

KPU



Your Community, Your Utility

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TRANSMITTAL MEMORANDUM

TO: The Honorable Mayor and City Council

FROM: Delilah A. Walsh, General Manager

DATE: October 12, 2022

RE: **Project Status Reports of the KPU Division Managers – September 2022**

Attached for City Council review are the project status reports of the KPU division managers for the month of September 2022. Should the City Council have questions regarding the division managers' reports, staff can respond accordingly.

MANAGER'S REPORT
SALES, MARKETING & CUSTOMER SERVICE DIVISION
September 2022

KPU's net Internet accounts for September were slightly higher than August's internet accounts, and were 5% higher than September 2021. Standalone, no phone-line internet accounts increased by a few percentage points from last year, as people cut phone lines in order to save money; approximately 34% of customers have standalone internet. Between free unlimited internet which comes with TV, and add-on unlimited internet, 62% of KPU internet customers have unlimited internet service. TV accounts declined slightly, as additional customers opted for streaming vs. cable box TV.

Much of the KPUtv film work in September involved the local candidate forums. The Chamber School Board forum, City Council Forum, Borough Assembly and Mayor Forums were filmed and livestreamed, with the live stream going out over KPUTV Facebook, and KPUTV. Post-filming, the unedited footage was uploaded to the KPUTV YouTube, as well as to KPUTV Event Channel. The Governor, and Senator forums held during Southeast Conference in Ketchikan were also live-streamed by the KPU TV crew, and also were uploaded to our YouTube page. Kayhi Sports were filmed during September, including Swimming, and Cross Country. A sports intro featuring cross country, swimming, and volleyball were filmed and each segment will be used as an opener for the various sports game. Creative content produced during September included In the Spotlight episodes featuring Dr. Elena Suleimani on Tsunamis, Deer Mountain Tourist Fishing spotlight, Cooking Basics with Jason, Mainstreet Minute: Positive Affirmations Art show, and In the Spotlight: Dr. Charlie Jose on cancer awareness.

KPU Marketing assisted other City departments with design and promotion of social media, including design work for the Fire Department on the 9/11 event, construction information for public works and water, the Community Ketch-Up meeting for KPD, NOAA Alerts, Employment posts for the City, and Nixle alerts as requested.

KPU social media for September consisted of notice of new and dangerous fraud alerts, electric outages, sneak peeks of KPUtv newest video releases, Local KPUTV new video channel and air time schedule, Marketing staff also shared the Wellness Coalition's social media posts on the City of Ketchikan pages, as requested.

MANAGER'S REPORT

ELECTRIC DIVISION

September 2022

Electric Shop and Meters

- Meters. During the month, there were forty-three (43) meter exchanges/installs.
- Operations. Investigated, performed troubleshooting, made repairs, performed maintenance and/or installed equipment at KPU facilities:
 - No. 1 intake level transducers.
 - Ketchikan plant smoke detectors.
 - No. 1 intake trash rack pump.
 - Beaver Falls Powerhouse Unit No. 4 exciter.
 - Beaver Falls Powerhouse Unit No. 3 exciter.
 - Ketchikan Unit No. 3 tachometer.
 - Ketchikan plant lights.
 - Silvis substation upgrade.
 - Whitman rain gauge.
 - Whitman Unit No. 2 PTs
 - Welcome sign neon lighting.

Continued the metering upgrade for the Yukon system with Eaton/Cooper. Service disconnects and reconnects, system print updates, and station readings.

- SCADA Operations. Coordinated ongoing projects, investigated, performed troubleshooting, made repairs and/or installed equipment at KPU facilities:
 - Network equipment upgrades.
 - SCADA (OSI) upgrade continuing.
 - System radio testing.
 - Warehouse radio testing and replacement.
 - Meter communications system testing.

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 and PLC's (Programmable Logic Controllers). Records management activities and SCADA upgrade planning.

- Water Department. Installed, investigated, and performed troubleshooting for Water Department soda ash alarm, two point chlorination solenoid.
- Harbors. Conducted work on harbor pedestals, lights, and cleared nine (9) harbor trouble tickets.
- Telecommunications. No new activities.

Outages and Events

- No outages to report.

Powerhouse & Fleet Maintenance

- Beaver Falls Hydro Project:
 - Replaced BFG1 AC bearing oil pump
 - Completed Adit Valve pipe/valve inspection with consultant
 - Cycled Upper Silvis Lake valves
 - Removed rock from area near Upper Silvis tunnel
 - Brushed Silvis access road with excavator
 - Completed annual brushing around all facilities within project
 - Installed No. 1 trash rack
- Whitman Hydro Project:
 - Repaired Valve 17
 - Conducted general brushing within project boundaries
- Ketchikan Hydro Project:
 - Removed large logs from boom on Ketchikan Lake
- Completed repairs to work skiff and trailer
- Fleet maintenance
- Contract 22-19 Flatbed Truck: No bids received
- Contract 22-20 Pickup Truck: No bids received

Regulatory and Dam Safety

- Addressed comments on Beaver Falls Draft License Application; preparing Final License Application for October filing.
- Finalized and filed Beaver Falls Historic Properties Management Plan with the State Historic Preservation Office.
- Conceptual design and agency consultation for modifications to the Whitman Powerhouse tailrace to reduce fish stranding.

