



STATE OF WASHINGTON
DEPARTMENT OF HEALTH
NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20425 72nd Avenue South, Suite 310, Kent Washington 98032-2388

June 18, 2013

ROBERT YORK
PORT OF SEATTLE/SEATAC AIRPORT
PO BOX 68727
SEATTLE WA 98168-0727

Subject: Port of Seattle/SeaTac Airport Water System (ID# 03182D)
King County
2013 Routine Sanitary Survey

Dear Mr. York:

This letter is in follow up to my inspection of the Port of Seattle/SeaTac water system on June 13, 2013. My inspection was part of the Department's routine sanitary survey program. The purpose of this program is to inspect water system facilities and their O & M programs to ensure compliance with drinking water regulations and to help ensure that safe and reliable water is delivered to users. I appreciate the time spent by you, Paul Price, Cody Smullin, Tom Banomi, and Michael Smith discussing operational practices and showing me the water system. The SeaTac Water System appears to be very well operated and maintained, keep up the good work.

A copy of my inspection summary is enclosed, please check it for accuracy. All of the items listed in the recommendation/directives section of the summary should be addressed by the water system.

The Drinking Water Regulations require that all Group A public water systems have a sanitary survey every 5 years. In order to receive credit for the survey, a sanitary survey fee must be paid. Enclosed is an invoice for \$1020. Please remit your complete payment in the form of a check or money order within thirty days of the date of this letter to: **DOH, Revenue Section, P.O. Box 1099, Olympia, WA 98507-1099.**

Once again thank you for your time, if you have any questions please call me in Kent at (253) 395-6767.

Sincerely,

Steve Deem, P.E.
Regional Engineer
NW Drinking Water Operations

Enclosures

Cc: King County Health
Paige Igoe, DOH





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MEETING SUMMARY/SYSTEM INSPECTION
June 13, 2013

System: Port of Seattle/SeaTac Water System
King County
ID# 03182D

Persons Attending: Bob York, System Manager
Paul Price, Chief Maintenance Engineer
Cody Smullin, Operating Engineer 2
Tom Banomi, Operating Engineer 2
Michael Smith, Manager Mechanical Systems
Steve Deem, DOH

Purpose: Routine Sanitary Survey

System Summary & Findings:

General:

SeaTac water system was last surveyed in August 2008. Findings from the survey included recommendations to document written standard operating procedures (SOPs). Since the last survey the water system has expanded to serve the new SeaTac rental car facility.

System Description:

The SeaTac water system provides water to the airport terminal and all of the support facilities at SeaTac International Airport. Approximately 35 million passengers use the airport each year. The 2008 Water System Plan indicates approximately 18,000 employees work at SeaTac. Total flights including major area air carriers, small commercial and other flights exceed 350,000 flights per year. Average day demands are approximately 750,000 gallons per day. Fire flow requirements for the Northwest Service Hanger (18,300 gpm for 1 hour) drives distribution sizing. The fuel farm storage facility has a fire flow requirement of 5,000 gpm for 4 hours. The system is classified as a Group A non-transient non community (NTNC) water system. The water system has a green operating permit. The Port of Seattle owns and operates the SeaTac Water System.

The water system is surrounded by the Highline Water District to the south and east; Water District 49 on the west, and Water District 125 on the north.



The SeaTac water system provides service to approximately 80 metered and non-metered service connections throughout the airport area. The port meters water supplied to its tenants but does not meter internal airport operations. SeaTac purchases all of its water from the City of Seattle. SeaTac receives its water from the Cedar River pipeline #4 which is a 60-inch main. The Seattle main connects to two parallel 24-inch diameter pipelines. Each 24-inch main is metered with a 20-inch meter. A separate 12-inch main is teed off the 24 inch mains and metered with a 10-inch meter for domestic flows. The two large meters are required for fire flows.

The SeaTac water system consists of a booster pump station located adjacent to Air Cargo Road, a two million gallon steel storage tank, and a looped distribution system including 24-inch water mains on Cargo Road and the main runway, and a new 24-inch main loop for the 3rd runway. The pump station has 14 pumps. Two pumps supply water from SPU service to the reservoir, two pumps provide domestic service and 10 pumps provide fire flows. One of two 2,100-gpm pumps draws water from the Seattle supply and into the 2MG tank. Two variable speed pumps maximum 2,500 gpm capacity provide all domestic demands. Operating pressures range from 45 psi in the north service area to approximately 90 psi in the southern extreme. The two 24-inch SPU mains are connected directly to the pump station and serve as suction headers for the fire flow pumps. The fire flow pumps are a mix of 2 electric and 8 diesel motors.

SeaTac also owns two wells located on the south end of the Airport. Well #1 is used by the Tyee golf course for irrigation. A second well (Des Moines Creek mitigation well) is operated by the Port as mitigation for the 3rd runway project. Additional groundwater withdrawals may be available under the Port's groundwater right permit.

