced the opening of the second E-Rate application window on September 16, 2020, recognizing that schools across the United States are facing an increased demand for connectivity during the COVID-19 pandemic. The E-Rate program, which is part of the Universal Service Fund, provides discounts to schools and libraries for broadband services

Reports and filing:

Annual FCC 911 Reliability Certification

KPU filed their initial reliability certification on October 7, 2020. This certification indicates KPU is in compliance with FCC standards for 911 reliability. This Certification was submitted directly to the FCC.

Quarterly Revenue Report filed

KPU Telecommunications filed their 499Q Revenue report on October 30, 2020. The 499Q is a quarterly report, which contains revenue information from the preceding quarter.

TELECOMMUNICATIONS PLANT DEPARTMENT
Summary

Outside Plant Construction and Splicing:

Projects Completed in October 2020:

- Roosevelt overbuild completed
- Madison Lumber building terminal placed and spliced
- Tongass Marine terminal placed and spliced
- Southeast Stevedoring building terminal placed
- Hospital building terminal placed/ one side spliced

Installation and Repair:

- The installation and repair crews completed
 - 78 service orders
 - 99 trouble tickets
 - 18 fiber drops

2020	Jan	Feb	March	April	May	June	July	August	Sept	Oct
SO	53	58	59	34	68	67	84	81	94	78
TT	95	76	54	77	87	115	76	100	104	99
FD	19	24	17	5	35	14	17	19	30	18
Total	167	158	130	116	190	196	177	200	228	195

OSP Installation & Repair Scorecard:	SO	TT	FD
Month of: October 2020			
Employee			
Brad C.	8	49	0
Nathan L.	23	7	2
Ryan J.	27	14	5
Roger M.	19	12	7
Chad W.	1	17	0
Line Crew	0	0	4
Total	78	99	18

Safety:

Due to meeting restrictions and the ESCI safety instructor cancellation caused by the Covid-19 environment, the safety/staff meeting was canceled during October.

TELECOMMUNICATIONS ENGINEERING DEPARTMENT
Summary

Engineering:

- 4G/LTE
 - Hospital cell site awaiting final fiber install prior to turn-up

- IP Engineering
 - Coherent Optical Transport equipment installed and commissioned
 - Production traffic successfully transitioned to new subsea fiber path
 - Decommissioned Mountain Point Zhone malc

- Video Engineering
 - Minerva M10 middleware server testing towards getting VOD system up
 - Amino Engage platform redesign in process
 - Legacy RGB transcode migration to new DVEO server in-progress

- Voice Engineering
 - 988 – Suicide Prevention programming testing 90% complete
 - Broadworks dial plan updates to allow 988 on hosted platform completed
 - GCI – local numbers ported to GCI was fixed via a bad Trunk in Juneau

- Systems Engineering
 - New Broadworks hardware platform redesign ongoing
 - Worked with City IT to migrate WebEX to enterprise licensing
 - Webex Kit for TFCC proposal to Clerks for Nov 5th Council meeting
 - Resolved vmWare upgrade issues that caused one of six hosts to drop
 - Completed 65TB VOD space deployment
 - Completed major patch upgrades to vmWare

- Facility
 - Mountain Point remote cleanup and redesign complete
 - Mount Point generator replacement project in progress
 - Ward Cove railcar weathered in
 - Ward Cove designs for fiber feed to new routers completed
 - Ward Cove conduit and enclosures installed on the dock
 - Ward Cove Space and Power agreement 95% complete

