

Kenai Peninsula Borough
Kenai Peninsula Borough School District
Office of Risk Management

MEMORANDUM

TO: Penny Vadla, Board President
Members, Kenai Peninsula Borough School District Board of Education

THRU: Scott Griebel, Director of KPB Maintenance

FROM: Adam Hoyt, KPB Lead Water Operator
Patti Williams, KPB Environmental Compliance Manager

DATE: August 5, 2019

RE: Request for an Approval for an Alternate Method of System Supervision (AMOSS) of Kenai Peninsula Borough School District regulated drinking water systems.

Kenai Peninsula Borough (KPB) maintenance, information technology and environmental department representatives submitted the updated AMOSS plan to and met with the Governor's Water/Wastewater Works Advisory Board (Advisory Board) April 3rd, 2019 to propose that regulated drinking water systems be visited/inspected every two weeks instead of weekly by the KPB water operators. The Advisory Board approved the new AMOSS plan (attached) and asked that KPB present it to the KPB School District Board of Education (School Board) to request the School Board's approval. The following explains KPB's position.

Automation and remote operation saves the KPB School District (KPBSD) money in the long run for treatment of the regulated drinking water systems. The regulated drinking water systems are located at the following schools: K Beach, Nikiski Middle/High, Skyview, Sterling and Tustumena. The KPB Maintenance shop on Poppy Lane is also a regulated system. The KPB Maintenance Department has installed, updated, upgraded, and maintains various forms of Supervisory Control and Data Acquisition (SCADA) monitoring, real-time cameras, and alarm systems at these locations.

These systems operate 24 hours a day, 7 days a week and are the sentry and data gathering backbone to all of KPB's water treatment facilities. They are

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To: Kenai Peninsula Borough School Board

RE: Request for an Approval for an Alternate Method of System Supervision (AMOSS) of Kenai Peninsula Borough regulated drinking water system.

maintained and tested frequently to assure compliance and accurate, smooth operation. They are relied upon daily and have been for many years without incident or compliance issues. This will continue into the future guaranteeing safe and clean drinking water for the students, staff and members of the public. This AMOSS is sufficient to protect public health, the capital investment of the system and the environment.

As confirmation of compliance, the drinking water systems sampling data for the past 2 plus years is attached. Additionally, the Alaska Department of Environmental Conservation (ADEC) monitoring summaries are attached to show the 2019 sampling requirements. Also, the ADEC Drinking Water representatives can confirm the improvement and continued compliance record for the regulated drinking water systems. Following are some steps we take above what is required:

1. At arsenic sites, 4 samples instead of one is analyzed
2. In house lead and copper testing is done monthly
3. All water wells are sampled twice a year.

ADEC regulations require weekly site checks at all regulated drinking water treatment facilities. This requires several hours a week of driving to facilities to look at the equipment with no other reason than just to look which is only a snapshot in time. Cameras provide eyes 24 hours per day, 7 days per week at each site and are viewed daily from the KPB Poppy lane office.

These weekly trips tie up valuable resources that can be used to improve the equipment for remote monitoring, install water saving devices, perform required preventative maintenance, and other projects that further protect, monitor, and streamline KPB and KPBSD operations.

The KPB Maintenance Department has spent considerable time and money on these systems to ensure the most reliable, accurate data monitoring and alarming possible. Therefore, we would like to request that the KPB Board of Education accept the inspection change from weekly to every two weeks for the regulated drinking water systems.

Thank you for your time and consideration.



Office of Risk Management



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A Division of Human Resources

Charlie Pierce
Borough Mayor

March 18, 2019

Mr. Martin Suzuki, Environmental Program Specialist II
ADEC – Operator Training and Certification Program
410 Willoughby Avenue, Suite 303
P.O. Box 111800
Juneau, AK 99811-1800

RE: Update of KPBSD AMOSS Plan

Dear Mr. Suzuki,

Per your request, the Kenai Peninsula Borough (KPB) is submitting this update of the Kenai Peninsula Borough and School District (KPBSD) Alternate Method of System Supervision (AMOSS) Plan for re-approval consideration by the Governor's Water/Wastewater Works Advisory Board (Board).