SEAPA

- There was a regular board meeting on September 23, 2022, it was via zoom.
- The next regular board meeting is scheduled for December 8, 2022, in-person in Ketchikan, Alaska.
- For additional information please visit SEAPA's web site at:
<https://www.seapahydro.org/>

Transmission & Distribution Work

- Opened bids for Contract 22-21 Polemount Transformers; October Council meeting for award consideration
- In-house tree trimming efforts on North Tongass Highway continued due to no bids being received for contracts No. 22-04 or No. 22-07.
- Completed 12.47kV and 34.5kV switching in support of ADOT Herring Cove Bridge project
- Replaced over one-hundred (100) 35kV insulators
- Replaced/set five (5) primary poles
- Completed a multitude of service upgrade disconnect/reconnects
- Conducted over ten (10) site visits for new power hook-ups.

- As of end of September, issued 65 estimates for power. Compared to a total of
 - 68 for all of 2021
 - 70 for 2020
 - 54 for 2019
 - 54 for 2018
 - 33 for 2017
 - 39 for 2016

Division Staffing

- There are no changes in staffing, the Electric Division continues to be short staffed; the Division is currently staffed at 33.4 Full Time Equivalent (FTE) of the authorized 43.4 FTE, or seventy-seven percent (77%).
- Staffing by Department/Section:

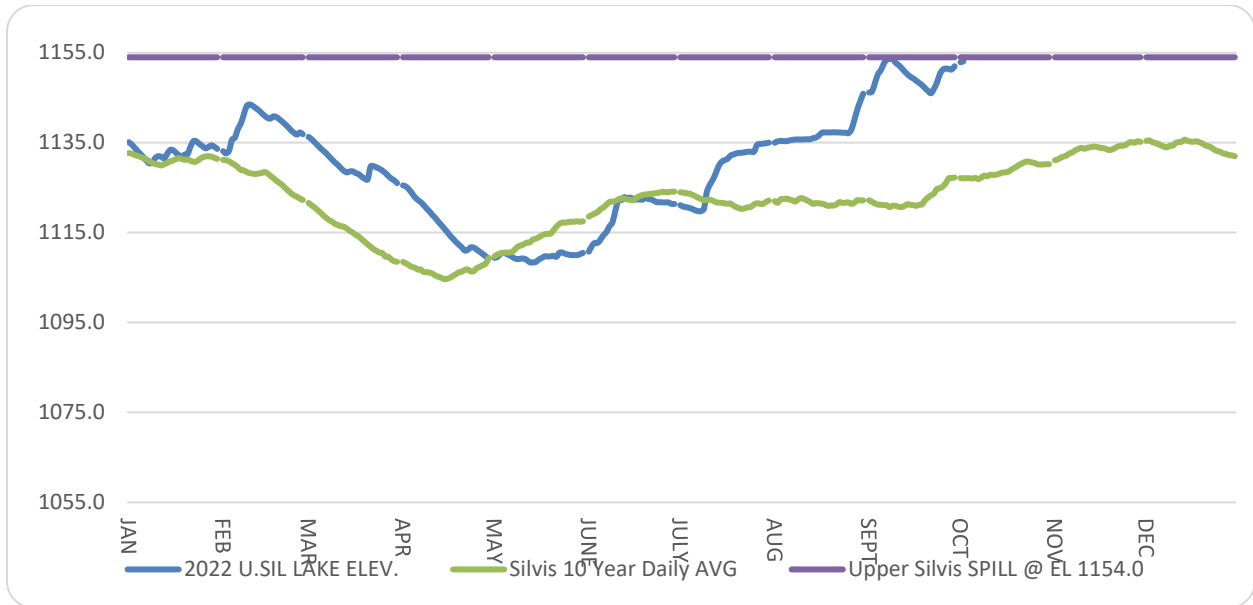
FTE	Authorized	Current	
Management, Front Office, and			
Regulatory	6	5	83.3%
Operations	8	5	62.5%
Metering and Generation	7.5	5.5	73.3%
Service and Line	8	6	75.0%
Maintenance	9	7	77.8%
GIS/CADD	1.4	1.4	100.0%
Warehouse	1.5	1.5	100.0%
SCADA	2	2	100.0%
	43.4	33.4	77.0%

- For the month, with scheduled vacations and sick leave, the Division operated with an effective capacity of sixty-seven percent (67%) of the authorized FTE.
- There were 393.5 hours of required overtime for the month.
- The Division continues to work with the City Human Resources (HR) Department for employee recruitments.

