KGS GROUP

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February 25, 2021

Manitoba Conservation and Climate
Environmental Approvals Branch
1007 Century Street
Winnipeg, Manitoba R3H 0W4

Attention: Ms. Elise Dagdick
Environment Officer

Re: Response to Public and TAC Comments
Evergreen Bog Peat Harvesting Environment Act Proposal

Dear Ms. Dagdick:

KGS Group is submitting this letter in response to questions from the public and the Technical Advisory Committee relating to the Environment Act Proposal (EAP) application that was originally submitted on October 16, 2020 on behalf of Sun Gro Horticulture Canada Ltd. (Sun Gro) to obtain the required major alteration to the existing Manitoba Environmental Act License 305R for the proposed expanded peat harvesting development into the Evergreen 1 sub-area. The information provided in this letter is in response to your letter dated February 18, 2021.

1.0 DRAINAGE, SEDIMENTATION PONDS AND EFFLUENT

Please provide information on how the licence requirements regarding sedimentation ponds will be met.

As described in section 2.5.4 of the EAP, the Evergreen 1 harvest area will tie into the existing drainage ditch for the Evergreen 2 and 3 sub-areas which daylights north of Evergreen 1 in a forested area. Once drainage water leaves the harvesting area it pools at the end of the drainage ditch, essentially acting like a sedimentation pond, and slowly flows overland into the surrounding peat bog. Drainage water is not discharged directly into another waterbody and there are no waterbodies near the discharge location. As such, there is no concern about water quality and associated potential impacts to fish and fish habitat. Any sediment that is suspended in the drainage water would settle within the bog area near the discharge point. Additionally, existing water quality monitoring data collected by Sun Gro and provided to MCC shows that effluent water quality criteria specified in the Licence is met, with the exception of one elevated suspended sediment concentration in September of 2020, which is thought to be related to beaver activity or lack of water movement, as noted in the water monitoring summary

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provided in Appendix A. As water is not discharging from the site to another natural water body and because the end of the drainage ditch acts as a sedimentation pond, Sun Gro feels that a formal sedimentation pond with a debris boom is not required and requests that this clause be removed from the licence when it is revised.

Presently, the drainage water from Evergreen 2 and 3 is discharged through a gated culvert located at the north-west corner of the harvest area. Likewise, drainage water from Evergreen 1 is proposed to be discharged through a single gated culvert. These gated culverts are capable of terminating the discharge of drainage water from the harvest areas whenever required. Sun Gro is currently working to install a staff gauge at the existing gated culvert and develop a rating curve to be able to manually measure instantaneous flow rates of water at the drainage location. A similar process would be established at the gated culvert from Evergreen 1.

Also as described in section 2.5.4 of the EAP, during site activities which may generate suspended particulate matter, such as ditch maintenance and ditch deepening, the gated culvert at the harvest area outlet will be closed to stop off-site flow. Essentially making the drainage ditches upstream of the gated culvert functioning as a sedimentation pond that will allow particulate matter to settle within the field drains and main drains before the gated culverts are opened and drainage is resumed.

2.0 PEAT HARVESTING

Is it likely that harvesting will occur to the minimum proposed depth of 0.5 m given that the peat at these depths would be sedge-dominated peat?

Based on the peat quality harvested at the Evergreen 2 and 3 sub-areas it is anticipated that Evergreen 1 will also have good quality peat such that harvesting will be to the full depth with only the required 0.5 m peat depth retained. As noted in Section 1.1 of the EAP, a peat assessment was conducted at Evergreen 1 in the spring of 2020 to supplement and confirm investigations conducted by the Manitoba Department of Energy and Mines. The investigation confirmed that peat at the Evergreen 1 was of sufficient quality and quantity to warrant harvesting. If during harvesting activities peat quality is deemed to be insufficient for harvesting in a given area, harvesting will stop at that area.

3.0 GROUNDWATER

Exactly how far is the groundwater well from the Evergreen 1 sub-area?

The closest groundwater well to Evergreen 1 sub-area is a test well located 1.5 km west, which was noted as being dry in the well log. The next nearest groundwater well is a production well located 3.4 km east. A map showing the location of nearby groundwater wells and a table describing the wells is provided in Appendix B.

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4.0 WETLANDS

Please provide a response and include an explanation of how this affects the environmental assessment in relation to wetlands.

