Miller Environmental Corporation
1803 Hekla Avenue
Winnipeg, Manitoba R2R 0K3
Tel. (204) 925-9600 Fax (204) 925-9601

Committed to Leadership in Our Industry

May 17, 2024

Environmental Approvals Branch
MB Environment and Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg MB R3Y 0L6

Attention: Agnes Wittmann – Director, Environmental Approvals Branch

Dear Ms. Wittmann:

RE: Leachate Pond Design Additional Information

Please accept this as Miller Environmental Corporation's (Miller) provision of additional leachate pond design information as requested by EAB representatives during design review meeting on May 15, 2024.

The proposed leachate pond design utilizes a 1 m thick clay liner (10^{-7} cm/s hydraulic conductivity) as well as a 60 mil HDPE geomembrane liner. The cell floor has a 1% slope in the lateral and longitudinal directions (central valley along floor), with an integrated sump on the east side of the pond. The sump contains a 200 mm non-perforated DR11 HDPE pipe which drains into a manhole riser outside of the east berm. The purpose of this manhole is to provide a means for extracting the liquids from the pond if necessary and to monitor the depth.

Between the two liners, there is a 500 mm drainage layer of clean stone wrapped in non-woven geotextile. At the bottom of the drainage layer there is a series of perforated 200 mm DR11 HDPE collection pipes. These pipes are connected to a manhole riser on the east side of the pond (separate from the leachate collection manhole). These pipes provide a means to remove any accumulated liquids beneath the HDPE liner. On top of the clean stone and directly below the HDPE liner there is a network of gas venting pipes. These pipes are distributed throughout the pond floor and up the side slopes to vent stacks. These pipes provide a pathway for gases to escape to prevent accumulate under the liner.

The perimeter berm will be constructed of compacted clay liner (10^{-7} cm/s hydraulic conductivity) and will also be lined with 60 mil HDPE. The height of the berm will be 1.5 m above prairie elevation, bringing the top of the liner to an elevation of 240.4 m. The north berm will be topped with a granular layer and connected with the existing road network for the repository cells. Runoff from the north berm roadway area will be collected in a catch basin and piped to a drainage ditch east of the pond. The drainage ditch is controlled by a gated culvert to allow for containment as needed.

The leachate pond location will be constructed directly east of Miller's RC3 repository cell. Miller will repossess 100 m of the leased farmland to the south of the pond. The 100 m area will act as a buffer zone between the pond and the farmland south of the property.

The pond will have a maximum operating capacity of 26,000 m^3 with 1 m of freeboard. Based on data from previous years and the average expected rainfall for the region, the predicted annual leachate generation is estimated to be 15,000 m^3, however, the progressive capping of the active RC2 repository cell will decrease this number with time.

The past evaporation rates have ranged from 6,000 m^3/year to 9,000 m^3/year as the rate of evaporation will vary based on weather conditions. Leachate is also utilized as reagent for hazardous waste processing. The amount of leachate utilized for processing currently is estimated to be 5,000 m^3/year, but could increase in years to come with future processes.

For reference to Miller's original leachate pond submission dated June 15, 2021, refer to Appendix B – Miller Submission Letter - June 15, 2021. For reference to the provincial approval letter dated October 4, 2021, refer to Appendix A – Provincial Approval Letter - October 4, 2021.

If you have any questions, please feel free to contact me at 204-925-9604 or by email at daveh@millerenvironmental.mb.ca

Sincerely yours,
Miller Environmental Corporation

Dave Howes
Director of Regulatory Affairs

CC: Tyler Kneeshaw – Regional Supervisor, MB Environment and Climate Change
Paul Bauer – President, Miller Environmental Corporation
Yolo Ortiz – Operations Manager, Miller Environmental Corporation

Appendix A

Provincial Approval Letter - October 4, 2021

Manitoba
Conservation and Climate
Environmental Approvals Branch
1007 Century St
Winnipeg MB R3H 0W4
T 204-945-8321 F 204-945-5229
www.gov.mb.ca/sd

File No.: 3440.20

October 4, 2021

Dave Howes
Director of Regulatory Affairs
Miller Environmental Corporation
1803 Hekla Ave.
Winnipeg MB R3N 0T1
daveh@millerenvironmental.mb.ca

Dear Dave Howes:

Re: Miller Environmental Corporation - Notice of Alteration Approval to Construct a Leachate Pond – Dangerous Goods Handling and Transportation Act Licence No. 58 HW S2 RRRR

Thank you for your June 15, 2021 Notice of Alteration request, July 20, 2021 additional revised design plans and information, and September 8, 2021 additional information for an alteration to Dangerous Goods Handling and Transportation Act Licence No. 58 HW S2 RRRR, originally issued for the construction and continued operation of a central hazardous waste management facility located on portions of NE 2-3-1 EPM within the Rural Municipality of Montcalm. The intent of the request is to construct a new leachate pond.

Upon review of the request, I am satisfied that the identified changes in the environmental effects as would result from the proposed new leachate pond described in the June 15, 2021 Notice of Alteration, and additional information dated July 20, 2021 and September 8, 2021 would be insignificant. The request satisfies the requirements of Dangerous Goods Handling and Transportation Act Licence No. 58 S2 RRRR regarding construction of leachate collection system. Therefore, I hereby approve construction of the leachate pond in accordance with Schedule A of this Notice of Alteration Approval.

All clauses of Dangerous Goods Handling and Transportation Act Licence No. 58 HW S2 RRRR remain in effect.

Please be advised that this Notice of Alteration Approval is contingent on the acceptance of a revised Dangerous Goods handling and Transportation Act Licence that will be issued in the near future.

If you have any questions concerning this Notice of Alteration Approval, please contact Edwin Yazon, Environmental Engineer, Environmental Approvals Branch, at Edwin.Yazon@gov.mb.ca or 431-335-2554.

For questions relating to the ongoing administration of Dangerous Goods Handling and Transportation Act Licence No. 58 HW S2 RRRR, please contact Tyler Kneeshaw, Regional Supervisor, Environmental Compliance and Enforcement Branch, at Tyler.Kneeshaw@gov.mb.ca or 204-239-3608.