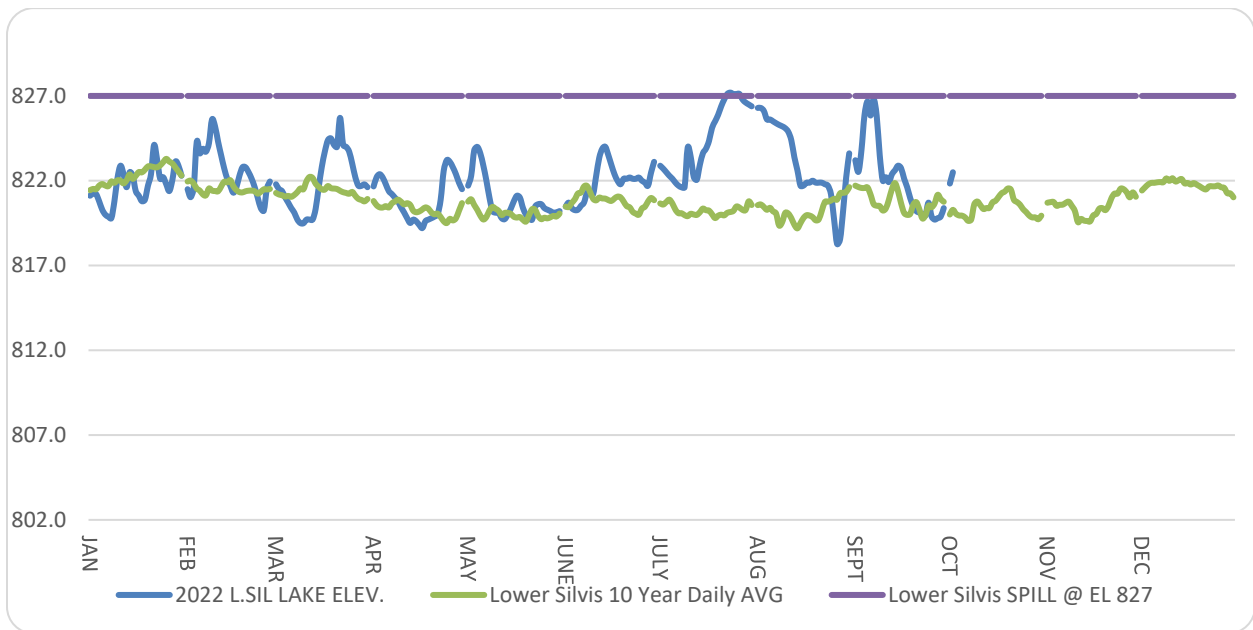
System Loads and Weather

- KPU loads for the month were above the 10-year average. The 10-year average total system load is 12.30 GWh; this month was 11.83 GWh, 3.84% below the 10-year average.
- The diesel generation total was 0.00 GWh, no diesel was required.
- The normal monthly precipitation is 14.30 inches; this month was 16.97, 18.67% above the normal value.
- The normal monthly degree days heating is 342 (a measure of how cold the temperature is in a given month); this month was 268, 21.64% below the normal value. This indicates a warmer month than normal or less heating required.
- Note: Values are from NOAA Climate Observed Weather.