Water Quality Monitoring:

Coliform Monitoring:

SeaTac is part of the Seattle regional monitoring system and is required to collect 25 coliform samples per month. SeaTac collects 28 samples a month from 7 routine sampling sites. The routine sampling sites are all dedicated; constant flow sampling taps similar to the type used by SPU. SeaTac collects a sample from each of the 7 sites weekly (7 x 4 weeks = 28 samples per month). Operators measure chlorine residual and temperature whenever any coliform sample is collected. All samples are also analyzed for HPC. The SPU water quality lab conducts all lab work. The system is in compliance with coliform monitoring.

In addition to the routine coliform sampling required by DOH, SeaTac conducts additional water quality monitoring for the jet way water boxes. Jet way water boxes are the apparatus that are used to provide water to commercial jet airliners. All jet way water box services are monitored 6 times a year. Jet way water sites are tested for chlorine residual, temperature, coliform, and HPC. Records are on file. Operators report that typical HPC levels are 0 for both routine and jet way sample sites.

Source Monitoring:

The water system has no source monitoring requirements since all water is purchased from SPU.

DBP Monitoring:

Water system collects Disinfection by Product samples. DBP's have been historically very low consistent with other wholesale customers receiving Cedar River water from SPU.

Pb/Cu Monitoring:

SeaTac conducts distribution lead and copper monitoring and has recently been included in the Seattle Regional Monitoring Plan. Historic lead and copper samples have been below the action level.

Facility Approval Status:

The water system obtained approval for its July 2008 water system plan. Plan was approved in July 2009, water system is considered approved and operates with a green operating permit. Water main extension to serve the rental car return facility was approved and constructed.

Operations and Maintenance:

Port of Seattle operates and maintains a complex mix of facilities that are needed to support an international airport. The water system is under the jurisdiction of the Aviation Facilities and Infrastructure department. System has written SOP's, descriptions of water system operations, etc. Staff are aware of key water quality concerns surrounding cross-connection control, new service installations, routine and preventative maintenance, etc. Facilities appear to be very well maintained.

Cross Connection Control Program:

System has over 500 backflow prevention devices. System uses a Maximo system for scheduling services and a separate data base for its cross connection control devices. The programs do not interface automatically and must be manually updated. The water system uses only reduced pressure backflow devices (RPs) for all connections that require backflow protection.

Coliform Monitoring Plan:

System has a written coliform monitoring plan (CMP). System has 7 routine sites that are sampled each weekly. System also conducts weekly routine sampling of jet way water boxes (provide service to commercial airliners) using a prescribed sampling plan. Five jet way water box samples are collected weekly.

Recommendations/Directives made to Bob York and Staff:

1. Please submit a copy of the construction completion report for the car rental facility submittal #08-0908. *(Submitted June 13, 2013)*
2. Please submit a schematic for the system's coliform monitoring plan. *(Submitted June 17, 2013)*
3. Water System staff monitor the jet way water boxes for water quality parameters, and conduct documented water flushing operations to insure that the jet way water box provides potable water to airliners. Testing results show that potable water is provided from these service locations when these standard protocols are followed. Water staff should develop a standard operating procedure (SOP) (one page) to insure that your airline customers follow the same practices used by your staff when they use the jet water boxes to service their planes. Key steps for this SOP might include flushing the jet way water box for 2-3 minutes, measuring chlorine residual and all of the hygiene practices employed to make sure that the hose does not get contaminated.
4. All service connections to the SeaTac water system that are not performed directly by water system staff should be directly supervised / observed by water system staff to protect the integrity of the water system. Many utilities use standard forms to document that service connections were performed to the utility's standards.
5. Storage tanks should be protected against unauthorized access. The storage tank hatch should have an intrusion alarm to notify operators anytime the hatch is opened.
6. Storage tank facilities including the top of the tank should be inspected on a routine basis. Key elements of concern are the integrity of air vent screens, overflow structures and hatch integrity.
7. Water systems throughout the Puget Sound region continue to plan for emergency operations including possible scenarios resulting from a large earthquake. SeaTac emergency planning should include how water service to the airport would continue if Seattle's service is interrupted or destroyed. During the survey we discussed the following areas:
 - a. SeaTac should actively create and maintain direct relationships with SPU management and operational staff. These pre-existing relationships are critical in an emergency setting.
 - b. Since fire flow is such a critical element for the water system, seismic valves in the storage tank that would be activated in an earthquake could help ensure that sufficient water is retained even if main waterlines break.

- c. In addition, SeaTac should consider conducting a detailed evaluation of the pros and cons associated with developing its existing well(s) as an emergency supply option in the event of loss of service from Seattle. As we discussed, Department of Health should be contacted and included at the beginning of any evaluation of the well for emergency supply.

DOH Follow up:

1. Complete summary, photos were taken.
2. Send follow up letter.



2 MG steel reservoir; Diesel fire flow pump (typical) in booster pump station.



Airplane potable water filling station (Water Box) consists of flexible hose (200 feet) on a reel, backflow RP device, and control mechanisms.



Close-up of water box RP device; Routine coliform sample station.