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MANAGERS REPORT
September 9, 2013

TO: MAYOR WYTHE / HOMER CITY COUNCIL

FROM: WALT WREDE

UPDATES / FOLLOW-UP

1. Gasline Progress: Enstar reports that the pipeline purges which have been taking place through much of downtown this week have been successful. They are confident in the quality of the construction. By the time Council reads this report, much of the distribution system between East and West Hill Road will be energized and filled with gas. Enstar has exhausted the State Legislative Grant on the Trunk Line and is now using its own funds for the final 3 miles of construction. Recall that this money will be repaid by consumers with a $1.00 per mcf surcharge until the amount Enstar "advances" is repaid. This amount is still estimated to be around $2.5 Million. The City is applying for full reimbursement of the grant proceeds. Enstar reports that it is running slightly over the trunk line budget but under the distribution system budget.
2. Port: You may have noticed the increase in business for vessel repair and scrapping at the beach haul out area. There is great demand for this service and I think it bodes well for the utility of the proposed barge mooring and haul out facility capital project. Vessels that are hauled out in this area pay regular moorage fees if they are on the tidelands and storage fees if they are on the uplands. These activities also generate jobs and tax revenues. Of course, the vessels are also unsightly and a nuisance to some. This year we had to move and inconvenience some campers a little early due to business demand. Not all of the campers were happy and you may be contacted about it. Some campers are really interested in the work going on there. Others say it blocks the view (which it does) results in too much noise, and generally degrades the camping experience.
3. Water Trail: Last week Bryan Hawkins and Angie Ottesen met with Dave Brann at the site of the water trail launch. The purpose of the meeting was to decide where to place the plaque the steering committee received. The plaque will be mounted on a large granite stone that is being donated. It will be a nice monument demarking the official start of the trail.
4. Beluga Slough Trail. Carey Meyer is working with the U.S. Fish and Wildlife Service to install interpretative signage on the newly reconstructed Beluga Slough Trail. The current plan is to commission a poet to write poetry that would double as interpretative signage. In other words, the poetry would tell the story of Beluga Slough and the resource values it represents. This should be terrific. This could only happen in Homer!
5. Public Safety Building: This agenda contains a resolution and an ordinance pertaining to the new proposed public safety building. You will notice that the ordinance contains instructions for me to use the GC/CM method of construction and to post an RFP for these services. This is what we recommend. We should talk about it more at the meeting to be sure Council is in agreement. Also, Council might want to consider forming a building committee, like it did with City Hall and the Harbormaster Building. Using the GC/CM method along with a building committee has been very successful for us in the past. In addition to getting ourselves in good position for the legislative session, we are also starting work on securing funding from other sources. In the next

few weeks, Chief Robl and I will be meeting with the DOC Commissioner to talk about the new jail. The State is very interested in seeing a new jail here and will provide funding for it. Also, Chief Painter has learned that FEMA will pay for up to 75% of the cost of constructing new Emergency Operations Centers. This building will house the EOC.

6. HERC Building: Carey has obtained an estimate for demolition of the HERC Building. The estimate includes both buildings. It is not as much as we anticipated. I will have the number for you at the meeting. I believe Katie may have mentioned it in her report. So, this is an important piece of the decision making matrix for this building.
7. Bathrooms: You have probably noticed that the new bathrooms are rising up quickly. People notice the ones at WKFL Park and Bartlett/Pioneer but the ones farthest along are at the Deep Water Dock and End of the Road Park. Enstar has agreed to run service lies to the Spit restrooms this year, even though they would normally be part of Phase II. This will allow us to pave over the lines this year as part of the construction project. It will save us money to do it this way and we appreciate Enstar's willingness to work with us.
8. System 5 Improvements. At the last meeting we reported to you about a large change order I approved for work at System 5 in the harbor. The change order will allow us to provide more electrical services and will greatly improve service there. The Council will see a very quickly payback and significant increase in business and customer satisfaction because of this move. We appreciate your support.
9. Water Treatment Plant and Sewer Treatment Plant. During the discussions about the new water and sewer rate model, there was frequent reference to the City's sophisticated water and sewer treatment plants and the high level of training and expertise of our employees. City employees have won several awards over the past few years as Council knows. Attached are two recent articles in professional journals about both treatment plants. I hope the Council members will be proud they read these articles. We will try and do a better job of getting this type of information out to the public because it is very informative.
10. Budget: We are working internally on the draft budget and at this point, are on target to deliver it to Council on October 14 and introduce the budget ordinance and supporting resolutions on October 28.
11. New Water Tank: At the last meeting, some questions can up about the proposed new water tank on Shellfish. Attached is a letter that went out to the neighborhood informing property owners of the project and soliciting their input.

