

HABITAT TECHNOLOGIES

June 6, 2022

Kristian and Joann Mullan
808 – 14th Street SW
Puyallup, Washington 98371
e-mail kjmullan@yahoo.com

cc. Ms. Cheryl Ebsworth, Senior Planner
@ Barghausen Consulting Engineers, Inc.
18215 – 72nd Avenue South
Kent, Washington 98032
e-mail cebsworth@Barghausen.com

RE: Spring 2022 Hydrology Monitoring
Parcel 5505300831, 808 – 14th Street SW, City of Puyallup

Dear Kristian and Joann Mullan,

Following the receipt and review of the *Third-Party Review Letter* of March 17, 2022 prepared by Confluence Environmental Company and provided by the City of Puyallup on April 14, 2022, Habitat Technologies undertook additional onsite assessments to better document and understand onsite conditions – specifically growing season hydrology patterns.

Issue to Address: Staff from Confluence Environmental Company visited the project site on March 2, 2022, and observed soil, hydrology, and vegetation conditions at three (3) locations and concluded that two (2) of these locations exhibited all three of the criteria for designation as “wetland.”

Actions Taken: As noted in the *Critical Areas Assessment - Biological Evaluation* completed by Habitat Technologies in the fall of 2021 the project site was dominated by a managed lawn plant community that did not exhibit prominent hydric soil characteristics and did not exhibit prominent field indicators of wetland hydrology patterns. Since the observations of Confluence Environmental Company were so contrary to those of Habitat Technologies, Habitat Technologies immediately began an assessment of early growing seasonal hydrology patterns to better understand the potential reasons for divergent findings.

On April 17, 2022, Habitat Technologies established a pattern of four (4) monitoring locations to define onsite hydrology patterns from the middle of April through the end of May 2022. Because the project site is actively managed as a part of the existing single-family homesite each monitoring location was defined with a hand-held GPS so that monitoring would be completed within generally the same locations over the monitoring

wetlands, streams, fisheries, wildlife – mitigation and permitting solutions
P.O. Box 1088, Puyallup, Washington 98371
253-845-5119 contact@habitattechnologies.net

A VETERAN OWNED SMALL BUSINESS COOPERATIVE

period. Twice a week at each monitoring location a monitoring hole was dug by hand to a depth of approximately 24 inches. Each monitoring hole was allowed to remain open for a period of 30 to 60 minutes. The level of free water and the level of soil saturation was then identified as measured in inches from the soil surface for each monitoring hole (Appendix A).

Assessment of Observations: The onsite monitoring completed in April and May 2022 identified that free water levels within each of the monitoring holes generally coincided with seasonal rainfall events. During periods of seasonal rainfall events, the level of free water within the monitoring holes (and in particular Monitoring Holes #3 and #4) were generally within 12 inches of the surface. However, following a period of no seasonal rainfall (even just a few days) the level of free water within the monitoring holes dropped to greater than 12 inches below the surface (Appendix B).

The observations completed in April and May 2022 also appear somewhat consistent with the findings of the groundwater monitoring program completed onsite by Earth Solutions NW, LLC between November 2021 and February 2022. This monitoring program concluded that the observations documented at three test pits were indicative of a seasonal high ground water table elevation.

As noted in the review letter provided by Confluence Environmental Company dated March 17, 2022 and attached to the City of Puyallup comment letter of April 13, 2022, the onsite assessment completed on March 2, 2022, identified that the seasonal water table was at the surface and that surface water ponding was identified immediately adjacent to each of the three test sites. These observations appear consistent with the observations completed by Habitat Technologies in April and May 2022. In particular, the precipitation data shows 2.02-inches of rainfall on March 1, 2022, and 0.30-inches of rainfall on March 2, 2022.

WETLAND CRITERIA DISCUSSION

Hydrology: As identified onsite during the spring of 2022, it is the opinion of Habitat Technologies that surface and shallow groundwater hydrology patterns throughout the project site are driven by a seasonal high ground water table elevation and shallow surface response to seasonal rainfall events. During periods of seasonal rainfall the level of shallow groundwater is often at or very close to the surface and that some areas would even exhibit shallow surface water ponding. However, between seasonal rainfall events the shallow groundwater and shallow surface water would infiltrate to exhibit a free water level of below 12-inches.

