



February 24, 2022

Ms. Jodi MacArthur, Treasurer
Township of Huron-Kinloss
P.O. Box 130
21 Queen Street
Ripley, ON
N0G 2R0

Attention: Ms. Jodi MacArthur, Treasurer

Dear Ms. MacArthur:

Subject: Landfill Closure and Post-Closure Cost Estimates, Huron and Kinloss Landfills - 2022

We are pleased to present the updated landfill closure and post-closure cost estimates for the Huron and Kinloss Landfills. Please refer to enclosed tables.

Our cost estimates are based on several assumptions, which are similar to those presented in previous years, although some minor changes are noted below. These assumptions are summarized for each site as follows:

Huron Landfill

1. The remaining volume estimate accounts for 11,846 m³ of fill beyond approved limits (FBAL) in the southeast corner of the site. To mitigate this, the remaining landfill capacity was reduced by the FBAL volume. The site capacity remaining as of December 2019 was estimated to be 91,810 m³ and was included in the Amended Environmental Compliance Approval dated April 16, 2020. The site capacity remaining as of December 2020 based on the 2021 annual monitoring report was estimated to be 80,303 m³. The estimated landfill closure date is August 2029 (previously 2030) based on the remaining airspace of 80,303 m³ and annual airspace usage of $\pm 9,000$ m³/year. To simplify the landfill closure and post closure calculations, site closure at the end of 2030 was assumed.
2. Final cover application costs assume closing the 1.5 ha area using imported final cover material and topsoil.
3. The post-closure period was assumed to be 20 years and may be extended if warranted by annual monitoring results.
4. Perimeter fencing will be replaced once during the post-closure period.
5. Cut/Fill contours are shown in the attached figure CF-1.

Kinloss Landfill

1. The landfill will reopen in 2030 once the Huron Landfill is filled to capacity. The site will service the entire Township of Huron-Kinloss, including Lucknow. The estimated site closure date is 2045 and closure activities will commence in the same year. The remaining site capacity is approximately 137,000 m³ while the remaining site life is calculated as 15.2 years. This assumes an annual airspace utilization of 9,000 m³. (137,000/9,000).
2. Final cover application costs are based on closing the 0.75 ha area using imported Final cover material and topsoil.
3. The post-closure period is assumed to be 20 years, i.e. the same as for the Huron Landfill. The period may be extended if warranted by annual monitoring results.
4. Perimeter fencing will be replaced once during the post-closure period.

The 2022 present value of landfill closure and post closure costs was calculated at \$669,895 for the Huron Landfill and \$490,390 for the Kinloss Landfill. As a comparison, the 2020 present value of landfill closure and post closure costs of the Huron site was calculated to be \$662,710. For the Kinloss site, the 2020 closure and post closure costs were calculated as \$457,614.

Statistics Canada's average Ontario Non Residential Building Construction Price Index for Toronto and Ottawa increased 13.58% from 2020 to 2022. Accordingly, the 2020 prices for all post closure items were increased by 13.58% to determine 2022 prices. The present value was calculated using a discount rate of 1.13%, representing the difference between interest/discount rate and inflation.