ATTACHMENTS

1. Water Treatment Plant and Sewer Treatment Plant Articles
2. Employee Anniversary letter

NEVER SATISFIED

A new ultrafiltration system resolved many issues for the team in Homer, Alaska, but that doesn't keep them from working diligently to continue getting better

STORY: **JIM FORCE**
PHOTOGRAPHY: **M. SCOTT MOON**

Perfectionists. That's the conclusion you draw after a conversation with the treatment crew at the 2 mgd Bridge Creek Water Treatment Plant in Homer, Alaska. Superintendent Todd Cook and his staff strive to improve constantly as they deliver drinking water to 1,500 customers in this community on the Kenai Peninsula, 200 miles southwest of Anchorage.

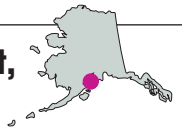
The plant includes the largest ultrafiltration membrane installation for drinking water in the state, but the Homer operators don't let such advanced technology keep them from tweaking plant processes and adjusting chemistry. They're on the alert against organics, iron and manganese, disinfection byproducts and more, and they have even made adjustments to the membranes and the control systems to give them better results. "We don't get bored around here," Cook says.

Step up to membranes

For many years, the Bridge Creek plant used pressure sand filters, but frequently had to deal with filter blinding. Filter backwashing required a high volume of water, reducing the amount of finished water for customers to only 40 to 60 percent.

The ZeeWeed ultrafiltration units (GE Water & Process Technologies) are the highlight of a major plant upgrade completed in 2009. Raw water comes from the 35-acre Bridge Creek Reservoir, a few hundred yards from the plant. Byron Jackson multi-stage turbine pumps (Flowserve Corp.) bring the water uphill to the plant, where it passes through strainers (S.P. Kinney Engineers) and then is mixed with recycled water decanted from the filter backwash water ponds.

Bridge Creek Water Treatment Plant, Homer, Alaska



BUILT:	**1970s (membrane plant started 2009)**
TREATMENT CAPACITY:	**2 mgd**
SERVICE AREA:	**City of Homer, plus users in two neighboring communities**
CONNECTIONS:	**1,500**
SOURCE WATER:	**Bridge Creek Reservoir**
TREATMENT PROCESSES:	**Rapid mix and flocculation, ultrafiltration**
INFRASTRUCTURE:	**43 miles of distribution lines, 22 pressure-reducing stations, 5 water storage tanks**
SYSTEM STORAGE:	**2.1 million gallons**
ANNUAL BUDGET:	**$1.9 million**
WEBSITE:	**www.cityofhomer-ak.gov**

Alum is injected in a rapid-mix tank to promote development of pinfloc in the flocculation basin, which is equipped with three impellers. "We don't want a bigger floc, because that could blind the membranes," explains Jerry Lawver, lead operator.

After the floc basin, the water is gravity-fed to the membranes. The membrane train consists of five cassettes, each with 48 modules. The cassettes can hold 64 modules, a feature that will make it easy to expand. Each module contains thousands of vertically strung membrane fibers, with millions of microscopic pores in each strand. Water is filtered by

Joe Young, operator III, checks the pH, alkalinity, turbidity and chlorine levels of a water sample to verify the accuracy of online instruments.

QUALITY LEADERS PLANT

applying a slight vacuum to the end of each fiber, drawing the water through the pores and into the fibers themselves.

The filtered water is dosed with orthophosphate for corrosion control and adjusted for pH with caustic soda. Chlorine for disinfection is generated onsite in a Miox system, which creates sodium hypochlorite and hydrogen gas through electrolysis of salt.

While on-site generation is becoming more common due to the risks of transporting chlorine over the road, Homer uses the technique mainly because shipping chlorine to the plant would be difficult. "There are few roads, or no roads, up here," Cook says. "Liquid chlorine would have to come by boat and would be classified as a hazardous material."