Soils: The project site had been cleared and leveled several decades ago in the development of an existing single-family homesite and associated managed yard and lawn areas. The soil throughout the project site is mapped as Sultan silt loam – a moderately well drained soil. A typical Sultan soil exhibits a dark grayish brown (10YR

4/2) coloration and a silt loam texture to approximately 14 inches in soil depth. The subsoil to a depth greater than 24-inches exhibits a mottled, brown silt loam (10YR 4/3) to dark yellowish brown (10YR 3/4) coloration and a very fine sandy loam texture.

As noted by both Habitat Technologies and Confluence Environmental Company the soil generally within the northcentral portion of the project site (Confluence points SP2 and SP3 and Habitat monitoring plot #3) did not exhibit soils typical of the Sultan soil series but more typical of the Briscot soil series (a somewhat poorly drained soil).

Vegetation: The plant community outside the single-family homesite area was dominated by a grass and herb community typical of a managed lawn. Observed species were typical of well managed seeded lawn grasses and a variety of lawn weeds ranging from “facultative wet” species such as buttercup through “facultative up” species such as dandelion and cats-ear.

CONCLUSIONS

Given the character of the project site - as a created and managed lawn - it is the opinion of Habitat Technologies that the primary factor deciding the presence or absence of a “wetland” would be that of early growing season hydrology patterns. As defined by onsite assessment during periods of seasonal rainfall the free water within the soil is at or very close to the surface. However, during periods between seasonal rainfall the free water within the soil was identified to infiltrate moderately well such that the free water was not or near the surface.

As such, the wetland hydrology criterion was not identified as met within the project site.

Thank you for allowing Habitat Technologies the opportunity to assist with your project. If needed for further discussion, Habitat Technologies would appreciate the opportunity to meet with the City of Puyallup staff and third-party consultants.

Sincerely,

Thomas D. Deming, SPWS
Habitat Technologies

HABITAT TECHNOLOGIES

THOMAS D. DEMING

Professional Wetland Scientist - Certificate #447

EDUCATION:

University of Puget Sound, School of Law - <i>Juris Doctor</i>	Tacoma, WA	1987
Oregon State University	Corvallis, OR	
<i>Bachelor of Science - Wildlife Science</i>		1978
<i>Bachelor of Science - Fisheries Science</i>		1978

EXPERIENCE:

Freshwater and Estuarine Wetlands and Streams

- Evaluation and delineation of freshwater and estuarine wetland areas using federal and state guidelines (1987 Manual with 2010 Supplement, Washington State Wetland Rating System) and the U.S. Fish and Wildlife Service classification systems.
- Conducting wetland function and value analysis evaluations.
- Development of workable wetland and stream impact mitigation programs and habitat restoration and enhancement plans. Included within these programs and plans has been the development and implementation of post-mitigation monitoring programs.
- Completion of onsite technical support and project team coordination during the implementation of mitigation site construction and vegetation planting.
- Coordination of wetland project activities and permitting processes to obtain appropriate and timely permits and project completion within defined timelines.
- Identification and evaluation of plant communities within wetland and buffer areas.

Wildlife and Fisheries

- Completion of Biological Evaluations for Threatened and Endangered Species following USFWS and NMFS guidelines.
- Completion of wildlife and fisheries habitat assessments to determine limiting factors to population dynamics and habitat utilization (both existing and potential).
- Completion of threatened and endangered species and habitat assessments for plants, fish, and wildlife to determine project impacts and restoration/enhancement potential.
- Development, implementation, and monitoring of restoration and enhancement projects within freshwater, estuarine, and upland habitats designed to improve wildlife and fisheries utilization and migration corridors.
- Preparation of wildlife and fisheries management prescriptions for both project-specific areas and basin-level planning processes.
- Development and implementation of hatchery components and operations for Chinook salmon, coho salmon, chum salmon, and steelhead trout culture.
- Coordination of wildlife and fisheries project activities and permitting processes to obtain appropriate and timely permits.