The CSPMA estimates that 31,675 ha of peatland were under harvest in Canada in 2017 (CSPMA, 2017). This accounts for 0.03% of the total 113,600,000 ha area of peatland in Canada (Tarnocai, et al., 2011). Within Manitoba, the CSPMA estimates 3,801 ha were under harvest in 2017 (12% of Canadian total; CSPMA, 2017). This accounts for 0.02% of the total area of 19,200,000 ha of peatland in Manitoba (Daigle and Gautreau-Daigle, 2001).

The proposed project consists of 60 ha, which is an increase of 0.19% of the total area under harvest in Canada and 1.58% of the total area under harvest in Manitoba. Relative to the overall peatland areas, the proposed project accounts for 0.00005% of peatland areas in Canada and 0.0031% of peatland areas in Manitoba.

Given the relatively small percentage the proposed project represents relative to both provincial and national areas of wetlands and peat harvesting areas, our assessment of the potential project effects on wetlands does not change from that presented in the EAP.

5.0 CLIMATE CHANGE

Please provide a full life-cycle analysis of GHG emissions and removal.

KGS Group estimated the GHG emissions for this project, as described in the EAP Section 5.2.4, based on the research and formulas developed by Cleary et al. (2005). As noted in the EAP other literature was also reviewed which cited similar GHG flux rates. The formulas developed by Cleary et al. were used as they are from Canadian peatlands and because Manitoba Conservation and Climate had previously recommended the use of these formulas. Cleary et al. estimated the GHG contributions from each component of the life cycle of peat harvesting where land use change accounted for 15%, peat harvesting and processing accounted for 4%, transport to market accounted for 10% and decomposition accounted for 71% (Cleary et al. 2005). However, GHG emissions from decomposition are associated with the end use and should not be attributed to the producer. Because the Cleary et al. formulas are based on a life cycle analysis already, conducting a life cycle analysis specific to the Evergreen 1 sub-area is not necessary and well beyond the typical scope of an EAP.

6.0 AIR QUALITY

With respect to the rest of Sun Gro's PHL#3 operations, what is the overall increase in harvested peat each year? (As the other areas are scheduled to begin restoration, the total increase should be less as these sites are retired.)

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The proposed Evergreen 1 sub-area will result in a one-time increase of 60 ha of peat harvest area. Other sub-areas within Sun Gro's PHL #3 where harvesting is currently occurring include Evergreen 3 (14 ha) and South Julius 2 (200 ha) (Sun Gro, 2019). A 60 ha increase would result in a 28% increase in harvesting area relative to other areas under harvest within PHL #3. This increase is partially offset by the 28 ha of peat harvesting at North Julius sub-area that has recently stopped. As described in the PHL #3 Peatland Management Plan, harvesting at the North Julius sub-area was originally scheduled to continue until 2028, however harvesting was stopped in 2019 due to insufficient quality of peat (Sun Gro, 2019).

Three other sub-areas within PHL #3 have not undergone harvesting: Julius Lake West, South Julius 1, and Moss Spur 3. Sun Gro has already determined that there is no harvestable quality peat available at South Julius or Moss Spur 3 so these sub-areas will not be developed. Sun Gro is in the process of completing a peat investigation at Julius Lake West to determine if there is sufficient quality and quantity to develop this sub-area in the future. If there is good quality peat, it is estimated that between 70 and 120 ha of the 177 ha sub-area may be developed, following implementation of required buffer areas. If Julius Lake West is proposed to be developed in the future, a new EAP would need to be prepared to amend the existing licence and the Peatland Management Plan and Peatland Recovery Plan amended accordingly.

Please do not hesitate to contact the undersigned if you have any questions or require additional information.

Prepared By:

[redacted]

Dan Leitch, M.Sc.
Environmental Scientist

Approved By:

[redacted]

Jason Mann, M.Sc., P.Geo.
Environmental Department Head/Associate Principal

DL/jr
Enclosure

cc: Tim North, Sun Gro

REFERENCES

- Canadian Sphagnum Peat Moss Association (CSPMA). 2017. 2017 Statistics about Peatland Areas Managed for Horticultural Peat Harvesting in Canada. https://tourbehorticole.com/wp-content/uploads/2020/01/Summary_2016_2017_Indutry_Statistic_AREAS_WEB.pdf.
- Daigle, J.-Y. and H. Gautreau-Daigle. 2001. Canadian Peat Harvesting and the Environment (2nd Edition). Issues Paper, No. 2001-1. North American Wetlands Conservation Council Committee.
- Sun Gro. 2019. Peat Harvest Licence No. 3 – Julius: Peatland Management Plan. September 2019.
- Tarnocai, C., Kettles, I.M. and B. Lacelle. 2011. Peatlands of Canada; Geological Survey of Canada, Open File 6561 (digital database); CD-ROM.