The filtered, chlorinated water flows to a 1-million-gallon clearwell, then downhill to the city distribution system, which consists of just over 43 miles of pipe and 22 pressure-reducing stations. A small portion of the finished water is provided to private haulers who deliver it to customers in two neighboring communities.

Besides Lawver, Cook's staff consists of Joe Young and Dave Welty, operators, and Paul McBride and Bob Kosiorek, maintenance technicians. They follow a standard membrane cleaning protocol. The filter modules are regularly back-pulsed with an air scour feature and backwashed by reversing the flow. In a maintenance clean, the membranes soak for 15 minutes in a solution of chlorine or citric acid. A full recovery clean involves soaking in a chlorine solution for six hours.

Filter backwash water passes to two backwash water ponds in series. As solids settle, clear water decants from the first pond to the second. From the second, water is returned to the plant inlet, where it is mixed with raw water. The water recovery rate is 92 percent, meaning that only 8 percent of the water being processed does not end up going to customers — that's a huge improvement over the old setup.

Keeping it running

While the upgrade to membranes has resolved the issue of filter blinding and low water recovery rates, the Homer team continuously seeks to improve treatment operations and water quality. Iron and manganese can cause problems. Cook and his crew have found that the membranes remove most of the iron, but only about half of the manganese. "We used to get black water complaints, and the clear tubing on our chlorine meters would turn black," Cook says.

By experimenting with increases in the orthophosphate and caustic soda injection rates, the Homer staff brought the manganese issue under control. "We upped the phosphate addition from 0.2 to 2 ppm and are now back to 1 ppm," explains Cook.

> **"We don't get bored around here."**
>
> TODD COOK

The relatively low pH of the source water, driven even lower by the alum dosing, can also contribute to lead and copper issues and disinfection byproducts (DPBs), so the Homer staff works carefully to increase pH and maintain it at 7.5 to 8.0. The operators have taken several other measures to minimize DPBs. "We have only 1,500 connections, and over 43 miles of water distribution lines," Cook say. "That's a lot of standing water in the system."

Todd Cook, treatment superintendent, checks the pH of an acid cleaning in a filter train.

WINNING PERFORMERS

It's cause for celebration when an operator at a water treatment plant wins a prestigious state award; it's an even bigger deal when two operators are so honored. At the Bridge Creek Water Treatment Plant, Joe Young and Jerry Lawver received the Alaska Rural Water Association Operator of the Year Award in 2011 and 2012.

They're both invaluable to the success of the Bridge Creek operation, says treatment plant superintendent Todd Cook. "Joe has a mechanical background," Cook says. "He's sharp, and our go-to guy for SCADA issues. Jerry's been here since 1991 and brings a lot of experience to the table. He became our lead operator in 2011."

Young started with the City of Homer in 2007 as a treatment plant mechanic and has applied himself to learning the treatment techniques of both the water and wastewater plants. "Not only does he do an outstanding job operating the plant, but his knowledge of computers and the SCADA systems is invaluable," says Cook. "He is willing to tackle any challenge that may arise, and I have found nothing that he can't figure out given the time and resources."

Lawver has 26 years' experience in water and wastewater, 21 with Homer. As lead operator, he is responsible for operating Alaska's largest drinking water ultrafiltration plant. "Jerry has been very helpful in passing his knowledge on by training new operators on the system," says Cook. "He has probably forgotten more about this plant than most operators will ever know. He is always trying to optimize the operation to run the system as efficiently as possible."

The Alaska RWA presents its operator awards — based on outstanding performance and professionalism — at its annual training conference each fall.

The utility recently added variable-frequency drives on its pumps and motors as a way to keep water moving throughout the system. Before, the pumps ran on a fill-and-draw basis; in winter it took six to eight hours to fill the storage tank, and then the system would shut down for 16 to 18 hours. "With the VFDs, the pumps are running at a slower pace and the water keeps moving in the system," says Cook. "We've seen some reduction in DBPs, and our power consumption is more efficient."

The staff also pays close attention to organics. Influent TOCs come in at about 4 parts per million and leave the membrane system at 2 ppm or less. The operators rely on UV transmittance testing to track TOCs in the raw and finished water, enabling them to better adjust the plant's alum addition rates.