Operators and Training

Operators:

The KPB Water Department's three experienced water operators continue to operate the regulated water systems. See Attachment A on page 6. The water operations members are:

1. Adam Hoyt - the KPB lead water operator, a certified Water Treatment 1 operator, and Backflow Assembly Testing (BAT) certificate. Training for certificate renewal is ongoing.
2. Jody Sours – a certified Water Treatment 2 operator. Training for certificate renewal is ongoing.
3. John S. Anderson – KPB Homer, Alaska based and a provisional water treatment operator.
4. Patti Williams - the KPB Environmental Compliance Manager supports the Water Department and is a member of AWWA/ARWA.

Training:

The Head Custodian and the Principal are given annual Emergency Response Plan/Priority Measures Plan (ERP/PMP) training by the Environmental Compliance Manager and an Operator. At this training they are given an updated ERP/PMP folder

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and all the procedures for power loss, pressure loss, flooding, by-passing treatment, etc. are discussed. Pictures on the by-pass procedure and step by step instructions are included in the folder as well as appropriate signage (potable/non potable), emergency contacts, and chain of command outline with afterhours contact numbers. Most of the treatment areas are frequented by the custodians and they know to call if there are alarm lights flashing or they discover a leak, etc.

Operations:

The KPB 'Water Department' successfully completed numerous improvement and maintenance projects such as piping upgrades, media replacement, installation of low flow fixtures, replacement of pressure tanks, etc. None of the improvements affect the system classification.

SCADA systems are installed in all AMOSS systems except the KPB Maintenance Shop on Poppy because a water operator is present daily when open. We do a physical check daily of the treatment room and observe pH.

The following parameters are monitored, data logged and alarmed at the Arsenic Treatment Sites:

Booster Pump Failure, Low Building Temp, Back Wash Failed, Loss of AC Power, Chemical Feed Pump Fault, Low Chemical Tank, High Treatment Tank 2 Cl2, Low Treatment tank 2 Cl2, Valve Failures, High/Low Distribution Pressure, Flood, High/Low Storage Tank, High/Low Storage Tank Cl2, System Pressure, Loss of Communication, Filter Flow, Distribution Flow, Totalizers, Tank Levels, Valve Positions, Effluent Flow/BW.

Corrosion Control Sites:

Room Temp, Water Temp, Chemical Tank Levels, Flood, Well Flow, Distribution Pressure, Well Pressure, pH, Distribution Flow/Totalizer, Loss of AC Power

McNeil Canyon School:

SCADA monitors, data logs, and alarms pressure, flow, temperature, flood, AC power, as well as several parameters on the Waste Water System.

North Star Elementary School:

North Star El is not currently being monitored by SCADA. This system utilizes a cartridge filter for arsenic removal and is changed yearly. The Arsenic free water is only piped to two taps and five drinking fountains, not the entire school.

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Ninilchik School:

No SCADA and no treatment system is currently in use at Ninilchik School. We are anticipating this to be a permanent change in treatment status.

Following is how the offsite operators can make remote changes to the system via SCADA:

We have complete control of our Arsenic Removal Sites remotely from the office, from home, or from wherever we have access to the WWW via Laptop, iPad, or Computer. We can operate valves, adjust the injector pumps, acknowledge alarms, and look at data logging.

At the Corrosion Control Sites, we are mainly using the SCADA for alarming and data logging although we have the ability to control much more. The injector pumps at these locations are controlled by the well pump with manual on site adjustments being necessary.

If a loss of communications occurs:

Data is stored and re-transmitted with a Loss of Communications, no data is lost. All of our sites are backed up by a generator, a UPS, and a battery back-up with data being stored on the SCADA unit until communications are back up.

Additional and upgraded cameras:

We have cameras at all sites with SCADA controls now and they all have been upgraded to higher resolution. We view them daily and can use them remotely to verify alarms.

Based on the exceptional systems in place and lack of violations, we recommend that the regulated systems visits be reduced to 2 times a month. The regulated systems are: KPB Maintenance Shop, K Beach El, Nikiski Middle/High, Skyview Middle, Sterling El and Tustumena El.

Emergency Response/Alarms:

The routine schedule for offsite operators:

Each day for the Arsenic sites the Operator looks at the last run cycle and records manually on a log the Date and Time of last run, Storage Tank chlorine level, Tank 1/Tank 2 chlorine level and chlorine pump percentage (speed). Then the current Storage Tank chlorine level is recorded with date and time as well as any changes to the chlorine pump speed. At this time the operator would see any alarms that are outstanding as well as Communication and Power status, holding tank levels, VFD distribution pumps status etc. This is the time they would also look at the camera views in the treatment rooms. These SCADA's data log every 10 seconds and are written to a

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virtual drive in spread sheet format for tracking trends, referencing adjustments, troubleshooting etc. The daily manual logs are also used for this purpose.