APPENDIX A

Water Quality Monitoring

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SUBJECT: 2020 Water Sample Summary For Eastern Region

In accordance with Environment Act License (EAL) 305R (Evergreen) and (EAL) 2481RR (Julius Lake South). Sun Gro collected weekly samples of the effluent from Evergreen (EG West) and Julius Lake South Bog (Station B) during operation under conditions of effluent release. These weekly samples were collected between May and October 2020 and were analyzed for pH and TSS as well as analysis of the full parameter set in May, July and October.

The TSS concentrations measured from South Julius Station A and EG West during the 2020 operational monitoring ranged between <3 – 23.5 mg/L. There was however 1 sample that was 31 mg/L which was caused from either beaver activity or lack of water movement. All other measurements were below the license limit of 30 mg/L, therefore TSS was not considered a concern.

The pH values measured from South Julius Station A and EG West during the 2020 operational monitoring ranged from 7.22 to 8.846 pH units. The pH values were above the 5.0 pH specified in the license, therefore pH was not considered a concern.

ALS		Sample ID	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG
2/16/2021		ALS ID	L2444496-2	L2447111-2	L2449631-2	L2452612-2	L2459019-2	L2461747-2	L2465380-2	L2468737-2	L2471495-2	L2474720-2	L2478227-2	L2481285-2	L2483306-2	L2487705-2	L2491075-2	L2493773-2	L2497922-2	L2500646-2	L2503910-2	L2507094-2	L2510014-2	L2513699-2	L2516633-2
Multiple Work Orders		Date Sampled	5/6/2020 2:30:00 PM	5/13/2020 7:20:00 AM	5/20/2020 7:30:00 AM	5/27/2020 7:15:00 AM	6/10/2020 7:20:00 AM	6/17/2020 7:25:00 AM	6/24/2020 7:20:00 AM	7/2/2020 7:25:00 AM	7/8/2020 7:20:00 AM	7/15/2020 7:25:00 AM	7/22/2020 7:15:00 AM	7/29/2020 7:35:00 AM	8/4/2020 9:10:00 AM	8/12/2020 7:20:00 AM	8/19/2020 7:20:00 AM	8/25/2020 7:25:00 AM	9/2/2020 7:20:00 AM	9/9/2020 7:25:00 AM	9/16/2020 7:20:00 AM	9/23/2020 7:15:00 AM	9/30/2020 7:25:00 AM	10/7/2020 7:15:00 AM	10/14/2020 8:35:00 AM
Analyte	**Units**	**LOR**	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Conductivity	umhos/cm	1	-	-	565	-	-	-	-	-	-	-	-	-	544	-	-	-	-	-	-	-	-	-	718
Hardness (as CaCO3)	mg/L	0.2	-	-	339 *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	446
pH	pH units	0.1	8.03	8.01	8.06	8.15	8.4	8.23	8.22	8.33	8.18	8.14	8.24	8.11	7.89	7.83	8.45	8.23	8.08	8.08	8.25	8.33	8.41	8.41	8.46
Total Suspended Solids	mg/L	2	6.3	4.4	4.5	4.9	8.6	<3.0	5.1	4.1	<3.0	4.7	4.1	9.7	6.3	<3.0	5.4	7.9	4.6	5.8	6.3	9.1	31	23.5	7.6
Total Dissolved Solids	mg/L	13	-	-	372	-	-	-	-	-	-	-	-	-	399	-	-	-	-	-	-	-	-	-	530
Acidity (as CaCO3)	mg/L	2	-	-	<2.0	-	-	-	-	-	-	-	-	-	4.8	-	-	-	-	-	-	-	-	-	<2.0
Alkalinity, Total (as CaCO3)	mg/L	1	-	-	310	-	-	-	-	-	-	-	-	-	307	-	-	-	-	-	-	-	-	-	342
Ammonia, Total (as N)	mg/L	0.01	-	-	0.051	-	-	-	-	-	-	-	-	-	0.016	-	-	-	-	-	-	-	-	-	0.231
Bicarbonate (HCO3)	mg/L	1.2	-	-	378	-	-	-	-	-	-	-	-	-	375	-	-	-	-	-	-	-	-	-	387
Carbonate (CO3)	mg/L	0.6	-	-	<0.60	-	-	-	-	-	-	-	-	-	<0.60	-	-	-	-	-	-	-	-	-	14.5