September 2022 KPU Lake Graphs

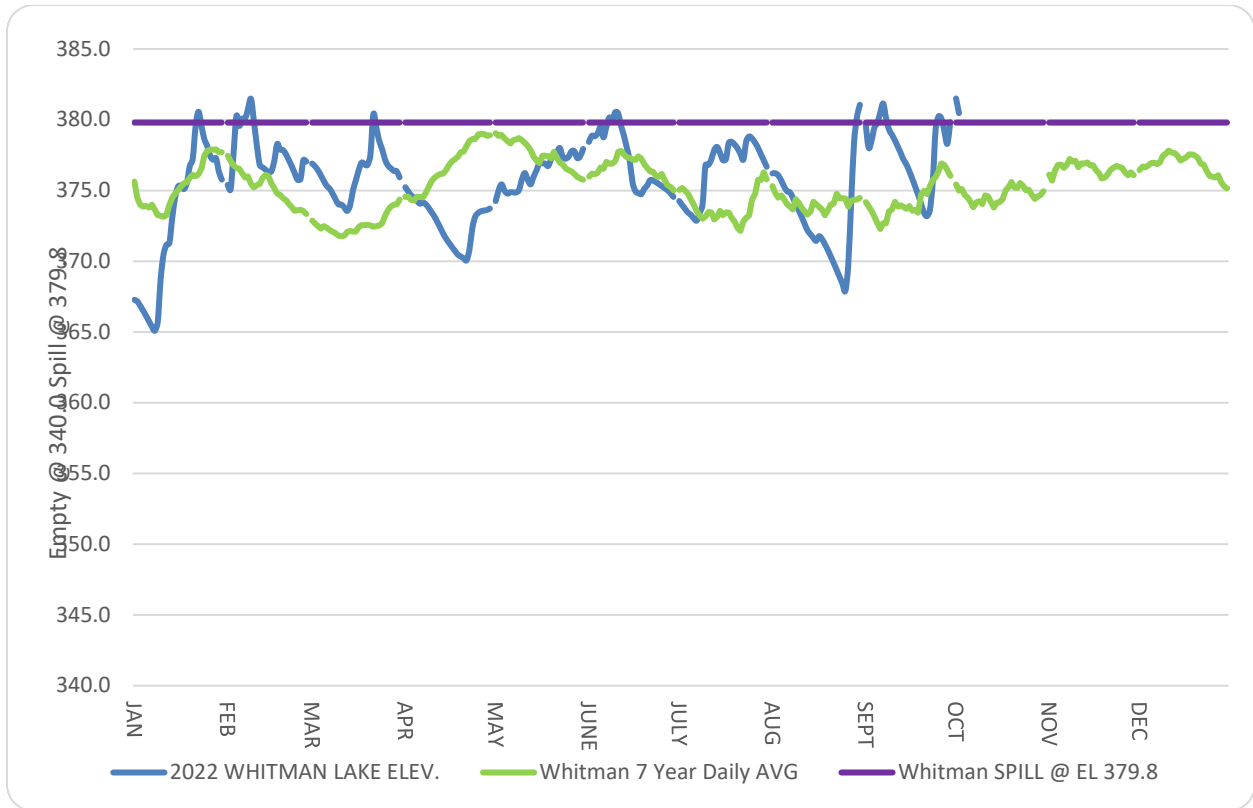


Upper Silvis Lake

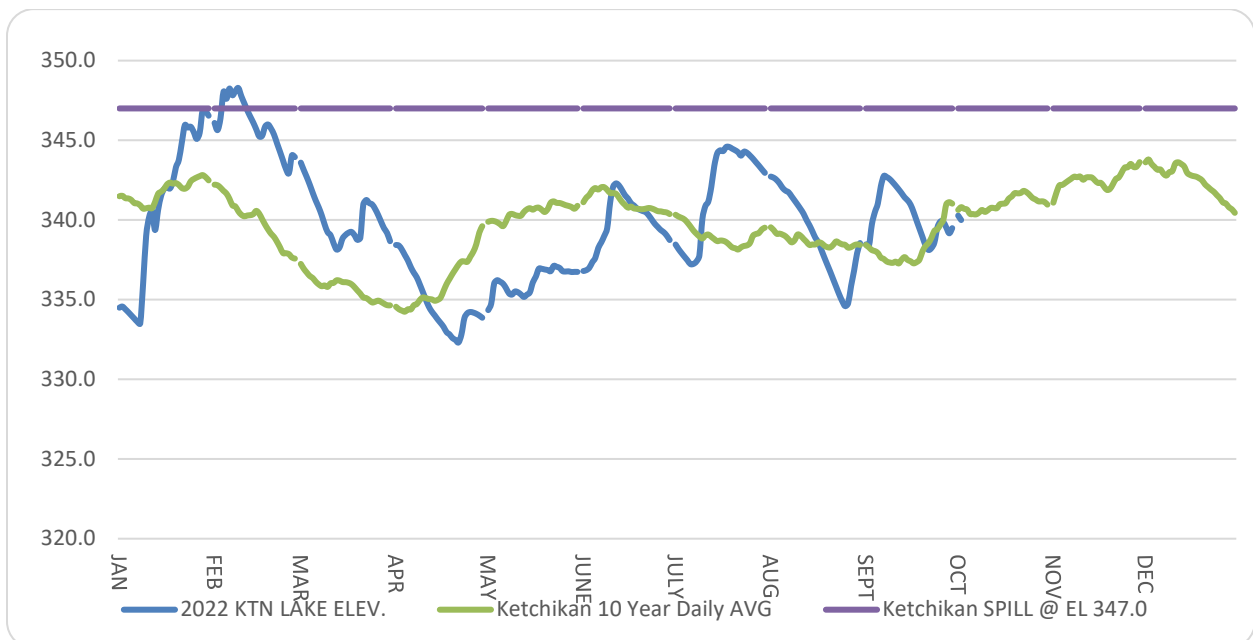


Lower Silvis Lake

September 2022 KPU Lake Graphs



Whitman Lake



Ketchikan Lake

MANAGER'S REPORT
TELECOMMUNICATIONS DIVISION
October 2022
Operational Issues

TELECOMMUNICATIONS DIVISION MANAGER
Summary

As the new KPU Telecommunications Division Manager, I am excited and eager to continue the excellent work of the Telecommunications Division in providing exceptional communications services to the community. The Division is in good shape both operationally and financially. It will be key to continue the legislative efforts outlined below in order to continue the long term success of the Division.

ReConnect Grant:

The Division continues to be on track to file the round 4 ReConnect Grant which has a due date of November 6, 2022.

KetchCan1:

Subsequent to repair of various terrestrial fiber optic cables in southern British Columbia (due to flooding in late December, 2021), KetchCan1 continues to perform flawlessly.

Auction 108:

Auction 108: FCC Auction 108 for 2.5GHz wireless spectrum started on July 29th, 2022. On August 29, 2022, bidding concluded in FCC Auction 108, the auction of new flexible-use geographic overlay licenses in the 2.5 GHz band. Auction 108 raised a total of \$419,133,261 in net bids and \$427,789,670 in gross bids, with 63 bidders winning a total of 7,872 licenses. KPU Telecommunications Division won the licenses it bid on for \$81,000 gross, and \$68,850 net after applying the 15% rural bidding credit. KPU has filed its long form application and made payment for the new spectrum.