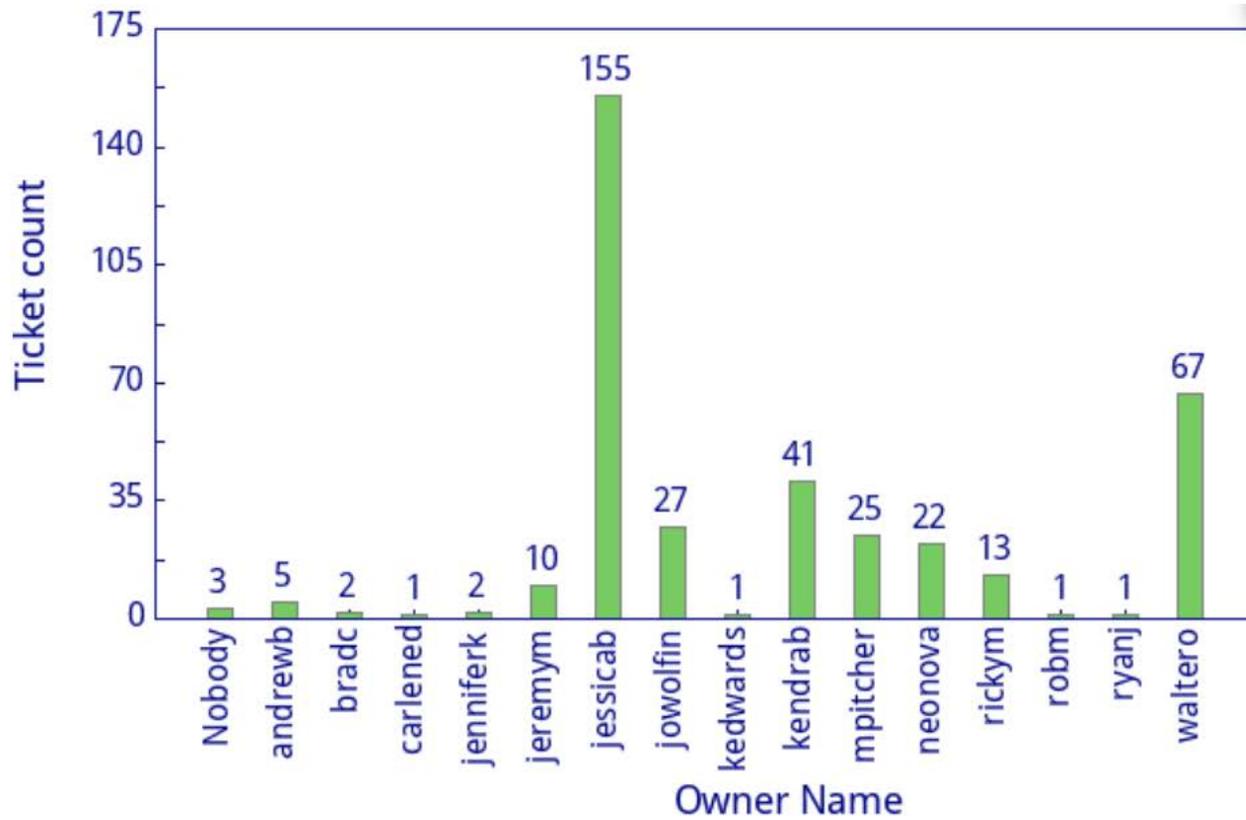
Service Delivery & Network Operations:

- 68 Resolved PBX tickets
- Madison Lumber – New hosted install with 35 phones and wiring
- Island Air Klawock – New hosted install with 12 phones and wiring
- Marble Construction – trunk line migration to hosted solution
- Delta Western – new fiber install
- Cruise Lines – communication room redesign and cleanup
- KPU Electric – 18-mile new Scada circuit installation
- KPU Telecom – relocation of Highliner laundromat MDU

Customer Support:

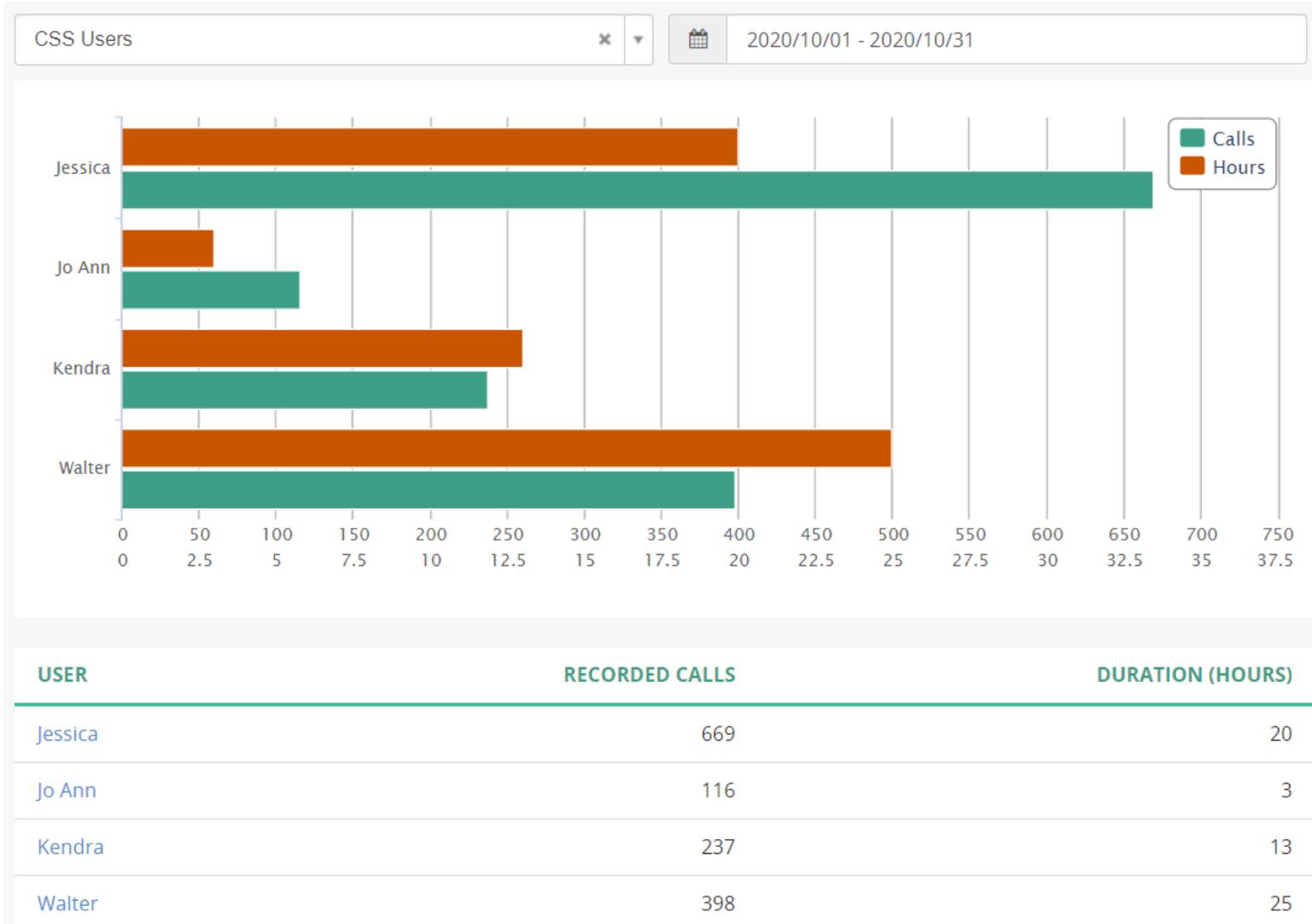
- Total Calls to Support Line 225-2111 = 395
- Calls forwarded to NeoNova 984-244-5721 = 143
- Calls Answered by Customer Support = 252

CSS Overview:



Owner Name	Ticket count
Nobody	3
andrewb	5
bradc	2
carlened	1
jenniferk	2
jeremym	10
jessicab	155
jowolfin	27
kedwards	1
kendrab	41
mpitcher	25
neonova	22
rickym	13
robm	1
ryanj	1
waltero	67
Total	376

Total CSS Calls:



**MANAGER'S REPORT
WATER DIVISION
October 2020**

FILTRATION AVOIDANCE

On April 16th, Ketchikan sent a proposal outline to ADEC that meets the Federal criteria for the submission of a Limited Alternative to Filtration (LAF) and has asked ADEC for their approval before making the LAF submission. As noted, the LAF must address two elements of the water supply; the disinfection treatment process, and the source raw water quality including the surrounding control of the watershed. In addition, the LAF requires that the disinfection treatment process provide greater removal and/or inactivation of regulated microbial contaminants and organisms including cryptosporidium oocysts, giardia lamblia cysts, and viruses than would be achieved by a combination of filtration with chlorine disinfection alone.

The most recent development occurred this October as KPU continues to seek a LAF. ADEC sent a letter on October 13th noting that due to the active, on-going nature of Ketchikan's discussions with the EPA, ADEC's Drinking Water Program was suspending their earlier November 20, 2019 letter containing an 18-month deadline requirement for the installation of filtration.