Hydroxide (OH)	mg/L	0.34	-	-	<0.34	-	-	-	-	-	-	-	-	-	<0.34	-	-	-	-	-	-	-	-	-	<0.34
Nitrate and Nitrite as N	mg/L	0.07	-	-	0.572	-	-	-	-	-	-	-	-	-	<0.070	-	-	-	-	-	-	-	-	-	2.23
Nitrate (as N)	mg/L	0.02	-	-	0.555	-	-	-	-	-	-	-	-	-	<0.020	-	-	-	-	-	-	-	-	-	2.23
Nitrite (as N)	mg/L	0.01	-	-	0.017	-	-	-	-	-	-	-	-	-	<0.010	-	-	-	-	-	-	-	-	-	<0.010
Total Kjeldahl Nitrogen	mg/L	0.2	-	-	1.34	-	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	1.31
Phosphorus (P)-Total	mg/L	0.003	-	-	0.0104	-	-	-	-	-	-	-	-	-	0.0237	-	-	-	-	-	-	-	-	-	0.0141
Sulfate (SO4)	mg/L	0.3	-	-	21.1	-	-	-	-	-	-	-	-	-	63.8	-	-	-	-	-	-	-	-	-	76.6
Total Organic Carbon	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	39.7	-	-	-	-	-	-	-	-	-	29.4
Escherichia Coli	MPN/100mL	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Coliforms	MPN/100mL	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum (Al)-Total	mg/L	0.003	-	-	0.0061	-	-	-	-	-	-	-	-	-	0.0058	-	-	-	-	-	-	-	-	-	0.13
Antimony (Sb)-Total	mg/L	0.0001	-	-	<0.00010	-	-	-	-	-	-	-	-	-	0.00012	-	-	-	-	-	-	-	-	-	0.00011
Arsenic (As)-Total	mg/L	0.0001	-	-	0.00127	-	-	-	-	-	-	-	-	-	0.00268	-	-	-	-	-	-	-	-	-	0.00107
Barium (Ba)-Total	mg/L	0.0001	-	-	0.0398	-	-	-	-	-	-	-	-	-	0.0428	-	-	-	-	-	-	-	-	-	0.0635
Beryllium (Be)-Total	mg/L	0.0001	-	-	<0.00010	-	-	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-	-	-	-	-	<0.00010
Bismuth (Bi)-Total	mg/L	0.00005	-	-	<0.000050	-	-	-	-	-	-	-	-	-	<0.000050	-	-	-	-	-	-	-	-	-	<0.000050
Boron (B)-Total	mg/L	0.01	-	-	0.042	-	-	-	-	-	-	-	-	-	0.053	-	-	-	-	-	-	-	-	-	0.042
Cadmium (Cd)-Total	mg/L	0.000005	-	-	<0.0000050	-	-	-	-	-	-	-	-	-	<0.0000050	-	-	-	-	-	-	-	-	-	0.0000094
Calcium (Ca)-Total	mg/L	0.05	-	-	96.5	-	-	-	-	-	-	-	-	-	75.7	-	-	-	-	-	-	-	-	-	129
Cesium (Cs)-Total	mg/L	0.00001	-	-	<0.000010	-	-	-	-	-	-	-	-	-	<0.000010	-	-	-	-	-	-	-	-	-	0.000025
Chromium (Cr)-Total	mg/L	0.0001	-	-	0.00023	-	-	-	-	-	-	-	-	-	0.00031	-	-	-	-	-	-	-	-	-	0.00058
Cobalt (Co)-Total	mg/L	0.0001	-	-	0.00013	-	-	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-	-	-	-	-	0.00022
Copper (Cu)-Total	mg/L	0.0005	-	-	0.00149	-	-	-	-	-	-	-	-	-	0.00136	-	-	-	-	-	-	-	-	-	0.00186
Iron (Fe)-Total	mg/L	0.01	-	-	0.145	-	-	-	-	-	-	-	-	-	0.088	-	-	-	-	-	-	-	-	-	0.281
Lead (Pb)-Total	mg/L	0.00005	-	-	<0.000050	-	-	-	-	-	-	-	-	-	<0.000050	-	-	-	-	-	-	-	-	-	0.000127
Lithium (Li)-Total	mg/L	0.001	-	-	0.008	-	-	-	-	-	-	-	-	-	0.0153	-	-	-	-	-	-	-	-	-	0.012
Magnesium (Mg)-Total	mg/L	0.005	-	-	23.9	-	-	-	-	-	-	-	-	-	27.7	-	-	-	-	-	-	-	-	-	26.1
Manganese (Mn)-Total	mg/L	0.0001	-	-	0.0266	-	-	-	-	-	-	-	-	-	0.00509	-	-	-	-	-	-	-	-	-	0.0205
Mercury (Hg)-Total	mg/L	0.000005	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000050	-	-	-	-	-	-	-	-	-	<0.0000050
Molybdenum (Mo)-Total	mg/L	0.00005	-	-	0.000511	-	-	-	-	-	-	-	-	-	0.000828	-	-	-	-	-	-	-	-	-	0.00122
Nickel (Ni)-Total	mg/L	0.0005	-	-	0.00153	-	-	-	-	-	-	-	-	-	0.0015	-	-	-	-	-	-	-	-	-	0.00127
Phosphorus (P)-Total	mg/L	0.03	-	-	<0.030	-	-	-	-	-	-	-	-	-	<0.030	-	-	-	-	-	-	-	-	-	<0.030
