

From: [Adria Snowdon](#)
To: [Arie and Willemiek Muilwijk](#)
Subject: RE: lagoon design
Date: December 23, 2019 9:32:00 AM
Attachments: [image001.png](#)

Thank you for this information Arie!

From: Arie and Willemiek Muilwijk [mailto:[\[REDACTED\]](#)]
Sent: December-23-19 9:31 AM
To: Adria Snowdon <Adria.Snowdon@nrcb.ca>
Subject: Fwd: lagoon design

Hello Adria

Attached is a letter from Trevor French who hopes to be the one to install the liner and the leakage monitor system when the time comes. He writes how he would install the monitor system, and hopes that the way he thinks will work best, will work for you too. This way we're on the same page.

Thanks

Arie

Sent from Sonim XP7

----- Forwarded message -----

From: Trevor French <info@thecontainmentanswer.com>
Date: Dec 23, 2019 8:33 AM
Subject: lagoon design
To: [\[REDACTED\]](#)
Cc:

Hi Arie,

Attached is the letter I had promised. I didn't go into great detail but the general idea is there. Let me know how you make out with the NRCB.

I also attached a spec sheet on the liner material.

Thanks and Merry Christmas.

--

Trevor French
General Manager



THE CONTAINMENT ANSWER
Secondary Containment Specialists

Phone: (403) 223-1113
Cell: (403) 634-4757
Toll Free: 1-866-822-7771

www.thecontainmentanswer.com

Dec. 23, 19

Arie Muilwijk

Fort Macleod, Ab.

Tel: (403 308-2449)

To Whom it May Concern

Re: Runoff Lagoon Liner

After discussion with Arie regarding a leak detection system within the runoff lagoon we would like to propose the following. We will install a 4" drain tile running east and west through the middle of the lagoon. Outside the east bank we will bring a riser to surface for monitoring the ground water below the lagoon. The liner within the lagoon with a 60mil HDPE product and upon installation a complete as-built and QC report will be provided.

Please let us know if you have any questions or concerns with this proposal.

Best regards,

Trevor French

403-634-4757



Geomembrane [HDPE 60 Textured (SS) Black]

Our HDPE 60 geomembranes are designed in accordance with the Geomembrane Research Institute GM 13 standard. It is manufactured to meet the properties of GRI GM13 and has been extensively used in a variety of containment applications. HDPE geomembranes have low permeability, good ultra violet resistance properties and excellent chemical resistance. HDPE 60 is a field assembled lining material that must be installed by trained installers. HDPE is used in a multitude of applications as a landfill liner, pond linings, and water containment projects.

Property	ASTM	HDPE 60 Textured ¹ Black Single Sided(SS)
Thickness nom. (min.avg)	D5199	60 mil (57 mil) 1.5 mm (1.45 mm)
Thickness	D5199 Lowest Individual for 8 out of 10 values Lowest individual for any of the 10 values	54 mil/1.4 mm 51 mil/1.3 mm
Asperity Height (min.ave)	D 7466	16 mil 0.4 mm
Sheet Density (minimum)	D792	≥0.940 g/cc
Dimensional Stability	D 1204	±2%
Tensile Properties (min. avg) ASTM D 638; Modified Type IV Die Gage length break: 2" (50 mm) Gage length yield: 1.3" (33 mm)	Tensile Strength @ Break Tensile Strength @ Yield Tensile Elongation @ Break Tensile Elongation @ Yield	90 ppi 16 kN/m 126 ppi 22 kN/m 100% 12%
Tear Resistance (min. avg)	D1004	42 lbs 187 N
Puncture Resistance (min. avg)	D4833	90 lbs 400 N
High Pressure Oxidative Induction Time (HPOIT)	D5885	400 mins
Stress Cracking	D5397	500 hrs
Carbon Black Content ¹	D1603	2.0-3.0 %
Carbon Black Dispersion ²	D5596	CAT 1 or 2
Oven Aging 85° C, HPOIT retained after 90 days	D5721 D D5885	80%
UV Resistance- % HPOIT retained after 1600 hrs	D7238 D5885	50%
Typical Roll Dimensions (Rolls dimensions may vary ± 1%)		
Roll Width	-	22.5 feet 6.86 mtrs
Roll Length	-	560 feet 170.7 mtrs

¹This product is designed and manufactured to meet the GRI GM13 specification

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