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Project:	City of Wasilla WWTP Pilot Study	Field Crew:	Jake Alward, John Marshall
File:	204700415	Date:	January 17, 2018
	Subsurface <input type="checkbox"/>	Surface <input checked="" type="checkbox"/>	Vegetation Plot <input type="checkbox"/>

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**Reference: January Water Sampling Event**

## 1.1 BACKGROUND

Despite warmer temperature at the end of 2017 and beginning of 2018, the site was more frozen than it was in December 2017. Both ponds, SW5 and SW15, no longer had an opening where we believed the source water was coming from. Both ponds had 18-inch of ice with little to no surface water present (Photos (1, 2 & 5)). The only place you saw a little bit of water was around grass clumps. Ice data was only taken at the 4 sample sites collected plus SW14. At SW14, there was no water present under the ice. The peat was frozen to 18-inches, the drill bit length. I believe the site to be frozen enough for a smaller drill rig to get around without problem as long as they stay away from the base of the percolation beds. We were told by plant operators that all percolation beds are open.

Photos of facility warning signs were documented for future design (Photo 3).

## 1.2 SAMPLING EVENT HIGHLIGHTS

This event went rather smoothly as there were only 4 sample sites that were collected. The one discrepancy was that the stream gage at SW18 was frozen so flow was not measured at this site for this event (Photo 4). Water was able to be sampled as the stream opened back up just shortly downstream.

The hill down to SW18 was very slippery and hard to get down without the rope. We need to measure the rope and bring a new rope as the existing one is quite frayed.

### Improvements for future sampling:

We may need to bring a longer drill bit to the February sampling event as the ice thickness was as long as the bit we brought. It's more than likely that only these 4 sites will be able to be sampled in February and they might even be frozen to the ground by then as well.

## 1.3 OTHER ACTIVITIES

### Weir 1 (SW17)

Width: 2.21 -ft

Water depth: 0.75 -ft

Velocity: 0.31-ft/sec

Calculated flow: 0.51 -CF/sec

**Reference: January Water Sampling Event**

Weir 2 (SW18)

Width: NA -ft

Water depth: NA -ft

Velocity: NA -ft/sec

Calculated flow: NA -CF/sec

## 1.4 SAMPLE RESULTS

The attached table summarizes detected analytes. All others were below detectable limits. Complete results can be found in the SGS reports. Note total coliform values were significantly lower than past tests showed.

## 1.5 DATA QUALITY

SW5 was duplicated to verify lab result quality. There are no notable inaccuracies in the data quality analysis. The duplicate does not have detectable FC results due to the test having a higher detectable limit than the sample did due to lab practices. The table below summarizes the relative percent difference between the sample and the duplicate.

	Nitrate	Nitrite	Nitrate/ Nitrite	TSS	TKN	Ammonia	Total P	BOD	FC	E. Coli	TC
<b>SW5</b>	0.0256	0.0302	0.0558	ND	0.378	0.221	0.0178	ND	1	ND	14
<b>Dup</b>	0.0346	0.028	0.0626	ND	0.329	0.247	0.0238	ND	ND	ND	19
<b>% Diff</b>	<b>29.9%</b>	<b>7.6%</b>	<b>11.5%</b>	<b>0%</b>	<b>13.9%</b>	<b>11.1%</b>	<b>28.8%</b>	<b>0%</b>	<b>N/A</b>	<b>0%</b>	<b>30.3%</b>

**Attachment: Photo Log**

## January Photo Log



Photo 1:  
Sampling pond at SW5



Photo 4:  
SW19 stream gage frozen



Photo 2:  
Pond at SW5 covered in snow



Photo 5:  
Pond at SW15 frozen



Photo 3:  
Typical Facility Warning Sign



Photo 6:  
Frayed support rope down hill

**Attachment: Results Summary Table**

Detectable Results Summary Table and  
Data Quality Summary Table

January-2018

	SW5	SW5.5	SW15	SW17	SW18
Date Collected	43117	43117	43117	43117	43117
Time	0.45416667	0.45416667	0.48194444	0.50277778	0.53333333
Sample Type	Surface	Surface	Surface	Surface	Surface
Water Temp (°C)	-0.01	-0.01	0.02	1.81	1.86
Conductivity	472	472	283	579	684
pH	6	6	6.01	7.52	8.52
DO	8	8	7.45	7.8	9.25
Nitrate	0.0256	0.0346	0.0322	2.88	3.89
Nitrite	0.0302	0.028	0.0294	0.0398	0.0332
Total Nitrate/ Nitrite (mg/L)	0.0558	0.0626	0.0616	2.9198	3.9232
TSS (mg/L)	ND	ND(0.555)	2.96	0.722	2.42
TKN (mg/L)	0.378	0.329	ND(0.500)	0.649	0.49
Ammonia (mg/L)	0.221	0.247	0.141	0.433	0.242
Total P (mg/L)	0.0178	0.0238	0.0532	0.196	0.682
FC (col/100mL)	1	ND	3	ND	1
E. Coli (col/100mL)	ND	ND	4	6	5
TC (col/100mL)	14	19	91	88	161