"We use hand-held UVT meters from Real Tech so we don't have to send samples out for analysis," says Cook. "There's a direct correlation between TOCs and UV transmittance. The higher the UV transmittance through the water, the better organic kill we're getting. So if our UV transmittance is in a certain range, we know our TOCs are in a certain range, and can adjust our alum dosage rates accordingly. We don't want to overfeed or underfeed alum."

On the other hand, turbidity is not an issue. "Our source water is very low in turbidity," says Cook. "The turbidity in our finished water is 0.02 NTU, rock solid. The filters pretty much do what the manufacturer says they'll do. They're awesome from that standpoint."

That wasn't always the case in the old days; Lawver remembers the staff used to "backwash and hope the turbidity would come down, then backwash and hope the turbidity would come down." When summertime temperatures reach into the 60s and 70s, the reservoir can experience

Jerry Lawver, lead operator, takes a routine coliform water sample from a homeowner's tap.

algae and diatoms. "You can see them in the vial, and they used to blind off the old sand pressure filters. Slime would build up. But they don't blind off the membranes."

Final analysis

Nearly five years into the $11 million upgrade, Cook and his staff are pleased with the results but nowhere near ready to slack off on fine-tuning. "Our membranes have been pretty bullet proof so far," Lawver says. "They're making good water."

> **"Our membranes have been pretty bullet proof so far. They're making good water."**
>
> **JERRY LAWVER**

The biggest issue has been with programming, Cook says. One of the original issues was with the chemical pumps used for membrane cleaning. "We were locked out from adjusting the length of time that they would run," says Lawver. "Run times were too short, especially with the sodium bisulfite — the chemical used for neutralizing chlorine."

After a chemical clean, he says, the rinse water would have a chlorine residual as high as 2.0 mg/L. The rinse water is discharged to the backwash ponds, which concentrate the organics removed by the filters.

"The combination of high organics and chlorine created DBPs in the pond," Cook says. "Tests of the decant water proved DBPs were being formed on site. The operators contacted GE/Zenon to have their programmers remove the locks so the operators could adjust the chemical pumps as needed. It's under control now. All the chlorine is neutralized before it is sent to the decant pond, and we have seen the DBPs drop off."

Todd Cook and his team at the Bridge Creek Water Treatment Plant treat source water that comes from a mountainside above Homer, Alaska.

Cook concludes that with advanced technology and a new SCADA system sometimes the engineers and programmers haven't seen eye-to-eye. "It took awhile in some cases, but the operators got things worked out," he says.

That's typical — Alaskans are known for self-reliance and are not ashamed to brag about it.

At the bottom of Cook's email signature, he quotes "Star Wars" Jedi master Yoda: "Try not. Do, or do not. There is no try." At Homer, they "do." wso

MORE INFO:

Flowserve Corp.
972/443-6500
www.flowserve.com

GE Water & Process Technologies
866/439-2837
www.gewater.com

Miox Corp
800/646-9426
www.miox.com

Real Tech, Inc.
877/779-2888
www.realtech.ca

S.P. Kinney Engineers, Inc.
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Greening the Plant: Innovative nutrient removal

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All In for the Hometown

John McCool
Plant Superintendent
Warren, Ill.

JOHN McCOOL OPERATES HIS PLANT WITH CARE FOR THE TROUT DOWNSTREAM AND RESIDENTS' POCKETBOOKS PAGE 30

In My Words: Behaving like a business

PAGE 26

The Fire Chief Project: Watershed Warriors

PAGE 9

Treatment in Depth

Operating team members in Homer split their time between the Deep Shaft Treatment Facility and the Bridge Creek Water Treatment Facility. They include, from left, Dave Welty, operator; Paul McBride and Bob Kosiorek, building maintenance; Joe Young, operator III; Jerry Lawver, lead operator; and Todd Cook, wastewater superintendent. (Photography by M. Scott Moon)

A DEEP-SHAFT ACTIVATED SLUDGE SYSTEM HELPS THE HOMER TREATMENT PLANT PRODUCE CONSISTENTLY GOOD EFFLUENT DESPITE ALASKA'S CHILLY CLIMATE

By Jim Force

THE MOUNTAINS, FORESTS AND CLEAR WATERS OF Kachemak Bay make Homer a favorite spot for Alaska's summer tourists. Year-round residents enjoy those features, too, along with a municipal water and wastewater infrastructure that protects the natural resources, while delivering reliable and efficient service.