The Corrosion Control Sites are done similarly. Each day the Operator looks at and manually records the date and time, the current pH, the minimum and maximum pH over the last 24 hours and then resets the min/max function. This is the time they would also look at the cameras in the treatment rooms.

These logs are saved in a similar format but are downloaded manually each month to a secure drive.

How alarms are acknowledged and responded to:

This is how it works at the Arsenic sites. Upon a parameter or set point being exceeded the SCADA sends a Text message to the Lead Water Operator and an e-mail to all Operators, Maintenance Foreman, and Maintenance Director. If the Lead doesn't acknowledge the alarm within a few minutes it is re-texted to the next Operator, then the Foreman and so on until it is acknowledged. Some alarms do not require acknowledgement such as Loss of Communications, Loss of AC Power as these are self-correcting. (The network would reconnect when available, and the generator and UPS would kick on immediately in the event of power loss). Otherwise when acknowledged it silences the alarm for a set time then alarms again if the parameters are not satisfied. Response to the alarm is priority dependent on the type of alarm, for instance, a Low Chemical Tank alarm only signifies that the Chlorine solution is getting low in the holding tank. This alarm gives about 4 days of reserve Chlorine so it is not a priority alarm. A Flood or Low Water Storage Tank alarm would require immediate action.

Corrosion Control Sites alarm by placing phone calls instead of texts. Again, starting with the Lead Operator and working down the list until acknowledged.

All alarms are tracked and logged automatically as well as manually investigated. We test the alarms monthly for function.

Some the automatic actions occur when exceeding SCADA set points:

There are some automatic actions that work with the alarms. A High Storage Tank Alarm will shut down the water making operation, a Low Water Cut off will turn off the Distribution Pumps. We could make the plant shut down in the event of High Chlorine or pH but with as much water in reserve to mix and redundant alarms in place we believe this is not necessary. For instance, Nikiski High School has three 1500 gallon finished water tanks. The Run Cycle starts when these are at 2/3 capacity so we would have to over chlorinate back in Tank 1 by a mile to get the Chlorine level from 0.28 ppm (average in the storage tank) to over the regulatory limit! In the mean time we would have received a High Tank 2 Chlorine Alarm, and then a High Storage Tank Chlorine Alarm (set at 2 ppm). Plenty of time to react without shutting down the process.

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The response time for all sites during work hours is less than 1 hour. After hours and weekends the longest response time would take approximately an hour.

Compliance Issues:

We are in compliance with all of our monitoring requirements and have not had any sampling violations. If you have any questions regarding the status of our systems' compliance, please contact Jamie Bjorkman, our ADEC Drinking Water Program compliance contact at 907-262-3423.

Please let Adam Hoyt or me know if you have any questions.

Sincerely,
Patti

Patti Williams
Environmental Compliance Manager
Kenai Peninsula Borough
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Soldotna, AK 99669
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Cc: Adam Hoyt (ahoyt@kpb.us), Scott Griebel (sgriebel@kpb.us)

Attachment A

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Attachment A

WATER SYSTEM NAME	WATER SYSTEM NUMBER (PWSID)	SYSTEM GROUP	PEOPLE SERVED (2018-2019)	WATER SYSTEM CLASSIFICATION	SYSTEM CLASSIFICATION	FREQUENCY OF ROUTINE INSPECTION VISITS
KPB Maintenance Shop	AK2248878	Northern	50	NTNC	WT1	Daily
KPBSD Kalifornsky Beach Elementary School	AK2243064	Northern	390	NTNC	WT1	2 visits per month
KPBSD McNeil Canyon School	AK2242929	Southern	123	NTNC	Small Untreated	2 visits per month
KPBSD Nikiski Middle/High School	AK2244484	Northern	363	NTNC	WT1	2 visits per month
KPBSD Ninilchik School	AK2240553	Southern	101	NTNC	Small Untreated	2 visits per month
KPBSD North Star Elementary School	AK2244125	Northern	349	NTNC	Small Untreated	2 visits per month
KPBSD Skyview High School	AK2244329	Northern	403	NTNC	WT1	2 visits per month
KPBSD Sterling Elementary	AK2249011	Northern	211	NTNC	WT1	2 visits per month
KPBSD Tustumena Elementary School	AK2240618	Northern	177	NTNC	WT1	2 visits per month