Sincerely,

_____

Laura Pyles, A/Director
The Dangerous Goods Handling and Transportation Act

c. Paul Bauer, Yolo Ortiz – Miller Environmental Corporation
Arman Vahedi – Crocus Environmental Inc.
Gaetan Fontaine – Community Liaison Committee
Harvey Miller, Ryan Hewitt - Manitoba Hazardous Waste Management Corporation
Kristal Harman, Yvonne Hawryliuk, Tyler Kneeshaw - Environmental Compliance and Enforcement
Asit Dey, Eshetu Beshada, Edwin Yazon - Environmental Approvals
Public Registry

Schedule A

SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS

Respecting Synthetic Liner

1. The Licensee shall construct the leachate pond as described in the July 20, 2021 revised design and identified in Schedule B of this Notice of Alteration Approval, unless otherwise approved by the Director of Environmental Approvals Branch.

2. The Licensee shall notify the assigned environment officer of the approvals branch, and the regional supervisor, not less than five (5) days and not more than ten(10) days before construction begins in accordance with the Waste Management Facilities Regulation, and future amendment thereto.

3. The Licensee shall construct the synthetic liner underlying the component in accordance with clauses 4 to 7 of this Notice of Alteration Approval.

4. The Licensee shall construct and maintain a continuous liner underlying the component of the leachate pond, such that:
   a) the liner is constructed from HDPE geomembrane;
   b) the liner has a minimum thickness of 60 mils;
   c) all sections of the liner are joined by dual track seaming;
   d) the liner is installed under the entire base and side wall or berm of the leachate pond;
   e) the liner is installed to a minimum elevation of 3.90 metres above the base of the cell;
   f) the liner is installed in accordance with ASAE Standard EP340.2 for the installation of Flexible Membrane Linings;
   g) non-destructive test methods are used to test the integrity of:
      i) all field seams joining liner sections in accordance with ASTM Standard D 5820-95 (Reapproved 2006); and
      ii) all other field seams in accordance with ASTM Standard D 4437-99;
   h) an installation report is prepared and submitted to the assigned environment officer of the approvals branch for approval within 30 days of commencing the installation of the liner. The installation report shall include a cover letter with a declaration that the liner is continuous underlying the cell. The installation report shall also include the test results, a discussion of the results, and a declaration that the liner was installed in accordance with the manufacturer's requirements;
   i) the floor of the liner is covered with sand or other granular cover material to a minimum depth of 0.3 metres measured perpendicular to the surface of the liner; and
5. the liner is secured to prevent lifting of the liner. The Licensee shall complete the installation of the synthetic liner on any component of the leachate pond in accordance with the manufacturer recommendations regarding temperature and environmental conditions.

6. The Licensee shall not cover the synthetic liner until receiving written approval of the assigned environment officer of the approvals branch of the report submitted pursuant to sub-clause 4g) of this Notice of Alteration Approval.

7. The Licensee shall not set the leachate pond into operation or allow the use of the leachate pond until the assigned environment officer of the approvals branch has issued written authorization.

Respecting Recirculation

8. The Licensee shall not recirculate leachate or contaminated water collected at the Development into the repository cells, unless approved by the Director of Environmental Compliance and Enforcement Branch.

Respecting Accidental Spill

9. The Licencee shall, in the case of physical or mechanical equipment breakdown or process upset where such breakdown or process upset results or may result in the release of a pollutant in an amount or concentration, or at a level or rate of release, that causes or may cause a significant adverse effect, immediately report the event by calling the 24-hour environmental accident reporting line at 204-944-4888 (toll-free 1-855-944-4888). The report shall indicate the nature of the event, the time and estimated duration of the event and the reason for the event.

Respecting Leachate Monitoring

10. The Licensee shall develop policies and procedures for leachate monitoring program that includes:
    a) measurement of the depth of leachate head in the cell;
    b) collection of representative samples in accordance with Schedules C and D of this Notice of Alteration Approval; and
    c) annual monitoring and analysis of leachate in accordance with Schedules C and D of this Notice of Alteration approval.

11. The Licensee shall include the results of the monitoring and analysis carried out pursuant to clause 10 of this Notice of Alteration Approval in the Annual Monitoring Report, including but not limited to the following:
    a) documentation to verify the appropriate certification of the laboratory used to perform the analyses;
    b) copies of the laboratory analytical results in accordance with clause 10 of this Notice of Alteration Approval;quality assurance and quality control data;
    c) the date(s), exact place, and time(s) of sampling measurements;
    d) summary of laboratory analytical results in accordance with clause 10 of this Notice of Alteration Approval; and
    e) discussion of the results of monitoring and analyses carried out pursuant to clause 10 of this Notice of Alteration Approval.

12. The Licensee shall maintain the leachate monitoring program during the lifespan, final closure, and post closure of the Development.