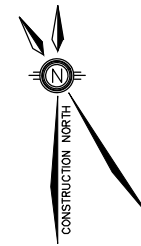
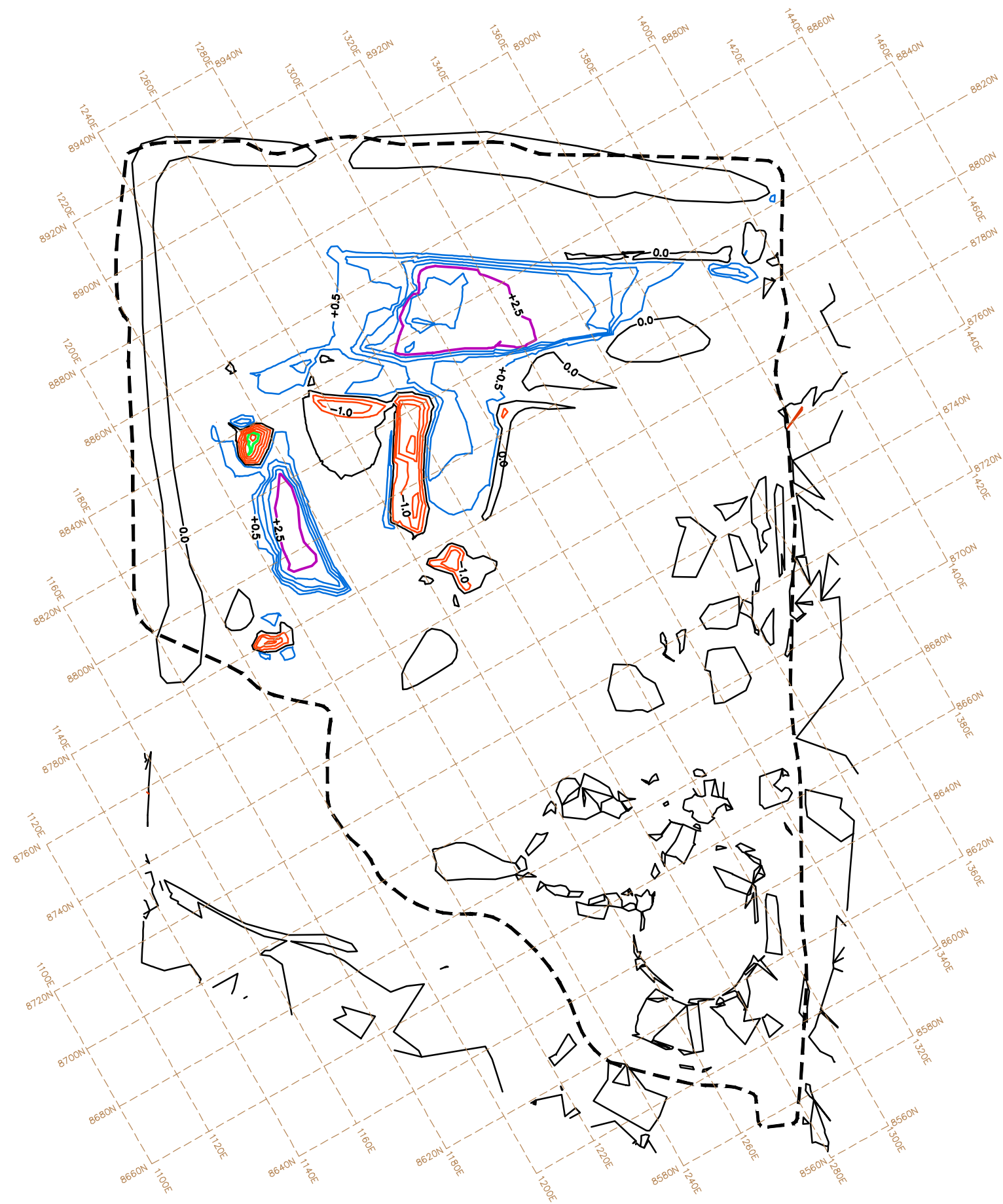
The 10-year annual average Ontario Non-Residential Building Construction Price Index for Toronto and Ottawa was determined to be 2.16%.

The 10 year annual average of Long-Term Government of Canada 30-year Bond Yield was determined to be 3.29%.


Please feel free to contact me with any questions or comments that you may have with respect to this letter. I can be reached at (289) 678-0326.



Paul Mulholland, P.Eng., PMP
Team Lead, Waste/Landfill Engineering



LEGEND :

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NOTES:

1. TOPOGRAPHICAL INFORMATION DERIVED FROM SURVEY COMPLETED BY SMC GEOMATICS IN DECEMBER 7, 2018 AND HISTORIC SURVEY INFORMATION OBTAINED BY WSP.
2. GRID AS SHOWN ON THIS PLAN IS BASED ON UTM COORDINATES. ADD 4,870,000 TO NORTHING AND 450,000 TO EASTING TO ESTABLISH PROPER COORDINATES.

