Field Report

Project:	City of Wasilla WWTP Pilot Study	Field Crew:	Jake Alward, John Marshall, Ryan Cooper
File:	204700415	Date(s):	July 12, 2017

Subsurface☒ Surface☒ Vegetation ☒

Reference: July Water Sampling Event

1.1 BACKGROUND

This was the first sampling event at the Wasilla WWTP. The goal of this sampling event was to locate the sites for all surface water sampling and vegetation plots. The weather was sunny and warm, 70°F, both days. Group started each data at the Anchorage office before proceeding to the site, checking-in with plant operators, and completing Stantec safety forms, RMS2.

Vegetation plot data collection observations are attached, along with field data forms. Select photos are provided in attached log.

1.2 SAMPLING EVENT HIGHLIGHTS

Being the first event, there is nothing for comparison. Everything went well. Walking around the site took a lot longer than thought. The site is also much more wet than expected.

Samples were taken from 8 of 18 surface water sites and none from sub-surface sites. Two of the surface water sites are ponds (Photo 2 & 4). An unfinished monitoring well was observed near SW14 (Photo 3).

IMPROVEMENTS FOR FUTURE SAMPLING:

- Chest waders are recommended for future sampling. Terrain was difficult to navigate (Photos 1, 5, &6).

Reference: July Water Sampling Event

1.3 SAMPLE RESULTS

The following table summarizes detected analytes. All other were below detectable limits (non-detects).

	SW1	SW2	SW3	SW4	SW5	SW9	SW14	SW15
Date Collected	7/12/2017	7/12/2017	7/12/2017	7/12/2017	7/12/2017	7/12/2017	7/12/2017	7/12/2017
Time	10:15	11:00	11:40	13:00	13:50	14:45	14:50	15:15
Sample Type	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Water Temp (°C)	8.36	5.22	14.22	12.1	6.9	15.3	12.8	12.67
pH	5.35	2.44	6.63	5.9	5.47	6.97	6.79	5.86
DO	1	1.7	0.67	0.63	7.78	3.36	1.54	4.3
TSS (mg/L)	9.5	11	68.3	4	7	1.8	32	13.8
Total P (mg/L)	0.0654	0.0452	0.0265	0.0251	ND	ND	0.244	0.0581
BOD (mg/L)	ND	3.89	3.1	2.19	2.74	ND	ND	2.32
FC (col/100mL)	4	20	3	1	720	3	1	112
E. Coli	Positive	Positive	Negative	Positive	Positive	Negative	Negative	Positive
TC	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive

*ND: Non-detect

Note we did not quantify E. Coli or total coliform and TKN results were not received. This was requested to the lab for future sampling events. Complete results can be found in the SGS reports.

1.4 DATA QUALITY

SW15 was duplicated to ensure lab results quality. There were no alarming results. The table below summarizes the relative percent difference between the sample and duplicate.

	Nitrate	Nitrite	TSS	Ammonia	TP	BOD	FC	E. Coli	TC
SW15	ND	ND	13.8	ND	0.0581	2.32	112	Positive	Positive
Duplicate	ND	ND	20	ND	0.0694	2.31	120	Positive	Positive
% Difference	**0.0%**	**0.0%**	**36.7%**	**0.0%**	**17.7%**	**0.4%**	**6.9%**	**0.0%**	**0.0%**