Respecting Atmospheric Emission of Leachate

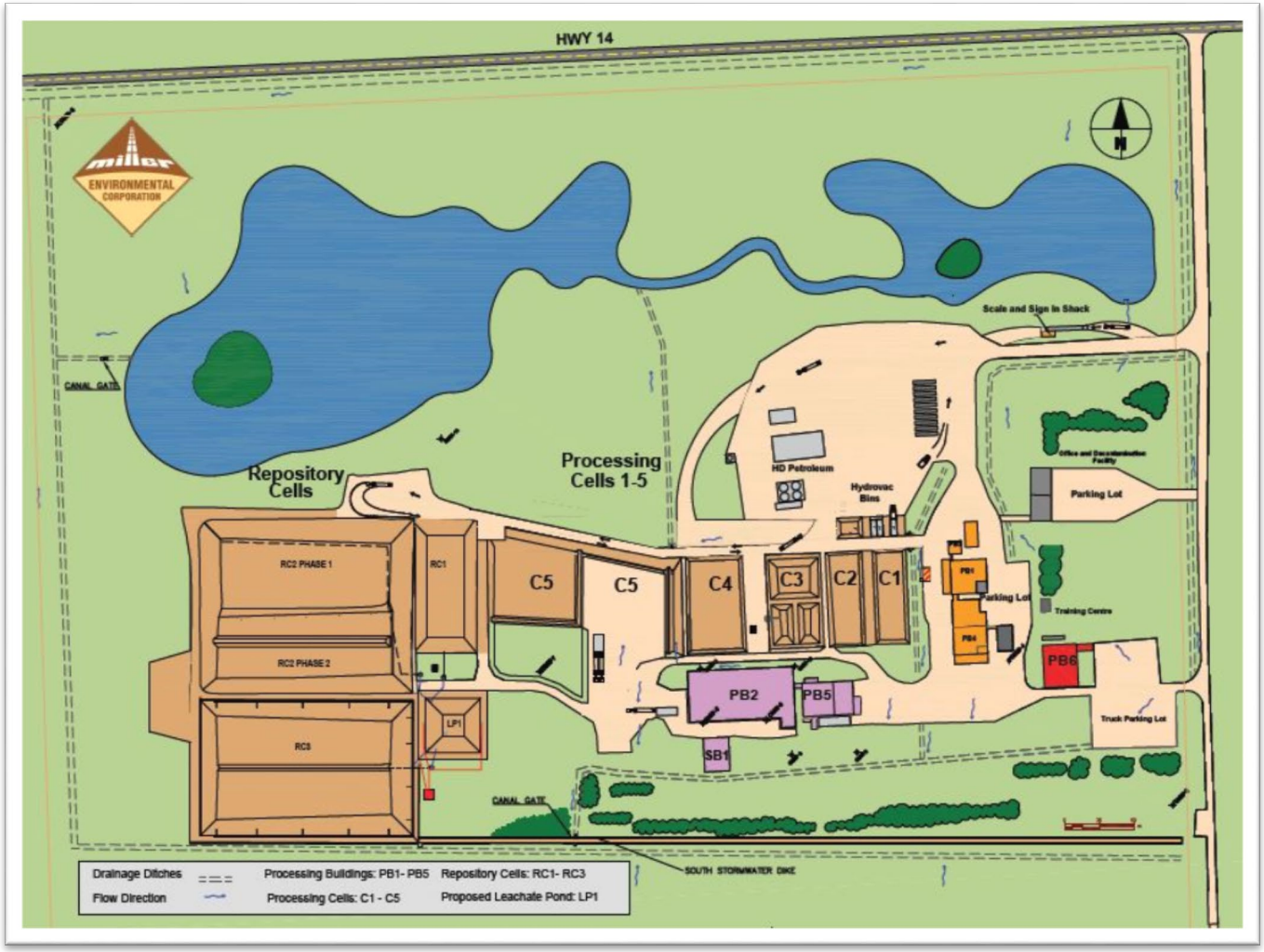
13. The Licensee shall, within six months from the date the leachate pond is in operation, submit and conduct an environmental and human health impact assessment of atmospheric emission of leachate acceptable to the Director. The assessment shall focus on the following, including but not limited to:
    a) direct and indirect exposure;
    b) pathway of exposure;
    c) bioaccumulation;
    d) soil accumulation;
    e) receptor sensitivity; and
    f) toxicity reference values.

14. The Licensee shall, upon review of the results of the assessment carried out pursuant to clause 13 conduct sampling and analysis of atmospheric emission from leachate at a frequency, parameters, and laboratory analytical methods specified by the Director of Environmental Compliance and Enforcement Branch.

General

15. In addition to any of the limits, terms or conditions specified in this Notice of Alteration Approval, The Licensee shall upon the request of the Director:
    a) sample, monitor, analyze and/or investigate specific areas of concern regarding any segment, component or aspect of contaminant storage, containment, repository cells, leachate pond, storage building, process building, containment pad, treatment, handling, disposal or emission systems, for such contaminants or ambient quality, aquatic toxicity, leachate characteristics and discharge or emission rates, for such duration and at such frequencies as may specified;
    b) determine the environmental impact associated with the release of any contaminant(s) from the facility;
    c) conduct specific investigations in response to the data gathered during environmental monitoring programs; and/or
    d) provide the Director, within such time as may be specified, with such reports, drawings, specifications, analytical data, descriptions of sampling and analytical procedures being used, bioassay data, flow rate measurements, and such other information as may form time to time requested.

Schedule B – Facility Layout



Schedule C

Monitoring and analysis requirements pursuant to clause 10 of Schedule A to October 01, 2021 Notice of Alteration Approval

1. Representative samples of leachate shall be collected from leachate pond

2. The sample of leachate shall be analyzed for the following parameters*:

a) pH
b) alkalinity
c) chloride
d) sulphate
e) sodium
f) potassium
g) COD
h) BOD
i) total organic carbon
j) total suspended solids
k) nitrate nitrogen
l) ammonia nitrogen
m) organic nitrogen
n) total phosphorus
o) ortho phosphate
p) total hardness
q) antimony
r) arsenic
s) barium
t) beryllium
u) bismuth
v) boron
w) cadmium
x) calcium
y) cesium
z) chromium
aa) copper
bb) total iron
cc) lead
dd) magnesium
ee) manganese
ff) mercury
gg) nickel
hh) potassium
ii) titanium
jj) zinc

*Analysis for heavy metals must be carried out in accordance with Schedule D of this Notice of Alteration Approval.

Schedule D

Analysis of metals pursuant to clause 10 of Schedule A of October 01, 2021 Notice of Alteration Approval

1. The laboratory performing these analysis shall:
   a) possess and maintain accreditation with the Canadian Association for Laboratories Inc. (CALA);
   b) operate a quality assurance program acceptable to the assigned Environment Officer;
   c) monitor the accuracy of the leachate and soil analyses fro each set of samples of leachate or soil through the use of a suitable reference material acceptable to the assigned Environment Officer; and
   d) analyze field duplicates of samples with acceptance criteria of ± 10 percent.

2. A copy of the analytical procedures and the analytical results for associated reference materials used in the laboratory, and any other controls used in the analysis, shall be submitted with the field sample results.