Potassium (K)-Total	mg/L	0.05	-	-	1.3	-	-	-	-	-	-	-	-	-	0.864	-	-	-	-	-	-	-	-	-	2.23
Rubidium (Rb)-Total	mg/L	0.0002	-	-	0.00179	-	-	-	-	-	-	-	-	-	0.0008	-	-	-	-	-	-	-	-	-	0.00255
Selenium (Se)-Total	mg/L	0.00005	-	-	0.000147	-	-	-	-	-	-	-	-	-	0.000126	-	-	-	-	-	-	-	-	-	0.000119
Silicon (Si)-Total	mg/L	0.1	-	-	2.41	-	-	-	-	-	-	-	-	-	1.22	-	-	-	-	-	-	-	-	-	4.15
Silver (Ag)-Total	mg/L	0.00001	-	-	<0.000010	-	-	-	-	-	-	-	-	-	<0.000010	-	-	-	-	-	-	-	-	-	<0.000010
Sodium (Na)-Total	mg/L	0.05	-	-	2.21	-	-	-	-	-	-	-	-	-	2.93	-	-	-	-	-	-	-	-	-	2.72
Strontium (Sr)-Total	mg/L	0.0002	-	-	0.142	-	-	-	-	-	-	-	-	-	0.185	-	-	-	-	-	-	-	-	-	0.207
Sulfur (S)-Total	mg/L	0.5	-	-	8.81	-	-	-	-	-	-	-	-	-	22.7	-	-	-	-	-	-	-	-	-	27.5
Tellurium (Te)-Total	mg/L	0.0002	-	-	<0.00020	-	-	-	-	-	-	-	-	-	<0.00020	-	-	-	-	-	-	-	-	-	<0.00020
Thallium (Tl)-Total	mg/L	0.00001	-	-	<0.000010	-	-	-	-	-	-	-	-	-	<0.000010	-	-	-	-	-	-	-	-	-	<0.000010
Thorium (Th)-Total	mg/L	0.0001	-	-	<0.00010	-	-	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-	-	-	-	-	<0.00010
Tin (Sn)-Total	mg/L	0.0001	-	-	<0.00010	-	-	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-	-	-	-	-	<0.00010
Titanium (Ti)-Total	mg/L	0.0003	-	-	0.00041	-	-	-	-	-	-	-	-	-	0.00066	-	-	-	-	-	-	-	-	-	0.00569
Tungsten (W)-Total	mg/L	0.0001	-	-	<0.00010	-	-	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-	-	-	-	-	<0.00010
Uranium (U)-Total	mg/L	0.00001	-	-	0.000966	-	-	-	-	-	-	-	-	-	0.00167	-	-	-	-	-	-	-	-	-	0.00218
Vanadium (V)-Total	mg/L	0.0005	-	-	0.00059	-	-	-	-	-	-	-	-	-	0.0007	-	-	-	-	-	-	-	-	-	0.00112
Zinc (Zn)-Total	mg/L	0.003	-	-	0.0044	-	-	-	-	-	-	-	-	-	<0.0030	-	-	-	-	-	-	-	-	-	<0.0030
Zirconium (Zr)-Total	mg/L	0.0002	-	-	0.00068	-	-	-	-	-	-	-	-	-	0.00075	-	-	-	-	-	-	-	-	-	0.00104
Dissolved Mercury Filtration L		n/a	-	-	-	-	-	-	-	-	-	-	-	-	LAB	-	-	-	-	-	-	-	-	-	LAB
Dissolved Metals Filtration Lo		n/a	-	-	-	-	-	-	-	-	-	-	-	-	LAB	-	-	-	-	-	-	-	-	-	LAB
Aluminum (Al)-Dissolved	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	0.0049	-	-	-	-	-	-	-	-	-	0.0041
Antimony (Sb)-Dissolved	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	0.00015	-	-	-	-	-	-	-	-	-	<0.00010
Arsenic (As)-Dissolved	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	0.0025	-	-	-	-	-	-	-	-	-	0.00101 *
Barium (Ba)-Dissolved	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	0.0427	-	-	-	-	-	-	-	-	-	0.0633
Beryllium (Be)-Dissolved	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-	-	-	-	-	<0.00010
Bismuth (Bi)-Dissolved	mg/L	0.00005	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	-	-	-	-	-	-	-	-	-	<0.000050
Boron (B)-Dissolved	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	0.061	-	-	-	-	-	-	-	-	-	0.047
Cadmium (Cd)-Dissolved	mg/L	0.000005	-	-	-	-	-	-	-	-	-	-	-	-	0.0000061	-	-	-	-	-	-	-	-	-	<0.0000050
Calcium (Ca)-Dissolved	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	77.9	-	-	-	-	-	-	-	-	-	136
Cesium (Cs)-Dissolved	mg/L	0.00001	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	-	-	-	-	-	-	-	-	-	<0.000010