EMPLOYMENT HISTORY:

Habitat Technologies (sole proprietorship)	1997 to present
Watershed Dynamics, Inc. (equal owner)	1990 to 1997
Habitat Technologies (sole proprietorship)	1987 to 1990
Puyallup Tribal Fisheries Division (habitat biologist)	1979 to 1989

PROFESSIONAL AFFILIATIONS:

Washington State Bar Association (retired) - Society of Wetland Scientists

wetlands, streams, fisheries, wildlife – mitigation and permitting solutions
P.O. Box 1088, Puyallup, Washington 98371
253-845-5119 tom@habitattechnologies.net

APPENDIX A – ONSITE HYDROLOGY MONITORING

2022 Hydrology Monitoring Program – Open Hole

DATE	# 1	# 2	# 3	# 4
15 APR 22	Free -16" Sat -8"	Free -15" Sat -8"	Free -8" Sat surface	Free -11" Sat surface
19 APR 22	Sat -14"	Free -20" Sat -13"	Free -14" Sat -10"	Free -14" Sat -10"
22 APR 22	Free -14" Sat -8"	Free -12" Sat -6"	Free -6" Sat surface	Free -9" Sat -3"
25 APR 25	Free -21" Sat -14"	Free -20" Sat -14"	Free -15" Sat -9"	Free -15" Sat -10"
28 ARP 25	Free -15" Sat -10"	Free -14" Sat -10"	Free -8" Sat -4"	Free -10" Sat -4"
2 MAY 22	Free -22" Sat -14"	Free -21" Sat -15"	Free -15" Sat -10"	Free -17" Sat -12"
5 MAY 22	Free -20" Sat -15"	Free -20" Sat -14"	Free -16" Sat -12"	Free -16" Sat -13
10 MAY 22	Free -21" Sat -16"	Free -20" Sat -15"	Free -15" Sat -11"	Free -17" Sat -13"
13 MAY 22	Free -19" Sat -14"	Free -17" Sat -12"	Free -11" Sat -5"	Free -12" Sat -5"
17 MAY 22	Free none Sat -18"	Free none Sat -17"	Free -15" Sat -12"	Free -16" Sat -12"
20 MAY 22	Free -17" Sat -13"	Free -17" Sat -14"	Free -12" Sat -8"	Free -14" Sat -9"
23 MAY 22	Free none Sat -24"	Free none Sat -22"	Free -19" Sat -16"	Free -18" Sat 16"
26 MAY 22	Free -22" Sat -19"	Free -22" Sat -18"	Free -16" Sat -13"	Free -17" Sat -13"
31 MAY 22	Free none Sat -22"	Free none Sat -22"	Free none Sat -18"	Free none Sat -17"

* as measured in inches from soil surface

APPENDIX B – RAINFALL DATA

Climatological Data for MCMILLIN RESERVOIR, WA - March 2022

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2022-03-01	54	49	51.5	12	2	2.02	M	M
2022-03-02	55	43	49.0	9	0	0.30	M	M
2022-03-03	50	39	44.5	5	0	0.50	M	M
2022-03-04	46	38	42.0	2	0	0.17	M	M
2022-03-05	M	M	M	M	M	M	M	M
2022-03-06	M	M	M	M	M	M	M	M
2022-03-07	48	29	38.5	0	0	0.00	M	M
2022-03-08	48	32	40.0	0	0	0.02	M	M
2022-03-09	44	33	38.5	0	0	0.05	M	M
2022-03-10	45	26	35.5	0	0	0.00	M	M
2022-03-11	46	27	36.5	0	0	0.00	M	M
2022-03-12	M	M	M	M	M	M	M	M
2022-03-13	M	M	M	M	M	M	M	M
2022-03-14	54	34	44.0	4	0	M	M	M
2022-03-15	49	42	45.5	6	0	0.77	M	M
2022-03-16	50	41	45.5	6	0	0.10	M	M
2022-03-17	53	37	45.0	5	0	0.02	M	M
2022-03-18	52	38	45.0	5	0	0.00	M	M
2022-03-19	M	M	M	M	M	M	M	M
2022-03-20	M	M	M	M	M	M	M	M
2022-03-21	54	37	45.5	6	0	M	M	M
2022-03-22	50	40	45.0	5	0	0.17	M	M
2022-03-23	62	40	51.0	11	1	0.02	M	M
2022-03-24	54	36	45.0	5	0	0.10	M	M
2022-03-25	54	37	45.5	6	0	0.00	M	M
2022-03-26	M	M	M	M	M	M	M	M
2022-03-27	M	M	M	M	M	M	M	M
2022-03-28	63	41	52.0	12	2	M	M	M
2022-03-29	56	44	50.0	10	0	0.00	M	M
2022-03-30	56	43	49.5	10	0	0.01	M	M
2022-03-31	54	38	46.0	6	0	0.00	M	M
Average Sum	52.0	37.6	44.8	125	5	4.25	M	M