3. If the analytical results of any associated materials do not meet the following criteria, the leachate must re-analyzed:

a)	Arsenic	± 35 percent from the reference value
b)	Cadmium	± 25 percent from the reference value (for values above 1 microgram/gram)
c)	Cadmium	± 35 percent from the reference value (for values below 1 microgram/gram)
d)	Chromium	± 25 percent from the reference value
e)	Copper	± 25 percent from the reference value
f)	Lead	± 25 percent from the reference value
g)	Mercury	± 25 percent from the reference value
h)	Nickel	± 25 percent from the reference value
i)	Zinc	± 25 percent from the reference value

Appendix B

Miller Submission Letter - June 15, 2021

Miller Environmental Corporation
1803 Hekla Avenue
Winnipeg, Manitoba R2R 0K3
Tel. (204) 925-9600 Fax (204) 925-9601

Committed to Leadership in Our Industry

June 15, 2021

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

Attention: Laura Pyles, Director (Acting), Environmental Approvals Branch

Dear Ms. Pyles:

RE: Dangerous Goods Handling and Transportation Act Licence 58 HW S2 RRRR

Please accept this as Miller Environmental Corporation's (Miller) notification for the installation of a new leachate pond as regulated under the issued Dangerous Goods Handling & Transportation Act License No. 58 HW S2 RRRR.

Miller has been working with Crocus Environmental Inc. to provide the engineered drawings and construction details to support the leachate pond installation. For leachate pond details, please refer to Appendix A – Leachate Pond Stamped Construction Drawings. The new leachate pond will be located on the east side of repository cell 3 (RC3). The 60 m x 58 m bermed pond will be lined with a 60 mil HDPE liner with a 2 m below grade depth. Leachate discharge lines will run from existing berm separated leachate containment area within the repository cells (RC1, RC2, and RC3) to the leachate pond. Discharge lines will allow for circulation and evaporation of leachate by controlled distribution onto the segregated black 60 mil HDPE liner. This will allow for maximum evaporation as well as reduce the accumulation of precipitation with leachate, thereby reducing overall leachate volumes. This is intended as an enhancement and addition to the current leachate management plan allowing for application of leachate to the operating areas of the repository for dust control.

For details of the location of the leachate pond, refer to Appendix B – Leachate Pond Location Details.

The leachate pond will be covered with a LLDPE liner (details as per engineered drawings). A negative air pressure system will be installed to secure the cover, prevent odour release and separate precipitation from leachate.

If you have any questions, please feel free to contact me at 204-925-9604 or by email at daveh@millerenvironmental.mb.ca

Sincerely yours,
Miller Environmental Corporation

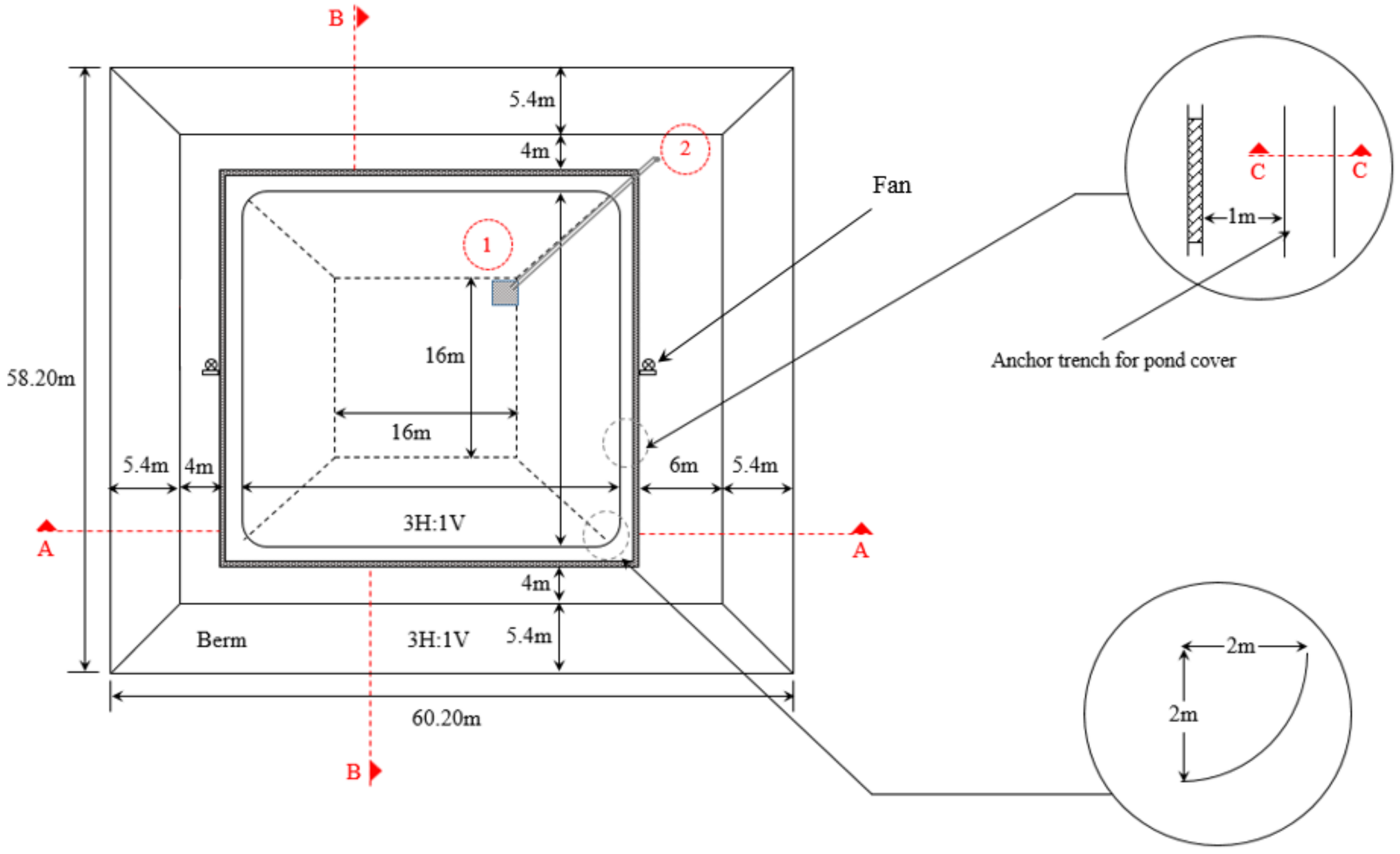
[redacted]

Dave Howes
Director of Regulatory Affairs

CC: Tyler Kneeshaw – Regional Supervisor, Manitoba Conservation and Climate
Paul Bauer – Vice President & General Manager, Miller Environmental Corporation
Yolo Ortiz – Operations Manager, Miller Environmental Corporation