Stantec

July Photo Log

Photo 1:
Difficult terrain to navigate near SW4

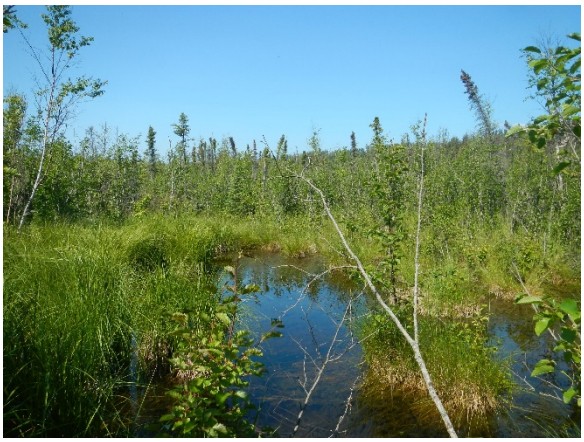

Photo 2:
Pond at SW5

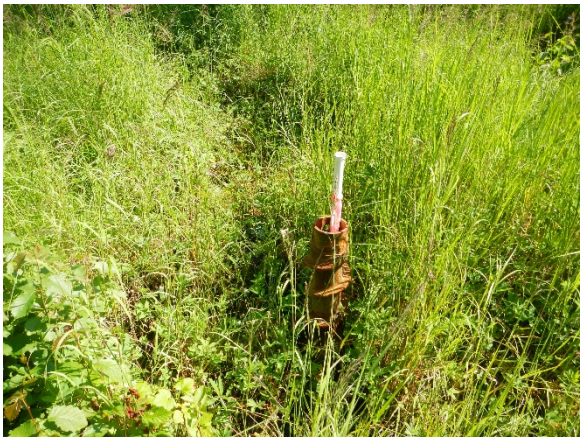

Photo 3:
Unfinished boring near SW14

Photo 4:
Pond at SW15

Photo 5:
Water surrounding trees and brush

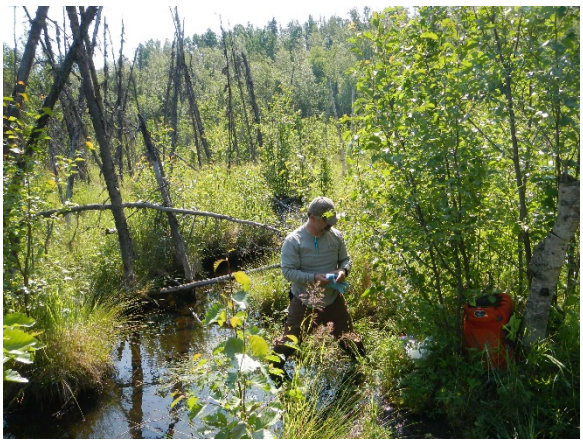

Photo 6:
Difficult terrain to navigate

A.3 WETLAND VEGETATION DATA FORM

Completed by: Ryan Cooper		Collection Date: 7/12/17	Site Id: TP-6
Time Arrived on Site: 2:25	Time Left Site: 2:53	Wetland Classification: PFO4F	Photo Taken: (Yes) / No
Local relief: concave / convex / (none)	Has site been disturbed? If yes, describe disturbance in remarks below. Yes / (No)		RSM01 reviewed and RSM02 Completed? (Yes) No
Surface water present: (Yes) / No	Water depth: 3 inches	Flow Rate: 0 Feet/sec	Landform: (hillside, hummock, etc.) hummocks
Weather Description: Clear 70		Are climate / hydrologic conditions on site typical for this time of year? (Yes) / No If no, explain:	
Field Team: Ryan Cooper, John Mershel/Alward, Jake		Remarks on site:	

Vegetation Use scientific names of plants. List all species in the plot (15-foot radius of stake).

Type	Absolute % Cover	Condition/Remarks
Tree Stratum		
1. Bet neoalaskana	3	
2. Aln sinuata	5	
3. Pic Mariana	1	
Sapling/Shrub Stratum		
4. Aln sinuata	75	
5. Vac vitus-idea	10	
6. Sal myrtifollia	5	
7. ribes triste	5	
8.		

Herb Stratum		
9. Ca. canadesis	90	
10. Pot. P. lustris	90	
11.		
12.		
13.		
14.		
15.		
16.		
17.		

Stem Density and Height

Randomly place three 1ft quadrats within sample area and count total number of stems and average stem height (cm).

	Grasses		Sedges		Herbaceous		Shrubs		Trees	
Quadrat	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height
1	5	3.2	—		22	1.1	—		—	
2	9	1.3	—		—		41	0.1	—	
3	15	2.4	—		~~4~~10	1.5	6	1.4	—	

Additional Notes on Field Activities, Necessary Corrective Actions, or Conditions

A.3 WETLAND VEGETATION DATA FORM

Completed by: Ryan Cooper		Collection Date: 7/12/17	Site Id: TP-5
Time Arrived on Site: 12:43	Time Left Site: 1:12	Wetland Classification: PSS F	Photo Taken: Yes / No
Local relief: concave / convex / none	Has site been disturbed? If yes, describe disturbance in remarks below. Yes / No		RSM01 reviewed and RSM02 Completed? Yes / No
Surface water present: Yes / No	Water depth: 3 inches	Flow Rate: 0 Feet/sec	Landform: (hillside, hummock, etc.) Pond edge w/hummocks
Weather Description: Clear, 70°		Are climate / hydrologic conditions on site typical for this time of year? Yes / No If no, explain:	
Field Team: Ryan Cooper, Jake Alward, John Marshall		Remarks on site:	

Vegetation Use scientific names of plants. List all species in the plot (15-foot radius of stake).