Climatological Data for MCMILLIN RESERVOIR, WA - April 2022

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2022-04-01	53	35	44.0	4	0	0.00	M	M
2022-04-02	M	M	M	M	M	M	M	M
2022-04-03	M	M	M	M	M	M	M	M
2022-04-04	53	36	44.5	5	0	M	M	M
2022-04-05	43	36	39.5	0	0	0.20	M	M
2022-04-06	51	30	40.5	1	0	0.00	M	M
2022-04-07	58	31	44.5	5	0	0.00	M	M
2022-04-08	74	38	56.0	16	6	0.14	M	M
2022-04-09	M	M	M	M	M	M	M	M
2022-04-10	M	M	M	M	M	M	M	M
2022-04-11	51	33	42.0	2	0	M	M	M
2022-04-12	51	32	41.5	2	0	0.02	M	M
2022-04-13	44	29	36.5	0	0	0.02	M	M
2022-04-14	44	29	36.5	0	0	0.19	M	M
2022-04-15	45	30	37.5	0	0	0.00	M	M
2022-04-16	M	M	M	M	M	M	M	M
2022-04-17	M	M	M	M	M	M	M	M
2022-04-18	M	M	M	M	M	M	M	M
2022-04-19	57	31	44.0	4	0	M	M	M
2022-04-20	53	34	43.5	4	0	0.03	M	M
2022-04-21	54	36	45.0	5	0	0.18	M	M
2022-04-22	54	36	45.0	5	0	0.23	M	M
2022-04-23	M	M	M	M	M	M	M	M
2022-04-24	M	M	M	M	M	M	M	M
2022-04-25	68	36	52.0	12	2	M	M	M
2022-04-26	53	40	46.5	7	0	0.12	M	M
2022-04-27	50	36	43.0	3	0	0.13	M	M
2022-04-28	52	38	45.0	5	0	0.09	M	M
2022-04-29	54	40	47.0	7	0	0.03	M	M
2022-04-30	M	M	M	M	M	M	M	M
Average Sum	53.1	34.3	43.7	87	8	1.38	M	M

Climatological Data for MCMILLIN RESERVOIR, WA - May 2022

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2022-05-01	M	M	M	M	M	M	M	M
2022-05-02	60	41	50.5	11	1	M	M	M
2022-05-03	55	45	50.0	10	0	0.06	M	M
2022-05-04	53	43	48.0	8	0	0.00	M	M
2022-05-05	65	43	54.0	14	4	0.04	M	M
2022-05-06	56	43	49.5	10	0	0.46	M	M
2022-05-07	M	M	M	M	M	M	M	M
2022-05-08	M	M	M	M	M	M	M	M
2022-05-09	52	36	44.0	4	0	M	M	M
2022-05-10	54	40	47.0	7	0	0.18	M	M
2022-05-11	58	38	48.0	8	0	0.00	M	M
2022-05-12	59	42	50.5	11	1	0.08	M	M
2022-05-13	59	39	49.0	9	0	0.14	M	M
2022-05-14	M	M	M	M	M	M	M	M
2022-05-15	M	M	M	M	M	M	M	M
2022-05-16	M	M	M	M	M	M	M	M
2022-05-17	67	40	53.5	14	4	M	M	M
2022-05-18	60	45	52.5	13	3	0.23	M	M
2022-05-19	55	42	48.5	9	0	0.21	M	M
2022-05-20	57	40	48.5	9	0	0.00	M	M
2022-05-21	M	M	M	M	M	M	M	M
2022-05-22	M	M	M	M	M	M	M	M
2022-05-23	70	39	54.5	15	5	M	M	M
2022-05-24	70	39	54.5	15	5	0.00	M	M
2022-05-25	61	50	55.5	16	6	0.04	M	M
2022-05-26	69	48	58.5	19	9	0.00	M	M
2022-05-27	68	50	59.0	19	9	0.14	M	M
2022-05-28	M	M	M	M	M	M	M	M
2022-05-29	M	M	M	M	M	M	M	M
2022-05-30	M	M	M	M	M	M	M	M
2022-05-31	61	43	52.0	12	2	0.61	M	M
Average Sum	60.5	42.3	51.4	233	49	2.19	M	M