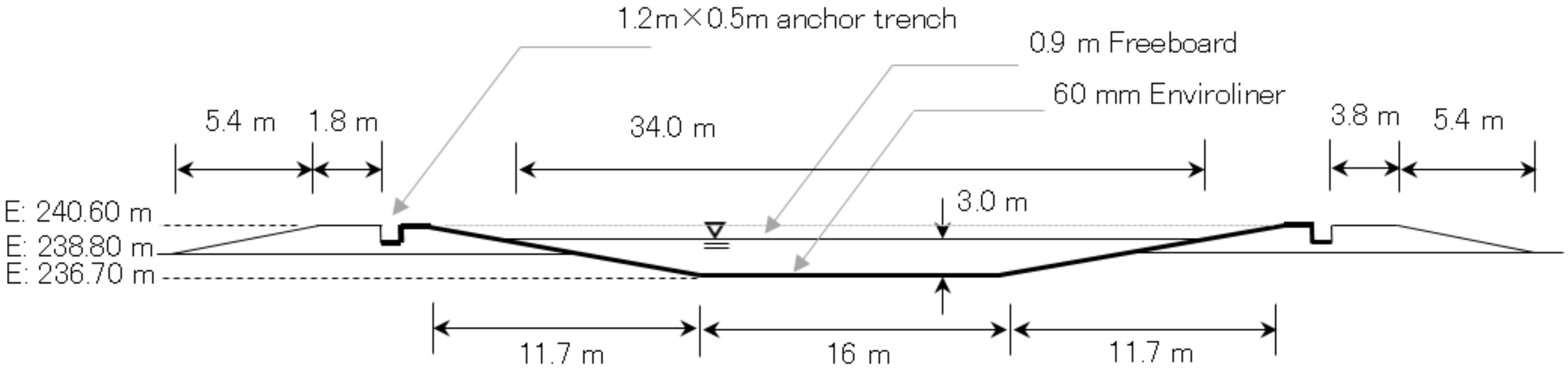
Appendix A

Leachate Pond Stamped Construction Drawings



Date: 5/12/2021 Project Number: 21-001	Crocus Environmental Inc. ENGINEERS GEOSCIENTISTS MANITOBA Certificate of Authorization 10071127 Manitoba Ltd. No. 7428 [redacted]		Client: Miller Environmental Corporation	Project Portion: Covered Pond Top View	Page: 1/7
			Project: Negative Air Covered Hazardous Pond	Scale: NTS	

A – A

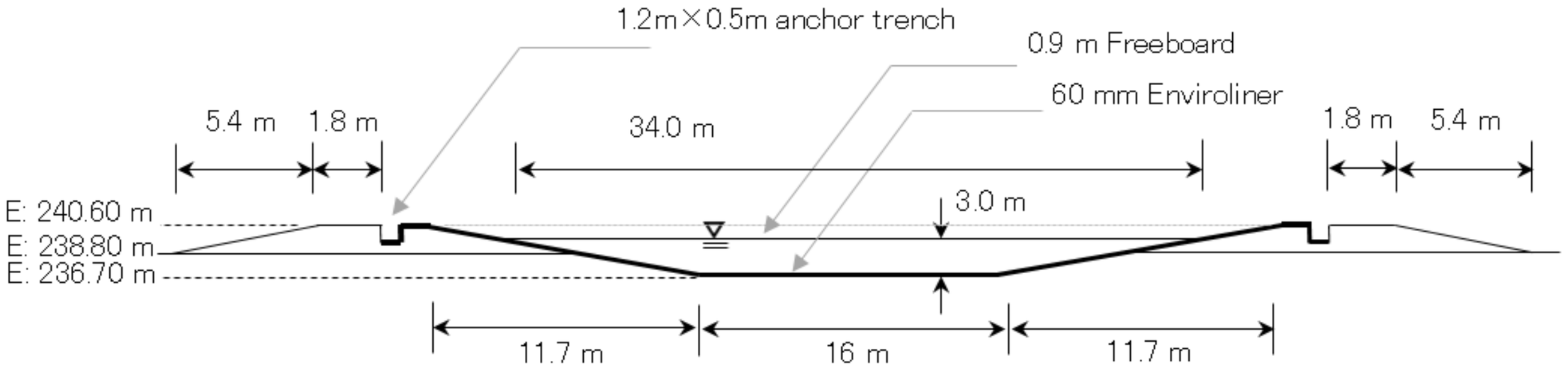


Notes:

1. Slopes are 3:1
2. Elevations are based on the information that we received for the original location. New survey data is required for new accurate elevation.

Date: 5/12/2021 Project Number: 21-001	Crocus Environmental Inc. ENGINEERS GEOSCIENTISTS MANITOBA Certificate of Authorization 10071127 Manitoba Ltd. No. 7428 [redacted]		Client: Miller Environmental Corporation	Project Portion: Covered Pond Side View A	Page: 2/7
			Project: Negative Air Covered Hazardous Pond	Scale: NTS	