Personnel:

I continue to be impressed with the Telecommunications Division's employee work ethic and dedication.

At present, the following positions remain vacant:

- Plant Manager (on 'permanent' hold through the end of 2022).
- Assistant KPU Telecommunications Division Manager

Legislative:

I continue to be engaged on legislative and regulatory issues working with the Alaska Telecom Association - participating in video meetings in Juneau and DC (with Alaska's Congressional Delegation and staff) - regarding Alaska telecommunications / broadband funding issues which may affect KPUTel indirectly or directly. Approximately 29% of KPUTel's annual revenue is derived from USF (Federal) and AUSF (State) - and the 'ground' under these programs is always shifting, and requires constant attention - particularly now that proposed federal infrastructure legislation has billions of dollars targeted toward broadband - it is critical to ensure that the Alaska Plan is not altered or threatened via the legislative process.

The industry was able to file a Consensus Proposal in R-21-001 in the matter of the sunset of the Alaska Universal Service Fund. The consensus proposal is favorable to KPU and would help keep us on the path of providing great service to our customers. The Consensus Proposal will be subject to a round of comment and final decision by the Regulatory Commission of Alaska.

REGULATORY UPDATE

Summary

The industry filed a Consensus Proposal in R-21-001 in the matter of the sunset of the Alaska Universal Service Fund. The consensus proposal is favorable to KPU and would help keep us on the path of providing great service to our customers. The Consensus Proposal will be subject to a round of comment and a final decision by the Regulatory Commission of Alaska.

Other regulatory issues of interest are as follows:

The FCC continues to monitor communications equipment and has added equipment from two entities to the list of equipment and service which have been deemed a threat to national security. The full list can be found at <https://www.fcc.gov/supplychain/coveredlist> . KPU does not utilize any of the listed equipment.

Reports and filing:

FUSC Rate Change

On September 16, 2022, NECA filed a revised tariff based on the FCC Public Notice released on September 13, 2022, increasing the Federal Universal Service Charge (FUSC) from 33.0% to 28.9%, effective October 1, 2022.

TELECOMMUNICATIONS ENGINEERING DEPARTMENT

Summary

Engineering:

- 4G/LTE
 - Verizon KPI's good for September.
 - Cranberry Rd cell site permitting in-process.
- IP Engineering
 - KPU Electric Scada redesign migration completed successfully.
 - Extrahop upgrade to 9.0.
 - Connect America Fund (CAF) testing completed Q4.
 - Broadband Data Collection (BDC) filing assistance.
 - Harbormaster and new COA508 10G TA5000 switches added.
 - Latest Adtran FTTH software testing and verification in-progress.
- Video Engineering
 - Vubiquity and Minerva meetings about future of video streaming services.
 - New receivers for 3ABN, Lifetime Real Women, GMA, and CSPAN.
- Voice Engineering
 - Webex for Broadworks deployment project in-progress.

- Webex for Broadworks training for several technicians.
- SIP registration optimization project still in-progress.
- Additional Broadworks Security Vulnerability updates.
- Oracle ACME Session Border Controller and ECG VoIP specifications complete for 2023 project plan.
- Systems Engineering
 - 0365 G3 instance in deployment.
 - 20 systems patched and upgraded.
 - Cisco UCS rebuild with SCN ongoing.
 - VSAN vmWare upgrade to ESXi 7 completed in all three clusters.
 - Weak password remediation project 95% complete.
 - Solarwinds 2022.3 upgrade completed.
- Facilities
 - New Mountain Point generator installation completed.
 - Added and tested 9x new Active-E cards for new subscriber capacity.

Service Delivery & Network Operations:

- 57 Resolved PBX tickets.
- 14 service orders.

Outside Plant Construction and Splicing:

Projects in September 2022

- Placed and spliced new fiber cable on Thatcher Way.
- Cranberry cell site planning.
- Central Office Satellite obstruction clearing.
- ReConnect Loan and Grant Program filing assistance.
- MDU interior residential installation standard design completed.
- 2x fiber job orders completed.
- Audited 1 fiber cable in Esri.
- Herring Cove 2nd phase cutover efforts concerning cable clearance.