However, since the LAF only appears in the federal Safe Drinking Water Act, as reauthorized in 1996, and doesn't also appear in the Federal Regulations, Part 141 National Primary Drinking Water Regulations, this complicates the matter as there is no guidance on how to implement a LAF. Fortunately, the State of Washington Administrative Code does include the necessary language allowing implementation of this provision and a LAF was granted to the City of Seattle for their Cedar River project. The State of Alaska has already prepared a draft LAF implementation document with similar provisions although it has not been adopted.

Complicating the matter, when the City Council approved ADEC's Compliance Order by Consent (COBC) on December 4, 2014, it included notice of Ketchikan's violation of a section of the Code of Federal Regulations, 40 CFR 141.71 (a)(1) which applies to all unfiltered water systems. It contains the requirement that, on a 6-month running average, at least 90% of the raw water samples that are collected from a sample point located just before the first point of chlorine injection cannot exceed a maximum contaminant level (MCL) of total or fecal coliform forming colonies.

The EPA regulation for a community our size and avoiding filtration is that 3 raw water samples must be collected each week and be taken on separate days. At a minimum, 90% of Ketchikan's raw water samples must contain 20 or less fecal colonies per 100 milliliter sample (that is, a sample of only 3.4 ounces or a little less than ½ cup of raw water). A total of 5 of the 80 samples collected between the months of April to September have already exceeded this permissible level with 3 of these samples suddenly occurring in late September. Consequently, beginning the last week of September, multiple samples are being collected throughout the watershed on 3 separate days each week attempting to identify the contaminating sources. With evidence of numerous migratory waterfowl discovered both around and in Fawn Lake, it was not surprising that several samples

from small tributary streams draining into Fawn Lake exceeded the minimum permissible fecal level as did Granite Basin itself.

Fortunately, the weather patterns changed in October. This month, the 3 raw water samples collected each week have remained below the minimum permissible fecal level. As a result, based on October's computed 6-month rolling average, 94% of these raw water samples continued to meet the EPA regulation. Meeting the 90% minimum of permissible fecal raw water colonies over the continuous six-month rolling average means that Ketchikan can only have 2 more raw water samples which exceed this limit over the next four months between November and February. Typically November is the last potential month for concern. After that, subfreezing weather will likely have occurred which reduces the probability for further high fecal levels. However, should a third exceedance occur within this same period, it will create a computed 6-month rolling average of only 89% and, as occurred in October 2019, Ketchikan will no longer be in compliance.

OPERATIONAL ISSUES

Contract 19-45 - Schoenbar Raw Water Transmission Main Design

DOWL Engineers, who have already completed the earlier design work for the replacement for Schoenbar Road's distribution water and wastewater mains are now designing a replacement for the failing portion of the 36-inch raw water transmission main in Schoenbar Road. It will be a single, permanent 42-inch HDPE pipeline to be located between the southwesterly edge of Norman Walker Field (adjacent to Park Avenue parking area), and the Ketchikan Charter School. Beginning at the westerly edge of Norman Walker Field, it will cross above Schoenbar Creek adjacent to where Schoenbar Creek's 96-inch multi-plate culvert begins, and then remain buried under Schoenbar Middle School's driveway, passing beneath the School District's Maintenance Shop parking area and the Ketchikan Charter School's playground before reconnecting to the remainder of the existing raw water transmission main.

Authorization has already been received from the City Council to seek property easements for the proposed alternative alignment from the Ketchikan Gateway Borough (KGB) and the School District. Preliminary meetings with their representatives have occurred and discussion of the proposed conceptual route appears in the Borough Public Works Manager's July 20th Report to the Assembly. This report notes that this proposal appears to be in the Borough's best interest and that their staff intends to work out the particulars with KPU's administrators and will return action items to the Assembly. A copy of this report was also forwarded to the School District for their consideration.

In the meantime, DOWL completed the final details for the upstream and downstream 42-inch HDPE connection points. This has allowed KPU to begin the preparations needed before placing an order for six 42-inch butterfly valves and the other needed long-delivery items necessary for the construction of the two connection points.

Contract No. 20-24 - Materials Procurement – Schoenbar Road HDPE Raw Water Connection Points

The ADEC Drinking Water Loan that is providing the financing for this project includes the Buy American requirement for all iron and steel products. Now that DOWL has completed the final details for their design of the upstream and downstream 42-inch HDPE connection points, KPU began discussions with potential vendors for the materials that are needed to construct these two connection points and comply with the Buy American requirement. From their responses, it has become apparent that there are a number of long-delivery items needed. Their estimated deliveries in Ketchikan are all between 20 – 26 weeks after receipt of order which is equivalent to arrival in mid-2021.