B – B



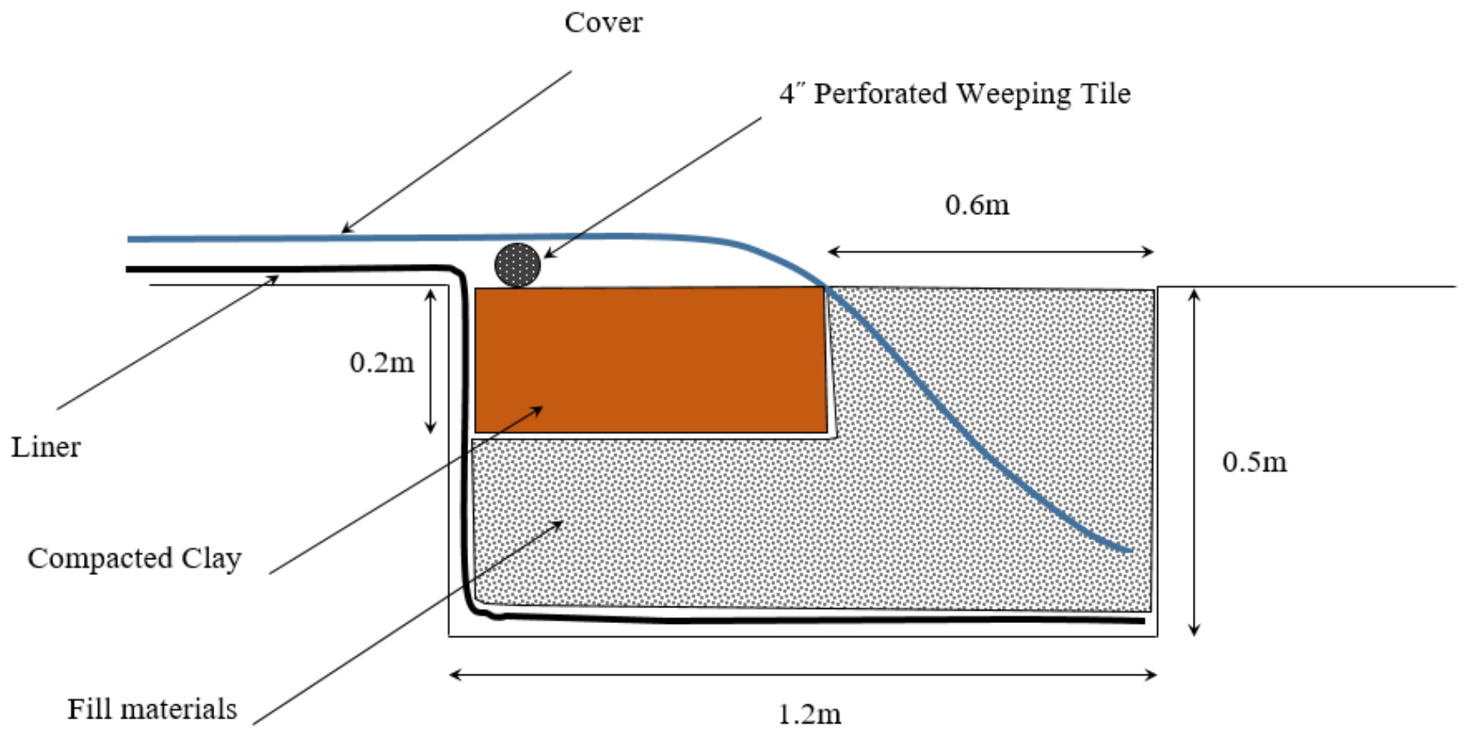
Notes:

1. Slopes are 3:1

Date: 5/12/2021 Project Number: 21-001	Crocus Environmental Inc. ENGINEERS GEOSCIENTISTS MANITOBA Certificate of Authorization 10071127 Manitoba Ltd. No. 7428 [redacted]		Client: Miller Environmental Corporation	Project Portion: Covered Pond Side View B	Page: 3/7
			Project: Negative Air Covered Hazardous Pond	Scale: NTS	

C – C (I)

Details of the anchor trench



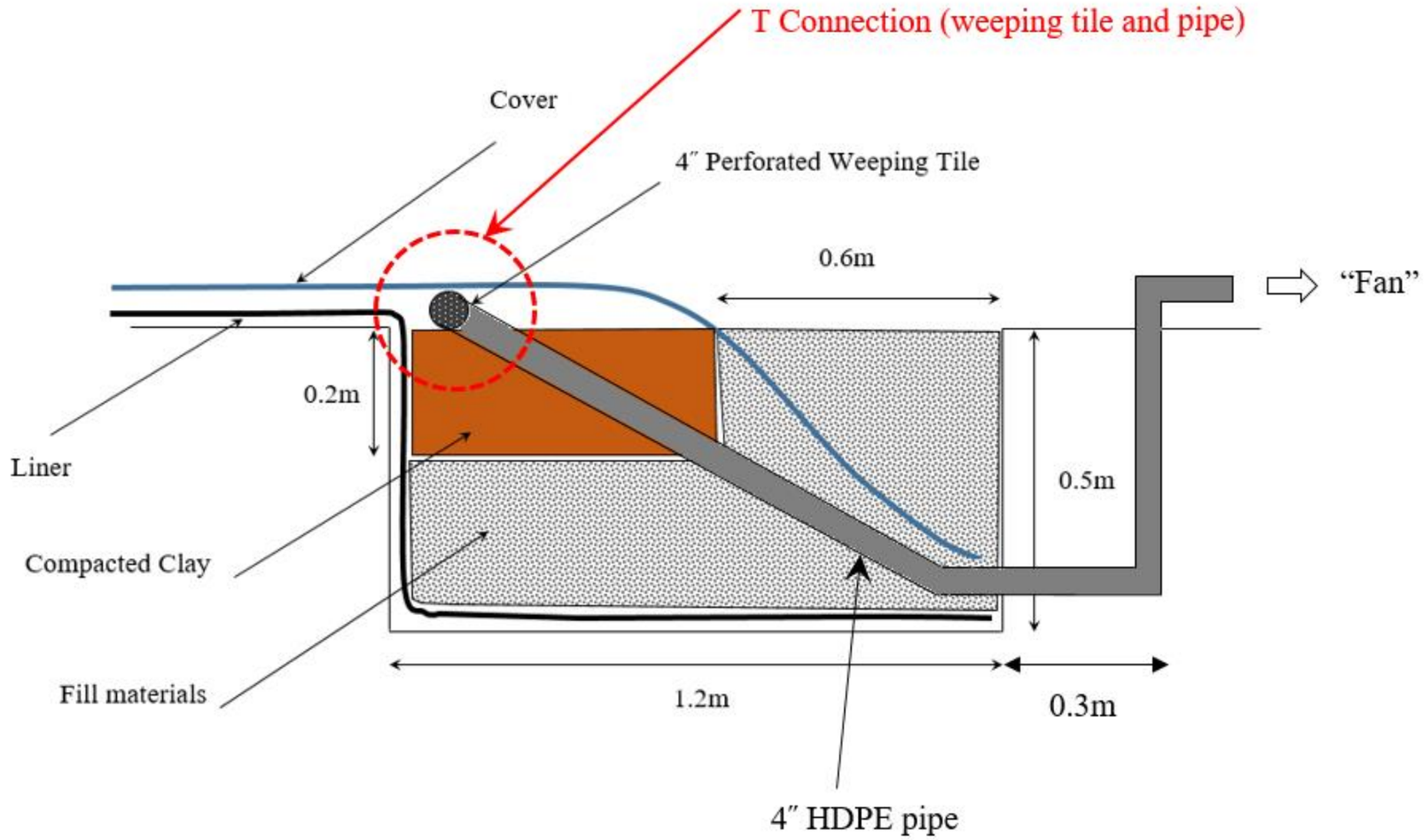
Note:

1. On one side sand bags can be used instead of fill material to allow easy opening of the pond cover.

Date: 5/12/2021 Project Number: 21-001	Crocus Environmental Inc. ENGINEERS GEOSCIENTISTS MANITOBA Certificate of Authorization 10071127 Manitoba Ltd. No. 7428 [redacted]		Client: Miller Environmental Corporation	Project Portion: Cover and Liner Anchor Trench Details	Page: 4/7
			Project: Negative Air Covered Hazardous Pond	Scale: NTS	

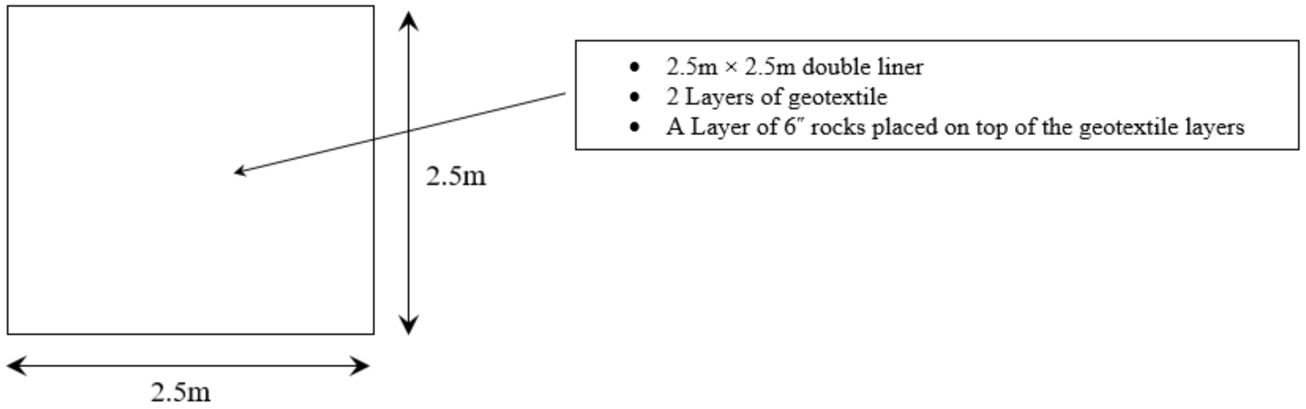
C – C (II)

Details of the weeping tile and connection to the fans



Date: 5/12/2021 Project Number: 21-001	Crocus Environmental Inc. ENGINEERS GEOSCIENTISTS MANITOBA Certificate of Authorization 10071127 Manitoba Ltd. No. 7428 [redacted]		Client: Miller Environmental Corporation	Project Portion: Details of Weeping Tile and Fan Connection	Page: 5/7
			Project: Negative Air Covered Hazardous Pond	Scale: NTS	

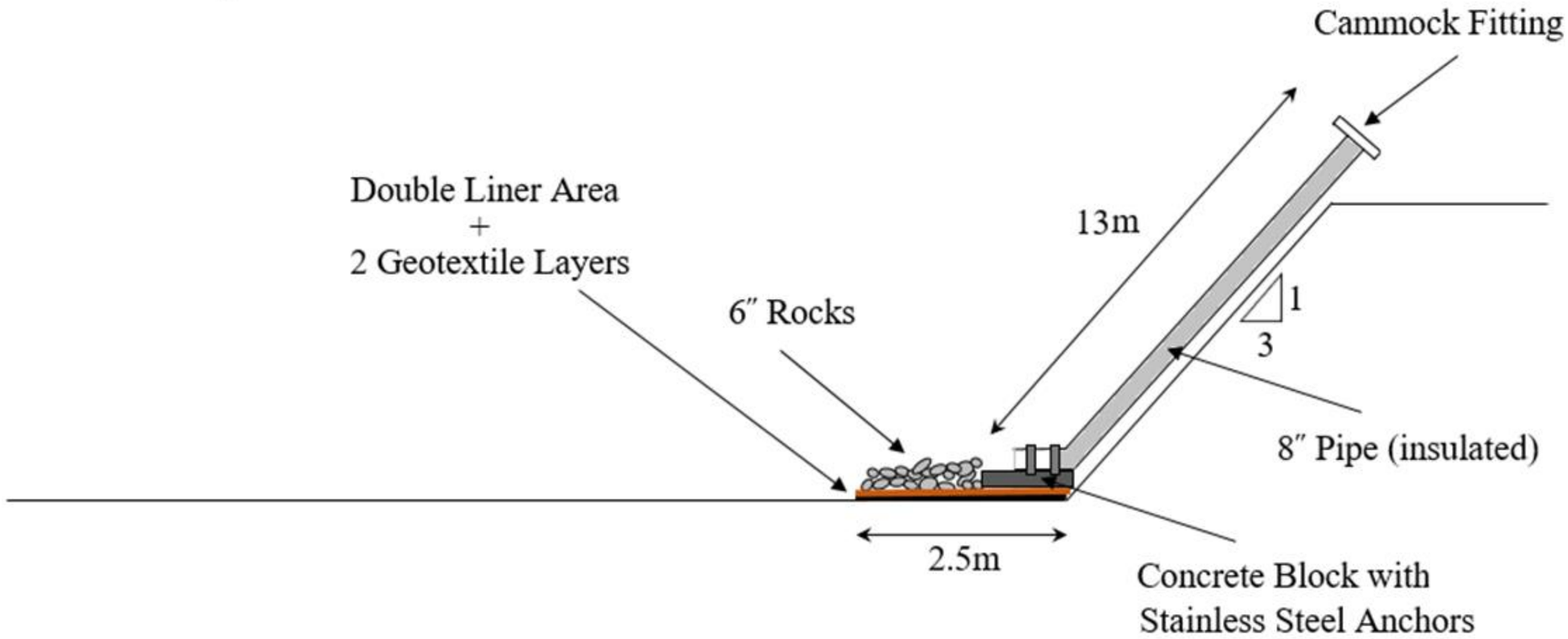
1 – Pad for discharge pipe



- 2.5m × 2.5m double liner
- 2 Layers of geotextile
- A Layer of 6″ rocks placed on top of the geotextile layers

