Stantec

Field Report

Project:	City of Wasilla WWTP Pilot Study	Field Crew:	Jake Alward, John Marshall
File:	204700415	Date:	April 24, 2018 and April 26, 2018

Subsurface☐ Surface☒ Vegetation Plot☐ Lagoon ☐

Reference: April Water Sampling Event

1.1 BACKGROUND

The April sampling event was the first 2018 event to show significant melting. It appeared from the surface that the wetland was completely thawed, however about 12" under the water surface the ground was still completely frozen. There were a handful of locations where the groundwater was upwelling and had thawed the ground.

Surface water was sampled on two days. Not all sites were sampled as there was not enough water at some locations. In addition to surface sampling, we attempted to develop MW20. It was also observed the majority of monitoring wells were thawed and they all would definitely be ready to be sampled by the June sub-surface sampling event (see photo 2).

The final activity of the sampling event was to sample two locations where we believed there was percolation bed seepage and one sample at the lagoon effluent (see photo 4).

1.2 SAMPLING EVENT HIGHLIGHTS

SUBSURFACE
MW20 was attempted to be developed. The team bailed approximately 30 liters of water from the well and the water never cleared up. A different method will be tried for the next sampling event.

LAGOON EFFLUENT AND SEEPAGE
The lagoon effluent water was sampled at the effluent manhole to compare it to two locations thought to be percolation bed seepage. The first seepage location sampled was at the toe of the hill, but not yet to the stream. The second location was southwest of percolation bed 9. At this location, water was trickling out of the sloped surface. This location appears to be the start of a developed stream.

SURFACE
14 of the 18 surface water locations were sampled. The water samples are thought to be typical of a spring break up. The ground had not yet completely thawed, although there was no ice or snow left visible on the surface (see photos 1-6). The water sitting on frozen ground is believed to be a combination of ground water and melted precipitation. It was apparent in a few locations that the ground water was upwelling to the surface because there were holes in the ground that were thawed to a depth greater than 4 feet.

Reference: April Water Sampling Event

IMPROVEMENTS FOR FUTURE SAMPLING:

In June, for the sub-surface sampling event, an electric pump will be rented to completely purge MW20. Bailing by hand took too long as the well is about 150 feet deep.

1.3 OTHER ACTIVITIES

WEIR 1 (SW17)

Width: 2.21 -ft
Water depth: 0.85 -ft
Velocity: 0.60-ft/sec
Calculated flow: 1.13 -CF/sec

WEIR 2 (SW18)

Width: 3.22 -ft
Water depth: 0.85 -ft
Velocity: 0.55 -ft/sec
Calculated flow: 1.51 -CF/sec

1.4 SAMPLE RESULTS

The attached table summaries detected analytes. All other were below detectable limits. Complete results can be found in the SGS reports.

1.5 DATA QUALITY

Duplicates were not sampled this sampling event.

Attachment: Photo Log

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April Photo Log

Photo 1:
Pond at SW5 thawed

Photo 4:
Surface appears to be completely thawed

Photo 2:
Monitoring well thawed

Photo 5:
Seepage location #1

Photo 3:
SW18 thawed

Photo 6:
Pond at SW15 thawed

Attachment: Results Summary Table

Site ID	SW1	SW2	SW4	SW5	SW6	SW8	SW9	SW10	SW12	SW13	SW15	SW16	SW17	SW18
Date Collected	4/24/18	4/24/18	4/26/18	4/24/18	4/26/18	4/26/18	4/26/18	4/26/18	4/26/18	4/26/18	4/26/18	4/26/18	4/24/18	4/24/18
Time	11:32	10:42	8:45	10:14	8:55	10:11	9:47	9:30	11:21	11:42	13:07	12:00	15:33	15:07
Sample Type	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Water Temperature (°C)	1.99	2.55	1.97	1.69	1.87	3.07	1.15	1.99	1.9	1.52	2.89	5.09	2.31	2.85
Conductivity	194	223	410	449	414	187	483	239	317	306	311	190	548	702
pH	5.04	4.93	5.83	5.8	5.71	5.33	5.67	5.15	5.72	5.61	5.67	5.49	6	6.33
DO	5.32	223	6.9	3.6	6.61	6.2	2.7	5.46	3.8	4.1	4.89	5.73	6.7	6.47
Nitrate	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	1.07	1.74
Total Nitrate/Nitrite	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.07	1.74
TSS	11.2	8.4	ND(1.04)	3.94	1.02	5.74	14.4	9	17.8	3	1.16	2.6	3.75	5.05
TKN	1.57	1.31	ND(0.500)	ND(0.500)	ND(0.500)	1.64	ND(0.500)	ND(0.500)	1.08	ND(0.500)	ND(0.500)	1.37	ND(0.500)	2.13
Ammonia	0.125	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	0.107	0.191	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	0.144	0.788
Total P	0.183	0.0796	ND(0.0100)	0.0392	ND(0.0100)	0.208	0.0279	0.0379	0.123	0.0479	0.0627	0.0989	0.209	1.46
BOD	21.2	7.05	ND(2.00)	2.65	2.24	7.89	6.07	3.1	2.73	4.37	ND(2.00)	3.73	ND(2.00)	2.31
FC	ND(1)	2	7	5	6	10	92	ND(1)	13	1	6	11	11	4
E. Coli	4	1	14	12	1	15	118	2	18	2	12	26	5	5
TC	110	411	109	228	51	560	157	46	727	126	83	488	154	127

Site ID	TS1	TS2	TS3
Date Collected	4/26/18	4/26/18	4/26/18
Time	13:27	13:51	14:30
Sample Type	Surface	Surface	Surface
Water Temperature (°C)	4.35	4.61	5.7
Conductivity	868	1201	1266
pH	6.08	6.53	6.75
DO	6.75	7.26	0
Nitrate	4.49	3.17	0.125
Total Nitrate/Nitrite	4.49	3.17	0.125
TSS	ND(1.09)	12.5	46
TKN	ND(0.500)	30.4	69.4
Ammonia	0.187	19.1	31.3
Total P	0.36	11.2	6.31
BOD	ND(2.00)	6.14	37.6
FC	ND(1)	ND(1)	3350
E. Coli	ND(1)	ND(1)	9210
TC	26	117	2420