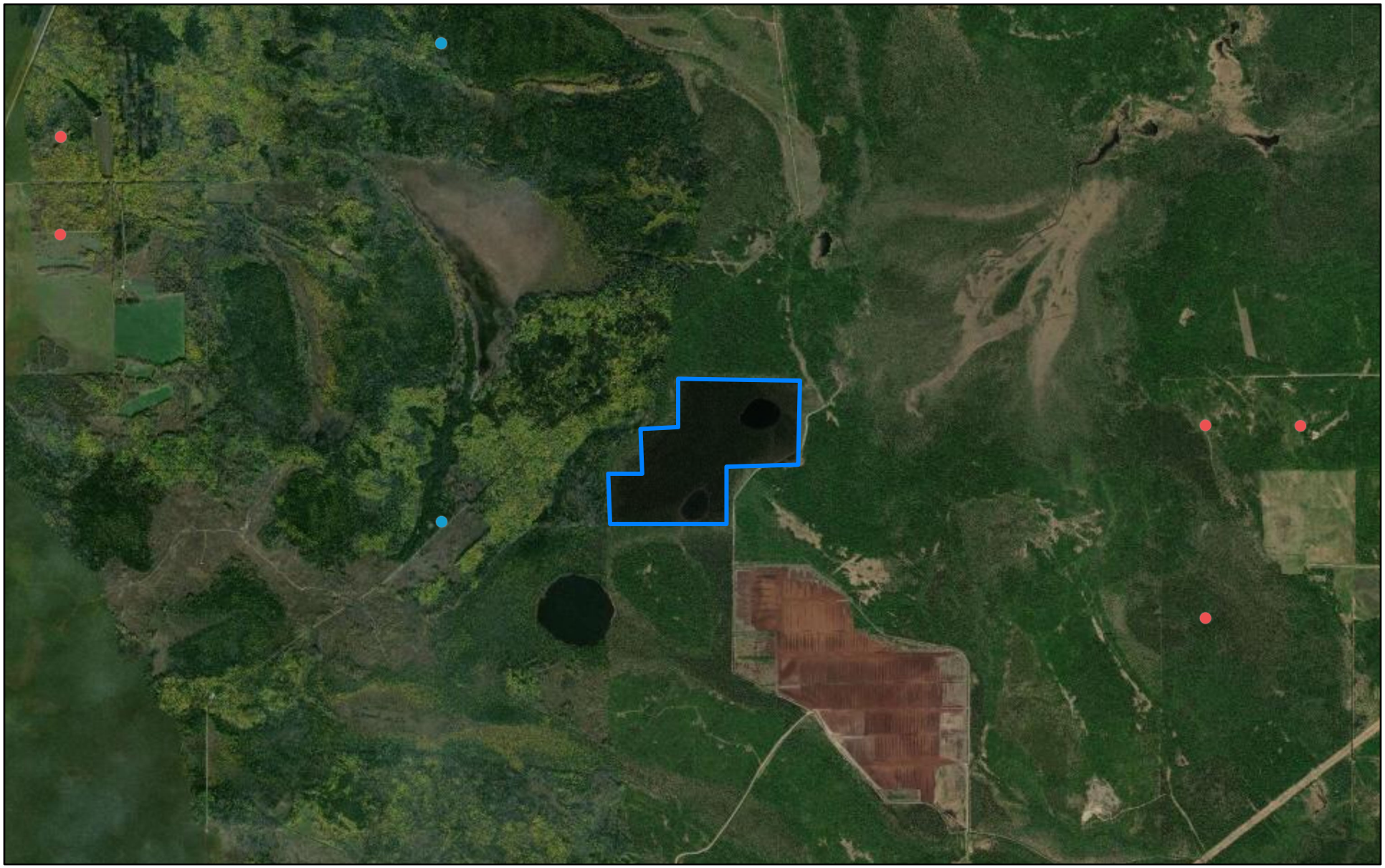
ALS		Sample ID	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN (EG	EVERGREEN EG WEST	EVERGREEN (EG
2/16/2021		ALS ID	L2444496-2	L2447111-2	L2449631-2	L2452612-2	L2459019-2	L2461747-2	L2465380-2	L2468737-2	L2471495-2	L2474720-2	L2478227-2	L2481285-2	L2483306-2	L2487705-2	L2491075-2	L2493773-2	L2497922-2	L2500646-2	L2503910-2	L2507094-2	L2510014-2	L2513699-2	L2516633-2
Multiple Work Orders		Date Sampled	5/6/2020 2:30:00 PM	5/13/2020 7:20:00 AM	5/20/2020 7:30:00 AM	5/27/2020 7:15:00 AM	6/10/2020 7:20:00 AM	6/17/2020 7:25:00 AM	6/24/2020 7:20:00 AM	7/2/2020 7:25:00 AM	7/8/2020 7:20:00 AM	7/15/2020 7:25:00 AM	7/22/2020 7:15:00 AM	7/29/2020 7:35:00 AM	8/4/2020 9:10:00 AM	8/12/2020 7:20:00 AM	8/19/2020 7:20:00 AM	8/25/2020 7:25:00 AM	9/2/2020 7:20:00 AM	9/9/2020 7:25:00 AM	9/16/2020 7:20:00 AM	9/23/2020 7:15:00 AM	9/30/2020 7:25:00 AM	10/7/2020 7:15:00 AM	10/14/2020 8:35:00 AM
Analyte	**Units**	**LOR**	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Chromium (Cr)-Dissolved	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	0.00029	-	-	-	-	-	-	-	-	-	0.00034
Cobalt (Co)-Dissolved	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-	-	-	-	-	0.00017
Copper (Cu)-Dissolved	mg/L	0.0002	-	-	-	-	-	-	-	-	-	-	-	-	0.00142	-	-	-	-	-	-	-	-	-	0.00169
Iron (Fe)-Dissolved	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	0.081	-	-	-	-	-	-	-	-	-	0.064
Lead (Pb)-Dissolved	mg/L	0.00005	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	-	-	-	-	-	-	-	-	-	<0.000050
Lithium (Li)-Dissolved	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	0.0149	-	-	-	-	-	-	-	-	-	0.0115
Magnesium (Mg)-Dissolved	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	27.4	-	-	-	-	-	-	-	-	-	26
Manganese (Mn)-Dissolved	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	0.00305	-	-	-	-	-	-	-	-	-	0.00955
Mercury (Hg)-Dissolved	mg/L	0.000005	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000050	-	-	-	-	-	-	-	-	-	<0.0000050
Molybdenum (Mo)-Dissolved	mg/L	0.00005	-	-	-	-	-	-	-	-	-	-	-	-	0.000825	-	-	-	-	-	-	-	-	-	0.00107
Nickel (Ni)-Dissolved	mg/L	0.0005	-	-	-	-	-	-	-	-	-	-	-	-	0.00147	-	-	-	-	-	-	-	-	-	0.00114