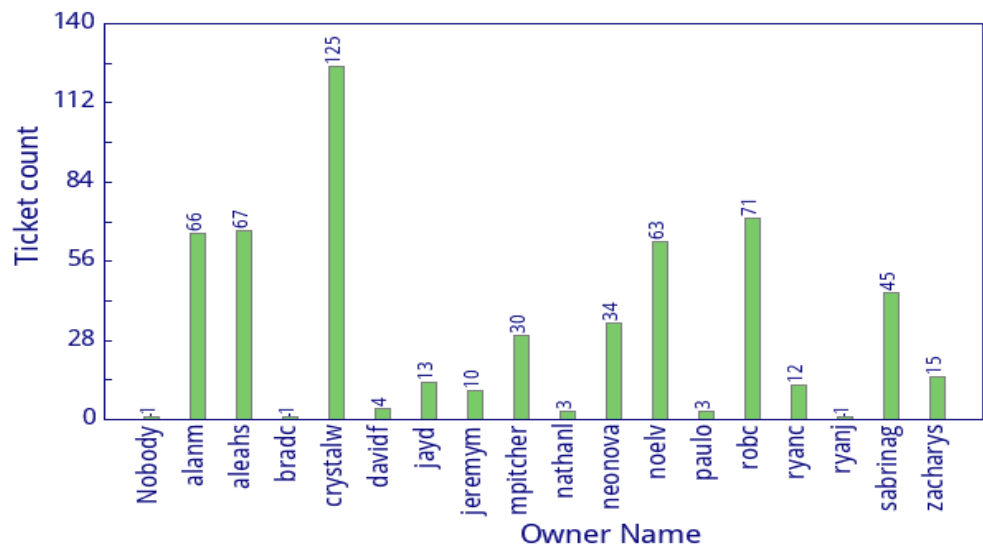
Installation and Repair:

- The installation and repair crews completed:
 - 72 service orders
 - 96 trouble tickets
 - 16 fiber drops

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SO	64	64	74	64	68	83	63	62	72			
TT	86	78	94	97	101	94	81	90	96			
FD	21	16	25	17	21	17	15	7	16			
Total	171	158	193	178	190	194	159	159	184			

OSP Installation & Repair Scorecard: September 2022	SO	TT	FD
Employee			
Brad C.		3	
Ryan J.			
Ryan C.	18	11	
Alan M.	3	63	
Nate L.	11	1	
Jared A.			
Zach S.		14	
David F.	26	1	
Jeremy M			
Nate/Zach/David		1	
David/Ryan C.	10		11
Ryan J / Ryan C			1
Nate L/Ryan C	2		
David F/Nate L	2	2	
Ryan C/ Alan M/ David F			2
Alan/Zach			
Alan/David			
Alan/Ryan C			
Total	72	96	14

CSS Overview:



Owner Name	Ticket count
Nobody	1
alanm	66
aleahs	67
bradc	1
crystalw	125
davidf	4
jayd	13
jeremym	10
mpitcher	30
nathanl	3
neonova	34
noelv	63
paulo	3
robc	71
ryanc	12
ryanj	1
sabrinag	45
zacharys	15
Total	564

Query: Status != 'SPAM' AND Status != 'rejected' AND Queue != 'OPS' AND Queue != 'CompHQ' AND Queue != 'Customerservice' AND Queue != 'MSM' AND Queue != 'Maintenance' AND Queue != 'BattRepl' AND Queue != 'Support_Level3' AND Queue != 'Billing' AND Queue != 'CustAtRisk' AND Queue != 'Test2' AND Queue != 'Support_Level2' AND Resolved < '2022-10-01' AND Resolved > '2022-08-31'



Total CSS Calls:

- Calls to Customer Support (September, 2022)
 - Total Calls to 225-2111 = 301
 - Calls forwarded to NeoNova 984-244-5721 = 104
 - Calls Answered by Customer Support = 197

**MANAGER'S REPORT
WATER DIVISION
September 2022**

FILTRATION AVOIDANCE

At their meeting of May 20, 2021 the City Council approved the draft Compliance Order by Consent (COBC) prepared by the Alaska Department of Environmental Conservation (ADEC). It contains provisions that KPU must demonstrate in order to qualify for a Limited Alternative to Filtration (LAF). They are:

- a. The system has “uninhabited, undeveloped watersheds in consolidated ownership.”
- b. The system has control over both “access to, and activities in, those watersheds.”
- c. The system’s source water quality and the alternative treatment requirements established by the state must ensure greater removal or inactivation efficiencies of pathogens than would otherwise result from the treatment requirements stipulated by regulations.

Each of the five Action Items that are listed in ADEC’s COBC are as follows:

Items A - Watershed Control Plan, and Item B – Consolidated Ownership Report, have been combined into a single report by Jacobs Engineering. It has been completed and transmitted to ADEC on February 4, 2022.

Item C – Source Water Quality Study and Item D – Water Treatment Report, were both completed and delivered to ADEC. Item C on March 17, 2022 and Item D on March 11, 2022.

Item E – Provisions for Public Involvement, has already been completed and transmitted to ADEC on November 23, 2021.

ADEC personnel have completed their reviews of each of these Action Items and updates incorporating their comments have been made to Item D, the Water Treatment Report by Jacobs Engineering. ADEC noted “Overall, the report looks good and we have no issues with the technical aspects provided to support your arguments/justification.” Updates to the now combined Items A & B, the Watershed Control Plan, have been resubmitted to ADEC for their final review and approval. The next step will be ADEC’s transmittal this fall of each of the final documents along with their documentation and approval package to the EPA Region 10 Administrator for the EPA’s review.

The EPA will undoubtedly have further questions during their individual reviews or requests for supplementary information about these Action Item submittals. This will likely occur over an extended amount of time, perhaps another year or more. Additional funding is needed for this subsequent work and on March 17th, the City Council adopted a motion authorizing Amendment No. 4 in the not to exceed amount of \$130,000 to Contract 19-44, Professional Services Agreement for Negotiation of a Compliance Order by Consent for Water Filtration.