The Homer Wastewater Treatment Plant is a case in point. Situated near the shore of the bay, the plant uses an innovative deep-shaft aeration system that provides effective biological treatment in this cold climate and lowers the plant's profile so it doesn't interfere with the town's travel-brochure views.

The deep shafts are the central part of a treatment train that treats a daily average flow of 0.3 to 0.5 million gallons and returns clean water through a 2,100-foot outfall to the bay. "We have some of the most picturesque views you can get," says Todd Cook, wastewater superintendent for his hometown. "Visually, it's an awesome place." Another reason deep-shaft technology was the choice for Homer is that U.S. EPA innovative technology funding was available for it.

A STEP UP

That was in 1991, when the Homer plant was upgraded from an old sewage lagoon system that Cook says wasn't cutting it anymore. "The quality of the effluent coming out of the ponds was not what the regulators wanted," he says. "We could only get so much treatment out of the lagoons. Besides the beaches and fishing, there are also shellfish here. We needed to increase treatment and get better-quality effluent."

In the upgraded treatment scheme, wastewater enters the plant through an influent pump station powered by four Flygt pumps, two in operation at any one time, controlled by an automatic level control sensor (Siemens). Two pumps are rated at 700-800 gpm and the other two at 1,000 gpm.

An old bar screen (John Meunier) removes rags, and a conical T-Cup Eutek centrifuge (Hydro International) takes care of grit, which is deposited in one of the old treatment ponds. Sharps and plastics pass through a grinder. Then the flow heads down the hatch.

Homer has a twin deep-shaft system — a splitter box directs flow to one or both shafts depending on volume. Each shaft extends 500 feet below the surface. The raw wastewater and return activated sludge (RAS) enter the system through an 18-inch inner pipe, passing to the bottom where the flow injected with 40 cfm of air at 80 psi from a 60 hp rotary screw compressor (Rogers Machinery). In a 5-foot-deep space at the bottom of the shaft, the flow transfers to the outer pipe and returns to the surface. The main pipe casing is 30 inches in diameter on each shaft.

The mean cell residence time at normal flow rates is about two days, Cook says. "Things run so steadily,

profile

City of Homer (Alaska) Wastewater Treatment Plant

BUILT:	1990
POPULATION SERVED:	6,500
FLOWS:	0.3 mgd average, 0.5 mgd summer, 1.5 mgd maximum
TREATMENT PROCESS:	Deep-shaft aeration
TREATMENT LEVEL:	Secondary
RECEIVING WATER:	Kachemak Bay
BIOSOLIDS:	Aerobic digestion, drying beds, cake to landfill
ANNUAL BUDGET:	$1 million
WEBSITE:	www.cityofhomer-ak.gov
GPS COORDINATES:	Latitude 59°38'31.74" N; Longitude 151°31'57.01" W

Operator Dave Welty rinses UV lamps used in the Homer Deep Shaft Treatment Facility's disinfection system (Ozonia North America).

"The quality of the effluent coming out of the ponds was not what the regulators wanted. Besides the beaches and fishing, there are also shellfish here. We needed to increase treatment and get better-quality effluent."
TODD COOK

City of Homer (Alaska) Wastewater Treatment Plant
PERMIT AND PERFORMANCE

	INFLUENT (Avg.)	EFFLUENT (Avg.)	PERMIT
BOD	293 mg/L	13 mg/L	Monthly 30 mg/L Weekly 45 mg/L Daily Max 60 mg/L 85% minimum removal monthly
TSS	306 mg/L	13 mg/L	Monthly 30 mg/L Weekly 45 mg/L Daily Max 60 mg/L 85% minimum removal monthly
Nitrogen	N/A	15-30 mg/L	Report in mg/L

it's almost boring," he says. "But sometimes boring is nice. Typically, plants use deep-shaft technology because they need a smaller footprint. The systems were first used in Europe, but when funding became available, we went for it."

Homer's northern location was an important factor in the decision. "I've worked in other activated sludge plants up here," says Cook. "The weather wreaked havoc. By having the shaft in the ground, the temperature stays stable, and that helps the biology." Keeping the plant running along with Cook are Jerry Lawver, lead operator; Joe Young and Dave Welty, operators; and Paul McBride and Bob Kosiorek, maintenance technicians.