Phosphorus (P)-Dissolved	mg/L	0.03	-	-	-	-	-	-	-	-	-	-	-	-	<0.030	-	-	-	-	-	-	-	-	-	<0.030
Potassium (K)-Dissolved	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	0.857	-	-	-	-	-	-	-	-	-	2.19
Rubidium (Rb)-Dissolved	mg/L	0.0002	-	-	-	-	-	-	-	-	-	-	-	-	0.00087	-	-	-	-	-	-	-	-	-	0.00236
Selenium (Se)-Dissolved	mg/L	0.00005	-	-	-	-	-	-	-	-	-	-	-	-	0.000163	-	-	-	-	-	-	-	-	-	0.000142
Silicon (Si)-Dissolved	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	1.15	-	-	-	-	-	-	-	-	-	3.45
Silver (Ag)-Dissolved	mg/L	0.00001	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	-	-	-	-	-	-	-	-	-	<0.000010
Sodium (Na)-Dissolved	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	2.84	-	-	-	-	-	-	-	-	-	2.78
Strontium (Sr)-Dissolved	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	0.186	-	-	-	-	-	-	-	-	-	0.206
Sulfur (S)-Dissolved	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	21.2	-	-	-	-	-	-	-	-	-	24.8
Tellurium (Te)-Dissolved	mg/L	0.0002	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	-	-	-	-	-	-	-	-	-	<0.00020
Thallium (Tl)-Dissolved	mg/L	0.00001	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	-	-	-	-	-	-	-	-	-	<0.000010
Thorium (Th)-Dissolved	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-	-	-	-	-	<0.00010
Tin (Sn)-Dissolved	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-	-	-	-	-	<0.00010
Titanium (Ti)-Dissolved	mg/L	0.0003	-	-	-	-	-	-	-	-	-	-	-	-	0.00063	-	-	-	-	-	-	-	-	-	0.00061
Tungsten (W)-Dissolved	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-	-	-	-	-	<0.00010
Uranium (U)-Dissolved	mg/L	0.00001	-	-	-	-	-	-	-	-	-	-	-	-	0.00167	-	-	-	-	-	-	-	-	-	0.00223
Vanadium (V)-Dissolved	mg/L	0.0005	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	-	-	-	-	-	-	-	-	-	0.00065
Zinc (Zn)-Dissolved	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	0.0023	-	-	-	-	-	-	-	-	-	<0.0010
Zirconium (Zr)-Dissolved	mg/L	0.0002	-	-	-	-	-	-	-	-	-	-	-	-	0.00082	-	-	-	-	-	-	-	-	-	0.00096
Biochemical Oxygen Demand	mg/L	2	-	-	2.7	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	<2.0
Sample Comment		n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX B