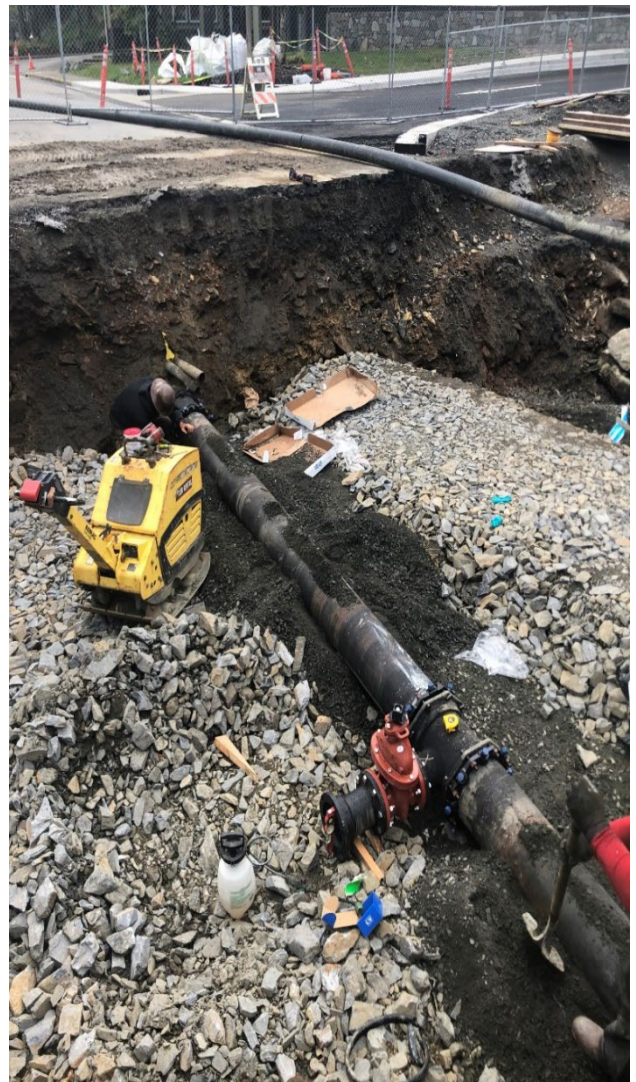
Final LAF approval still depends upon the EPA’s approval of ADEC’s acknowledgement that each of KPU’s five submitted Action Item studies have fully met the provisions listed in Ketchikan’s COBC, the EPA makes an affirmative decision that Ketchikan is to receive a LAF, and ADEC must adopt LAF provisions which do not exist today into the Alaska Drinking Water Regulations.

OPERATIONAL ISSUES

Contract 21-01 - Ketchikan Raw Water Transmission Main Replacement

Contract 21-01, awarded to BAM LLC for the replacement for the failing portion of the 36-inch raw water transmission main in Schoenbar Road, will be a single, permanent 42-inch HDPE pipeline being constructed 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.

BAM's work this September began by making the preparations to install the short ductile iron segment that crosses above Schoenbar Creek adjacent to where Schoenbar Creek's 96-inch multi-plate culvert begins. Both support piles have been driven and the concrete pile caps are installed.



While Schoenbar Road was closed for the crossing, the existing 12-inch water main was intercepted and a 6-inch tee with valve installed for a future service to the planned Walker Field grandstands.

Beyond the multi-plate culvert, 42-inch HDPE pipe has been buried beneath the Schoenbar Road crossing and continue underneath all of Norman Walker Field to a point adjacent to the Field's Park Avenue parking area. There, the easternmost connection point to the existing buried 36-inch raw water main is already installed and ready for the final connections.



The last main-line segment was successfully lowered into the Walker Field trench by three hydraulic excavators on September 27th. By the end of October, this entire project should be substantially complete with the new 42-inch HDPE pipe segment installed and fully operational. The abandoned portion of the 36-inch ductile iron raw water main in Schoenbar Road will also be filled with grout to prevent future subsidence of the roadway.

Contract 20-25 – Continuation of Water Meter Design / Build – Business & Commercial Customers

Ketchikan Mechanical Inc. (KMI) was awarded Contract 20-25, the installation of another 50 water meters using the same design-build contract method as before, by the City Council on February 4th. KMI's first task is to conduct individual audits of each of the businesses that were identified in the Bid Documents and from these audits, then prepares a simplified design for each individual meter installation for review and approval by KPU. After KPU's approval is issued, the contractor begins installation of the new meter. Since its inception in 2019, this step-by-step method of installing water meters has proven to be entirely satisfactory for everyone involved.

Like so many other manufactured items affected by the coronavirus pandemic, this inadvertent delay required an extension to KMI's Contract 20-25's completion date to October 9, 2021 and was approved by the City Council at their meeting of July 1, 2021. As before, this contract was completed on-time and under budget. With a total of 183 meters now installed, it is apparent that using the design/ build concept for meter installation has been both cost-efficient and successful, with minimal difficulties encountered. However, progress has been at a standstill during 2022 as the effects of the continuing coronavirus pandemic has severely affected material deliveries for both water meters as well as the radio-frequency nodes that allow them to electronically communicate and transmit information to KPU's electric meters.