Maintenance is minimal: "We really don't have to clean the shafts as long as nobody drops anything in them. There are a few items down there, but nothing worth going after," Cook says. The crew takes the head tank down periodically to remove rags and some grit and clean off the concrete to prevent deterioration from hydrogen sulfide.

After treatment, a pair of rectangular flotation clarifiers separate mixed liquor from the treated effluent. Between the shafts and the clarifier, the Homer team adds cationic polymer (Hydrofloc 1665 by Russell Technologies) to promote solids coagulation. "Because of all the air entrained in the mixed liquor, our solids float, rather than settle," says Lawver.

Both clarifiers discharge to a common effluent channel, which directs the water to a UV disinfection system (Ozonia North America) consisting of two banks, each with 12 racks of four bulbs (SunRay or UV Doctor). After disinfection, the flow passes to Kachemak Bay. "The Bay has good tidal action, from negative 3 feet to plus 16 feet, so we get good mixing and flushing," says Cook.

The system produces about 10,000 gallons a day of waste activated sludge (WAS), which is transported by Moyno pumps to two 50,000-gallon aerobic digesters. Cook and his staff run the digesters in series; WAS enters the first digester and decants to the second digester, which in turn decants to one of the former treatment ponds.

"We operate our digester at 8,000 to 15,000 ppm TSS," says Lawver, noting that the organic loading on the plant is much higher in the summer. "We

(continued)

DEEP SHAFTING

Even though deep-shaft aeration systems (also known as vertical bioreactors, or VBRs) were introduced in the mid-1970s and are common in other parts of the world, the City of Homer was the first treatment plant to install one in North America. Since then, says Todd Cook, plant superintendent, a second deep-shaft system has started up in the city of Dawson in the Yukon.

The systems are well suited to small footprints and to cold temperatures. At Homer, the system is positioned in a moderate-sized building that also contains the headworks, digesters, and UV disinfection system. A typical deep-shaft unit can be several hundred feet deep, consisting of a riser pipe and down-comer.

As wastewater and return activated sludge (RAS) fill the shaft, compressed air is forced into the solution at the base of the shaft, providing a highly efficient source of oxygen for the activated sludge biota. The rising oxygen and injected RAS assure adequate mixing. At the surface, the treated liquid is decanted and separated from solids. Though relatively high in construction costs, deep-shaft treatment is highly efficient with superior oxygen transfer rates and an absence of sludge bulking.

see a reduction of 2,000 to 4,000 parts in TSS from digester to digester."

From the pond, solids are pumped to drying beds, which are covered against wet weather. According to Lawver, the biosolids dry to about 35 to 40 percent solids, resulting in 400 to 500 cubic yards of cake per year, hauled to a landfill and used as landfill cover.

Cook and his staff also operate the Homer water treatment facility, so they split duty between the two plants. "Generally, we have an operator and a mechanic at both plants most of the day," says Cook. "If we have a big project at either plant, then it's all hands on deck. We flip flop just to keep things fresh."

The crews work overlapping schedules, half Monday through Thursday and the other half Tuesday through Friday. To fill in for the operator who is off-duty, Lawver covers one of the plants on Mondays, as does Cook on Fridays. "It gets our hands back into the operation," Cook says. "This paperwork stuff is for the birds." A SCADA system (S&B Controls with Siemens controllers) provides automatic control and monitors the operation.

TACKLING CHALLENGES

While it's generally "steady as she goes" at Homer, Cook and his staff have faced their share of challenges. One issue involved the recycle of return activated sludge. "The original design used head pressure to get solids to recycle off the bottom of the clarifier," says Lawver. "But we were getting more liquids than solids and that was throwing off our polymer injection rates, because those are based on flow. Our sludge was not coagulating as well as it should have, and our fecals were going up."

Now, "Homer homemade" airlift pumps have been installed in the clarifiers to pull RAS off the bottom, says Cook. While that has solved the polymer feed issues, it also added to maintenance because the pumps get jammed with rags from time to time.

Another issue has been algae growth in the decant ponds after the aerobic digesters, but a new solar-powered floating mixer (SolarBee) may have taken care of the problem. "We used to get long, stringy green algae," says Lawver. "It didn't inhibit the treatment process, but once it started, we couldn't get rid of it."