Groundwater Well Information

KGS GROUP

GW Drill - Nearby Well Locations_km



9/15/2020 8:53:00 AM

GW Drill (2018)

TEST WELL

PRODUCTION

1:72,224

0 0.4 0.8 1.6 mi

0 0.5 1 2 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS,

ArcGIS Web AppBuilder

Earthstar Geographics |

GW Drill - Well Information for Wells within 5 km of the Evergreen 1 Sub-Area

WELL PID	Year	Well Depth	Aquifer	Well Use	Status	Distance to Sub-Area (km)	Water Level Before Test	Water Level After Test	Pumping Rate	Notes
13237	1969	25.91	Dry Well	Test Well	Unknown	1.5				
51697	1984	15.24	Sand and gravel	Production	Unknown	3.4	3.048	7.62	0.379	
140720	2006	29.89	Sand and gravel	Test Well	Sealed	3.6				Geothermal TH
140721	2006	64.66	Sand and gravel	Test Well	Sealed	3.6				Geothermal TH
32664	1977	57	Sand and gravel	Test Well	Unknown	4.1				
33175	1978	21.95	Sand and gravel	Production	Unknown	4.1	0.914	4.572	2.273	
81184	1995	40.84	Sand and gravel	Production	Unknown	4.2	3.658	8.23	0.758	
185853	2015	21.35	Sand and gravel	Production	Active	4.5				
32673	1977	22.56	Sand and gravel	Test Well	Unknown	4.5				
32674	1977	21.95	Sand and gravel	Test Well	Unknown	4.5				
43127	1981	21.34	Sand and gravel	Production	Unknown	4.6	3.048	4.572	0.909	North Julius harvest area
24641	1975	21.34	Sand and gravel	Production	Unknown	4.6	3.658	9.754	0.53	
13238	1969	27.43	Dry Well	Test Well	Unknown	4.6				
43128	1981	13.11	Sand and gravel	Production	Unknown	4.6				