SCALE : 1:1500



<h1 style="text-align: center;">HURON LANDFILL</h1> <h2 style="text-align: center;">2021 TO 2022</h2> <h3 style="text-align: center;">CUT/FILL CONTOURS</h3> <div style="text-align: center;">  </div> <p style="text-align: center;">4 HUGHSON STREET SOUTH, SUITE 300 HAMILTON (ONTARIO) CANADA L8N 3Z1 TEL.: 905-529-4414 FAX: 905-521-2699 WWW.WSP.COM</p>	DESIGN P M
	DRAWN T C G
	APPROVED P M
	DATE FEB 15/22
	SCALE AS SHOWN
	FILE No. 101-16942-00
	FIG. No. CF-1

HURON LANDFILL (2022)
CLOSURE AND POST CLOSURE COST ESTIMATE

ITEM	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	SUB-TOTAL
A Closure Costs																					
Final cover	303,795																				303,795
Removal of structures	14,398																				14,398
Closure plan	14,398																				14,398
B Maintenance																					
Cap and topsoil repairs as required		4,896	4,896	2,449		2,449		2,449			1,224			1,224			1,224			1,224	22,035
Fence and signage repairs		577		577		577		577		577		577		577		577		577		577	5,772
Stormwater system maintenance	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441	28,824
Road maintenance	1,720				1,720					1,720					1,720					1,720	8,599
C Site Inspections																					
1 per annum	864	864	864	864	864	864	864	864	864	864	864	864	864	864	864	864	864	864	864	864	17,279
D Replacements:																					
Fencing																				57,616	57,616
Monitoring wells										17,566										17,566	35,132
E Monitoring																					
Environmental Monitoring and Reporting	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	11,172	223,435
Laboratory Fees	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	2,624	52,481
2022 Equivalent Total	350,411	21,574	20,997	19,127	17,821	19,127	16,101	19,127	16,101	35,964	17,325	16,678	16,101	17,902	17,821	16,678	17,325	16,678	16,101	94,805	783,764
NET PRESENT VALUE - 2022	320,286	19,499	18,765	16,903	15,573	16,527	13,757	16,160	13,452	29,710	14,153	13,472	12,860	14,139	13,918	12,880	13,230	12,594	12,022	69,995	669,895

NOTE: 1. Present value is 2022 cost discounted 1.13% per year for difference between interest and inflation.
2. Inflation 2.16% - 10 year average based on Non Residential Building Construction Price Index.
3. Interest 3.29% - 10 year average Long Term Government of Canada Bond Yield.
4. Cost of contingency measures not included.
5. Cost increase from 2020 to 2022 = 13.58%

KINLOSS LANDFILL (2022)
 CLOSURE AND POST CLOSURE COST ESTIMATE

ITEM	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	SUB-TOTAL
A Closure Costs																					
- Final cover	151,896																				151,896
- Removal of structures	4,320																				4,320
- Closure plan	11,519																				11,519
B Maintenance																					
- Cap and topsoil repairs as required		2,449	2,449	1,224		1,224		1,224			613			613			613			613	11,021
- Fence and signage repairs		288		288		288		288		288		288		288		288		288		288	2,880
- Stormwater system maintenance	721	721	721	721	721	721	721	721	721	721	721	721	721	721	721	721	721	721	721	721	14,412
- Road maintenance	1,720				1,720					1,720					1,720					1,720	8,599
C Site Inspections																					
- 1 per annum	864	864	864	864	864	864	864	864	864	864	864	864	864	864	864	864	864	864	864	864	17,280
D Replacements:																					
- Fencing																				23,037	23,037
- Monitoring wells										10,078										10,078	20,156
E Monitoring																					
- Environmental Monitoring and Reporting	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	11,681	233,628
- Laboratory Fees	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	3,218	64,357
2022 Equivalent Total	185,939	19,221	18,933	17,996	18,204	17,996	16,484	17,996	16,484	28,569	17,097	16,772	16,484	17,385	18,204	16,772	17,097	16,772	16,484	52,219	563,105
NET PRESENT VALUE - 2022	143,592	18,103	17,787	16,865	17,017	16,781	15,332	16,697	15,256	26,376	15,744	15,407	15,104	15,890	16,597	15,254	15,510	15,178	14,880	47,020	490,390

NOTE: 1. Present value is 2022 cost discounted 1.13% per year for difference between interest and inflation.
 2. Inflation 2.16% - 10 year average based on Non Residential Building Construction Price Index.
 3. Interest 3.29% - 10 year average Long Term Government of Canada Bond Yield.
 4. Cost of contingency measures not included.
 5. Cost increase from 2020 to 2022 = 13.58%