In addition to the six 42-inch butterfly valves, there are also twelve heavy 42-inch ductile iron fittings needed with a combined weight of almost 22 tons. Most of these fittings will be used in assembly of the two connection points although four fittings will be assembled later as the 42-inch HDPE raw water main is constructed. These fittings are necessary to construct an above-grade, self-supporting, 36-inch ductile iron crossing of Schoenbar Creek adjacent to Schoenbar Middle School driveway. The reason for using ductile iron here is any driver who is attempting to safely turn left and enter Schoenbar Road from Schoenbar Middle School's driveway needs to have a clear view of any on-coming traffic. Had HDPE pipe been chosen instead for the crossing, it would have also required a large overhead steel support structure and obstructed the driver's view.

The contract documents have been submitted to ADEC for their review and approval before beginning advertisement of this contract.

Contract 20-12 - Water Meters Design / Build - Business & Commercial Customers

Contract 20-12 has been awarded to Ketchikan Mechanical Inc. (KMI) and the Notice to Proceed issued. This contract is more along the lines of a design-build contract. In this case, the contractor will conduct individual audits of each of the businesses that are identified in the Bid Documents. From these audits, the contractor will prepare a simplified design for each individual meter installation for review and approval by KPU. After KPU's approval is issued, the contractor will begin installation of the new meter. As before, this contract is limited in size to allow everyone involved to both gain experience and to obtain better knowledge of the difficulties that are encountered while installing individual meters.

KMI has already completed 36 new meter installations and has received approval of another 10 submittals to begin construction. Of the pending 10 KMI designs that are still remaining outstanding, KPU has requested additional information for clarification.

KPU employees have installed and activated their Cooper Power nodes that communicate directly with the "smart" electric meters located outside the buildings and are transmitting hourly water flow measurements to the Electric Division. At the present time, there are 150 business and commercial meters installed throughout the community that are reporting daily information.

Ultimately, this consumption information will be transmitted to Finance's New World Financial Management System for the purpose of preparing monthly billings to our ratepayers.

This has proven to be a satisfactory method to have water meters installed and subsequent design-build contracts will be advertised well before the planned December completion date of Contract 20-12. Achieving the goal of having all of these business and commercial buildings and large residential apartment complexes fully metered before the end of 2021 will require significant effort as there are still approximately 265 unmetered businesses and large apartment buildings remaining. In addition, the 2016 Water/ Wastewater Rate Study will need to be updated.

Winter Weather Preparations

Fairbanks already has snow and their nighttime temperatures are already down to below 0 °F. It will not be long before winter really does arrive in Ketchikan too and when the first cold snap does appear in November/ December, the incoming water temperature will still be about 40 °F. By then many residences have become accustomed to just letting a water tap slowly run to keep their lines from freezing which works reasonably well – disregarding the aspect of water wastage for the moment.

However, even with this constant flow, during the coldest months of January/ February, incoming water temperatures can fall below 33 °F. Although everyone recognizes that an exposed service beneath a viaduct at tidewater or hung under a wooden street trestle is at risk, there is another situation that catches out new homeowners that may be unfamiliar with our weather patterns. Without the homeowner increasing the flow through their service as the water gets colder in January, it will easily freeze, particularly once the ground becomes solidly frozen all around their copper tubing. The ground can freeze quite deeply in a cold winter when the temperatures get down to 0 °F or below and there is little or no snow cover to provide additional insulation. Although 4-feet is generally considered sufficient depth of soil cover to prevent freezing; in the Bear Valley area one winter, the ground was found frozen to a depth to about 5-1/2 feet during site development for the present Recreation Center.

The Water Division has begun our preparations for the annual onslaught of subfreezing winter weather. Exposed hydrants underneath the Tongass Avenue/ Water Street viaducts are being checked to make sure that their bleeders are functioning properly. Exposed water mains that are insulated and heat traced, like the segment between Tower Road and Martin Street, are checked and the heat tracing turned on. Vaults throughout the community containing operating equipment including altitude valves, air relief valves, dp cells, and pressure reducing valves are checked and their electrical heaters turned on. Not only does cold weather affect our ratepayers having substandard, uninsulated services, without proper preventative maintenance, it will also cause problems for the Water Division.