Type	Absolute % Cover	Condition/Remarks
Tree Stratum		
1. Pic. mariana	5	
2. ~~Ala. Sinuata~~		
3.		
Sapling/Shrub Stratum		
4. Aln. sinuata	90	
5. Cor. canadensis	20	
6. Rub. chamemorous	10	
7. Vac. vitus idea	5	
8. Rho. geo (lab. tea)	5	

Herb Stratum		
9. Equ ~~sylvaticum~~ arvense	75	
10. Cal. canadensis	40	
11. Pot. palustris	20	
12. Equ. hymel	5	
13.		
14.		
15.		
16.		
17.		

Stem Density and Height

Randomly place three 1ft quadrats within sample area and count total number of stems and average stem height (cm).

	Grasses		Sedges		Herbaceous		Shrubs		Trees	
Quadrat	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height
1	4	0.8	—		~~0~~ 22	0.6	~~8~~	0.4	—	
2	86	2.2	—		3	.2	—		—	
3	64	1.8	—		16	0.5	6	0.4	—	

pond edge

Additional Notes on Field Activities, Necessary Corrective Actions, or Conditions

Also few small willows (~20" high)
Salix myrtillifolia ~ 1% coverage

Sedge in pond (too deep to reach)

A.3 WETLAND VEGETATION DATA FORM

Completed by: Ryan Cooper		Collection Date: 7/12/17	Site Id: TP-04
Time Arrived on Site: 1:35	Time Left Site: 1:55	Wetland Classification: PSS F	Photo Taken: Yes / No
Local relief: concave / convex / (none)	Has site been disturbed? If yes, describe disturbance in remarks below. Yes / (No)		RSM01 reviewed and RSM02 Completed? (Yes) / No
Surface water present: (Yes) / No	Water depth: 4 inches	Flow Rate: 0 Feet/sec	Landform: (hillside, hummock, etc.) hummock
Weather Description: Clear, 70		Are climate / hydrologic conditions on site typical for this time of year? (Yes) / No If no, explain:	
Field Team: John Marshall, Ryan Cooper, Jake Howard		Remarks on site:	

Vegetation Use scientific names of plants. List all species in the plot (15-foot radius of stake).

Type	Absolute % Cover	Condition/Remarks
Tree Stratum		
1. Bet neoalaskana	1	
2.		
3.		
Sapling/Shrub Stratum		
4. Bet neoalaskana	10	
5. Aln. sinuata	50	
6. Sal. myrtifollia	5	
7. Rub. chamemorous	10	
8.		

Herb Stratum		
9. Cal canadensis	50	
10. Pot. palustris	30	
11.		
12.		
13.		
14.		
15.		
16.		
17.		

Stem Density and Height

Randomly place three 1ft quadrats within sample area and count total number of stems and average stem height (cm).

	Grasses		Sedges		Herbaceous		Shrubs		Trees	
Quadrat	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height
1	16	1.6	—	—	23	2	5	2	—	—
2	12	1.2	—	—	9	0.3	16	0.6	—	—
3	18	2.7	—	—	20	0.4	—	—	—	—

Additional Notes on Field Activities, Necessary Corrective Actions, or Conditions

A.3 WETLAND VEGETATION DATA FORM

Completed by: Ryan Cooper		Collection Date: 7/12/17	Site Id: TP2
Time Arrived on Site: 10:53	Time Left Site: 11:15	Wetland Classification: PF04F	Photo Taken: (Yes) / No
Local relief: concave / convex / (none)	Has site been disturbed? If yes, describe disturbance in remarks below. Yes / (No)		RSM01 reviewed and RSM02 Completed? (Yes) / No
Surface water present: (Yes) / No	Water depth: 3 inches	Flow Rate: 0 Feet/sec	Landform: (hillside, hummock, etc.) hummock
Weather Description: Clear, 70		Are climate / hydrologic conditions on site typical for this time of year? (Yes) / No If no, explain:	
Field Team: John Marshall, Ryan Cooper, Jake Alward		Remarks on site: Black Spruce bog, Many shrubs on top of hummocks.	