KPU's present supply of Cooper Power nodes remaining in inventory is exhausted. Complicating the matter, the 80 additional nodes that were ordered back in October 2020, continues to experience further delays in their estimated delivery date. Cooper Power's March 22, 2022 email stated that 50 of our backordered batteries should be shipped the second week of June, another 80 nodes shipped by the end of June, and the last 160 backordered nodes will be shipped by the end of July. Although Cooper Power has assured KPU that it has priority to receive the nodes that are on order once the manufacturing production problems at their factory in Mexico are resolved, another recent email stated that our node deliveries will now not begin until December 2022.

Although the promised delivery dates of KPU's 2020 & 2021 orders for additional nodes has continued to slip drastically, Cooper Power has just sent an invoice for the first 80 of the 240 nodes ordered. Once these new nodes that were ordered in 2020 arrive and are installed by KPU employees, the remainder of the 50 new water meters that KMI installed in Contract 20-25 will become fully functional and begin reporting. The reporting procedure itself consists of each node interrogating its associated water meter hourly and then reporting the results to one of KPU's nearby Cooper Power "smart" electric meters which in turn transmits the water flow measurements to the Electric Division. Ultimately, this water consumption information will be transmitted to Finance's New World Financial Management System for the purpose of preparing monthly billings to our ratepayers.

As it stands now, achieving the original goal of having all of the remaining unmetered businesses, commercial buildings, and large residential apartment complexes fully metered before the end of 2022 is simply no longer feasible and as a result, completion of this project is now very likely delayed into

late 2023. Once the remainder of the 240 node order is received from Cooper Power, the next water meter installation contract is planned in early 2023 to install meters for the remainder of these approximately 225 unmetered businesses, commercial buildings, and large residential apartment complexes.

Despite the delay caused by lack of these critical nodes, KPU's draft 2023 Budget will still propose carryover of Drinking Water and Wastewater Loan Funds for the installation of the remainder of the water meters, an update to the 2016 Water/ Wastewater Rate Study, with provisions for amendments made to the Ketchikan Municipal Code.

Contract No. 21-10 – Programmable Logic Controller Upgrade – Phase II - UV Disinfection Facility

Although Jacobs Engineering has completed earlier Contracts which made the initial upgrades to our SCADA server and program software, there still remain a number of outstanding automation and cybersecurity risks existing within the disinfection system that also need to be addressed. The recently completed Contract 21-03 – Water Cyber Security Evaluation identified areas in urgent need of cybersecurity improvements including the planned multi-year project to replace all three of our present Allen-Bradley Programmable Logic Controllers (PLCs) which have reached the end of their useful service life. Collectively, KPU has three Allen-Bradley Programmable Logic Controllers (PLCs) installed at the UV Facility, the Chlorination Plant, and the Ammonia Addition Facility. They are each providing continuous supervisory control over specific critical components within KPU's complex, computer-controlled, disinfection process.

Although this project had been approved for construction in the division's 2020 CIP program, by that March everyone suddenly found themselves in the midst of the worldwide coronavirus pandemic and all that entailed. Accordingly, to minimize the Utilities' annual operating expenditures during 2020, KPU elected to defer any planned PLC upgrading until 2021. Included in Water's 2021 CIP Budget, Contract 21-10 is the first phase of this project and approved by the City Council at their meeting of July 15, 2021. These PLC replacements will be the new Allen-Bradley ControlLogix PLCs which have long-term manufacturer and industry support. They use a modern control system infrastructure that offers several improvements for communications, stability, ease of maintenance, and reliability. This is the reason, when the Two-Point Chlorination Facility was being designed in 2015, the latest ControlLogix PLC's were chosen to operate the two new ClorTec sodium hypochlorite generators.

Continued delays of critical material deliveries that will likely continue through the summer months are affecting completion of this project at the UV Facility (CP-100). Several project meetings have been held with Jacobs Engineering's staff, most recently on April 7, 2022, to discuss the preparatory work progress that is necessary before the equipment installation phase can begin. The final testing of the control system, the PLC and HMI programming, and the implementation planning must all be completed before shipping the components to Ketchikan and physically beginning the installation.

Rather than having any potential impact on 2022's fish processing season, the installation, commissioning, and cutover of the new CP-100 equipment in the UV Facility was planned to occur this fall. However, due to the world-wide effect of the coronavirus pandemic on material deliveries, the upgrade to the Water Treatment UV Facility's (CP-100) PLC has been further delayed and may not be completed before mid-2023. In addition, there have also been significant material cost increases during 2022 which are now reflected in the increased estimated costs to upgrade the two remaining PLCs; the one located in the Old Chlorination Building (CP-300) in 2023, and upgrade to the third and final PLC in the Ammonia Building (CP-400) in 2024. This will allow all of these critical PLC's to migrate to the modern Allen-Bradley ControlLogix PLC platform.