Date: 5/12/2021 Project Number: 21-001	Crocus Environmental Inc. ENGINEERS GEOSCIENTISTS MANITOBA Certificate of Authorization 10071127 Manitoba Ltd. No. 7428 [redacted]		Client: Miller Environmental Corporation	Project Portion: Double Liner Pad for the Discharge Pipe	Page: 6/7
			Project: Negative Air Covered Hazardous Pond	Scale: NTS	

2 – Discharge and intake pipe



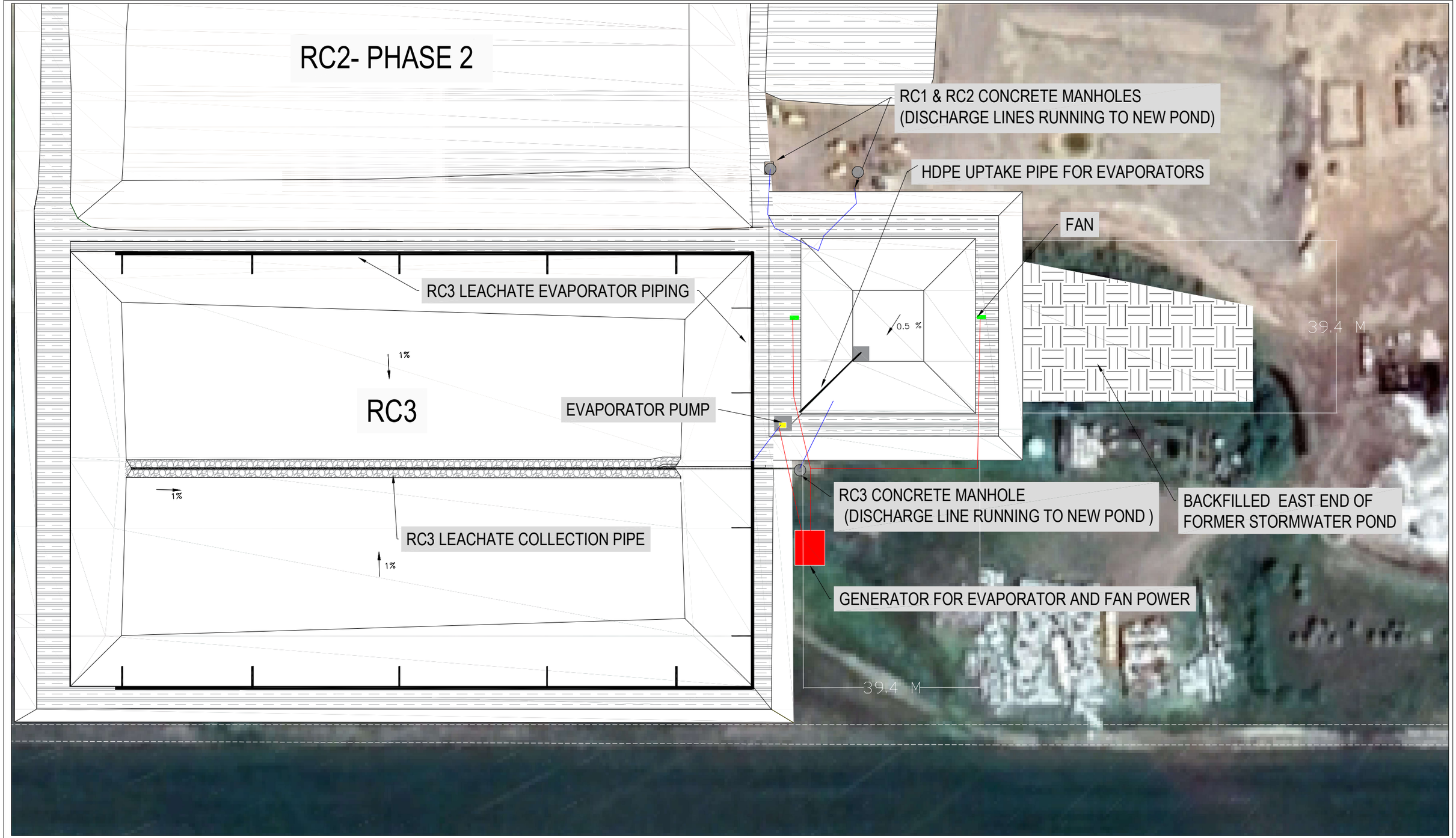
Notes:

1. The concrete anchor and blocks can be also done on the slope.

Date: 5/12/2021 Project Number: 21-001	Crocus Environmental Inc. ENGINEERS GEOSCIENTISTS MANITOBA Certificate of Authorization 10071127 Manitoba Ltd. No. 7428 [redacted]		Client: Miller Environmental Corporation	Project Portion: Details of the Discharge Pipe	Page: 7/7
			Project: Negative Air Covered Hazardous Pond	Scale: NTS	

Appendix B

Leachate Pond Location Details



1 SITE PLAN
Scale: NTS

REV. NO.	DESCRIPTION TO REVISION	REV. BY	DATE
0	ISSUED FOR CONSTRUCTION		

CUSTOMER: MILLER ENVIRONMENTAL CORPORATION

PROJECT: NEGATIVE AIR COVERED LEACHATE POND

MEC HAZARDOUS WASTE FACILITY, ST JEAN BAPTISTE

PROJECT PORTION: PLAN MAP VIEW

LP 1.0

CHECKED PROPOSAL	APPROVED PROPOSAL	CLIENT APPROVED	ENGINEER APPROVED

DRAWN BY:	SCALE: A1	REFERENCE TO:	DRG No.	REV.
CB	AS NOTED		1 of 8	0