Homer was using UV inhibitor chemicals to counter the algae but since has switched to the surface mixer. The mixing impeller is 30 inches in diameter and shears the water molecules, throwing them back across the surface of the water. One impeller covers the 1.4-acre pond, keeping dissolved oxygen up to the desired level of 1.0 mg/L. Solar powered, the unit offsets about 30 hp that normally would be required for mixing.

Todd Cook, wastewater superintendent.

Due to infiltration and inflow, the Homer plant tends to get high flows in springtime. "The seasonal change makes things a bit challenging for us," says Lawver. The spring breakup of ice and snow from connected roof drains and basement sump pumps add to the volume of water. "We chlorinate with 12 percent sodium hypochlorite as a backup during these high flows, and dechlorinate with sodium bisulfate," Lawver says.

Other staff-driven changes are adding to treatment efficiency. Homer will replace its old bar screen with a rotary drum screen later this year, and that will help greatly with rag removal.

Improvements have been made to the polymer system, as well. "We replaced our polymer system with a new dry feed system from Fluid Dynamics," Lawver says. "We're happy with it. We couldn't get parts anymore for the old system."

ENERGY SAVINGS

Energy conservation is also paying dividends. According to the U.S. Energy Information Administration, Alaska has the fifth highest electricity rates in the country — 14 to 16 cents per KWh — so conservation can save significant money. "We've replaced all our ballasts and installed motion-sensored lighting throughout the plant," Cook says. The team has also installed new transformers in the UV system, and has replaced mercury vapor lighting with LED lights.

Lead operator Jerry Lawver prepares to conduct a BOD test.

"I've worked in other activated sludge plants up here. The weather wreaked havoc. By having the shaft in the ground, the temperature stays stable, and that helps the biology."

TODD COOK

Finally, the plant's deep-shaft system requires just one of the pair of compressors to provide the air needed for biological treatment.

The energy program has won a state award. The product of a citywide energy audit and upgrade plan developed by Siemens and Sylvania, with local electrical contractors, Homer's conservation measures were funded by a state grant and received recognition in the Great Alaska Energy Challenge in 2011. Other awards for the plant include:

- 1993 Outstanding Plant of the Year, Alaska Water Wastewater Management Association, Southeast Region
- 1993 Large System Plant of the Year, AWWMA statewide
- 2011 Wastewater Treatment Plant of the Year, Alaska Rural Water Association

Cook has used the honors to boost the image of his plant and operators in the community: "It gave us some bragging rights. We received a proclamation from the city council, and our staff received awards. We've been on the local radio station."

The recognition has made the energy conservation measures known and has also boosted public confidence in the plant while giving its operators due credit, Cook believes. That's especially important in Homer where the wastewater treatment facilities themselves are nearly out of sight. tpo

more info:

Fluid Dynamics Inc.
888/363-7886
www.dynablend.com

Flygt - a Xylem Brand
704/409-9700
www.flygtus.com
(See ad page 3)

Hydro International
866/615-8130
www.hydro-int.com

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877/486-6966
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Ozonia North America, LLC
201/676-2525
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Rogers Machinery Company, Inc.
503/639-0808
www.rogers-machinery.com

Russell Technologies
800/844-9314
www.russell-technologies.com

Siemens Water Technologies Corp.
866/926-8420
www.water.siemens.com

SolarBee, Inc.
866/437-8076
www.solarbee.com

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Memorandum

TO: MAYOR WYTHE AND CITY COUNCIL

FROM: Walt Wrede

DATE: September 5, 2013

SUBJECT: September Employee Anniversaries

I would like to take the time to thank the following employees for the dedication, commitment and service they have provided the City and taxpayers of Homer over the years. In addition, I would like to take a moment to wish Rusty Cheney best of luck with his future endeavors. Rusty will be retiring this month after working over 30 years for the City of Homer. His dedication and commitment to the City will be sorely missed.

Janie Buncak,	**Police**	**13**	**Years**
Sue Gibson,	**Library**	**10**	**Years**
Aaron Glidden,	**Port & Harbor**	**9**	**Years**
Lary Kuhns,	**Police**	**9**	**Years**
Holly Brennan,	**Library**	**5**	**Years**
Ryan Browning,	**Police**	**3**	**Years**
Daren Hill,	**Public Works**	**3**	**Years**
Mike Lowe,	**Port & Harbor**	**2**	**Years**
Nick Poolos,	**IT**	**2**	**Years**