Vegetation Use scientific names of plants. List all species in the plot (15-foot radius of stake).

Type	Absolute % Cover	Condition/Remarks
Tree Stratum		
1. Pic mariana	1	
2.		
3.		
Sapling/Shrub Stratum		
4. Pic. Mariana	50	on hummocks
5. Rho dec	10	" "
6. Cloudberry Rub. Chamemorus	10	" "
7. Vac. vitus idea	5	" "
8. Vac. oli.	5	" "

Herb Stratum		
9. Pol. palustris	20	low
10. Equ. arvense ~~Sylvaticum~~	75	
11. Equ. ~~Arven~~ hymale	5	
12. Cal. canadensis	5	
13.		
14.		
15.		
16.		
17.		

Stem Density and Height

Randomly place three 1ft quadrats within sample area and count total number of stems and average stem height (cm).

	Grasses		Sedges		Herbaceous		Shrubs		Trees	
Quadrat	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height
1	—		—		3	0.4	21	0.5	—	
2	—		—		17	1.3	18	0.6	—	
3	/		/		16	0.7	32	0.4		

Additional Notes on Field Activities, Necessary Corrective Actions, or Conditions

Herb Stratum		
9. Marsh 5 Finger Pot. palustris	50	
10. C.l. C. aquatilis	90	
11. Wood fern Dry. dilatata	15	on up hummocks
12. ~~Fireweed Bunch berry~~	~~15~~	
13. equ. ~~sylvaticum~~ arvense	75	
14. ~~Geo Tid~~		
15.		
16.		
17.		

Unbranched single long

Stem Density and Height

Randomly place three 1ft quadrats within sample area and count total number of stems and average stem height (cm).

	Grasses		Sedges		Herbaceous		Shrubs		Trees	
Quadrat	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height	# Stems	Avg Height
1	19	2.8'	0	/	12	.8	0	/	0	/
2	6	3.1'	0	/	~~18~~ 16	1.3	~~2~~ 3	0.3	0	/
3	30	2.2'	0	/	~~18~~ 4	1.5'	~~2~~ 9	1.3	0	/

Standing water

Additional Notes on Field Activities, Necessary Corrective Actions, or Conditions

Hummocks. Standing 2" water in lows, Highs supporting shrubs. Birch have grown on highs

A.3 WETLAND VEGETATION DATA FORM

Completed by:		Collection Date:	Site Id:
RSC		7/12/17	TP+01
Time Arrived on Site: 9:55	**Time Left Site:** 10:28	**Wetland Classification:** PFO C	**Photo Taken:** Yes / No
Local relief concave / convex / none	**Has site been disturbed?** If yes, describe disturbance in remarks below. Yes / No well installed B-1 Wellinstalled		**RSM01 reviewed and RSM02 Completed?** Yes / No
Surface water present: Yes / No	**Water depth:** 2 inches	**Flow Rate:** 0 Feet/sec	**Landform:** (hillside, hummock, etc.) hummock
Weather Description: Clear, hot		**Are climate / hydrologic conditions on site typical for this time of year?** Yes / No **If no, explain:**	
Field Team: John Marshal Jake Alwerd Ryan Cooper		**Remarks on site:**	

Vegetation Use scientific names of plants. List all species in the plot (15-foot radius of stake).

Type	Absolute % Cover	Condition/Remarks
Tree Stratum		
1. Bet NEOalaskana	25	Growing on hummocks
2.		
3.		
Sapling/Shrub Stratum		
4. ~~Mesh 5 Ginger~~ Aln. sinuata crispa	1	
5. ~~Wood fern~~ Pos. aciculatus	5	on hummocks
6. ~~Cal Can~~ Cornus Canadensis Canadian bunch berry	15	" "
7.		
8.		