Canada Grassland Protocol
Version 1.0
ERRATA AND CLARIFICATIONS

The Climate Action Reserve (Reserve) published its Canada Grassland Protocol Version 1.0 (CGP V1.0) on October 16, 2019. While the Reserve intends for the CGP V1.0 to be a complete, transparent document, it recognizes that correction of errors and clarifications will be necessary as the protocol is implemented and issues are identified. This document is an official record of all errata and clarifications applicable to the CGP V1.0.[1]

Per the Reserve Offset Program Manual, both errata and clarifications are considered effective on the date they are first posted on the Reserve website. The effective date of each erratum or clarification is clearly designated below. All listed and registered Canada Grassland projects must incorporate and adhere to these errata and clarifications when they undergo verification. The Reserve will incorporate both errata and clarifications into future versions of the protocol.

All project developers and verification bodies must refer to this document to ensure that the most current guidance is adhered to in project design and verification. Verification bodies shall refer to this document immediately prior to uploading any Verification Statement to assure all issues are properly addressed and incorporated into verification activities.

If you have any questions about the updates or clarifications in this document, please contact Policy at policy@climateactionreserve.org or (213) 891-1444 x3.

[1] See Section 4.3.4 of the Reserve Offset Program Manual for an explanation of the Reserve's policies on protocol errata and clarifications. "Errata" are issued to correct typographical errors. "Clarifications" are issued to ensure consistent interpretation and application of the protocol. For document management and program implementation purposes, both errata and clarifications are contained in this single document.

Errata and Clarifications (arranged by protocol section)

Section 3

Section 5

Section 6

Appendix B

Section 3

1. Performance Standard Test – Option 2 to Assess the Financial Pressure to Convert Grassland (CLARIFICATION – February 14, 2022)

Section: 3.3.1.1 Financial Threshold

Context: The protocol requires that the financial pressure to convert from grassland to cropland be assessed by a Certified Real Estate Appraisal. The Reserve has received feedback that Certified Real Estate Appraisals can only be made when the highest and best use is cropland. There is a gap in options to assess land value for projects where the land could be converted to cropland but the best use of the land is not cropland. A second approach to estimate the financial threshold has been added to the protocol to cover that gap. Instead of using a certified land appraisal, project owners may use a land value assessment endorsed by a certified land appraiser.

Correction: The new applicable text for Section 3.3.1.1 is the following:

There is a financial barrier to project activities due to the economic incentives to convert grassland to cropland in specific regions for high quality soil. This protocol will use a threshold for financial additionality, referred to as the cropland premium. The cropland premium (CP) is determined as the percentage difference in the net present value of cropland over grassland for the project area. Depending on the resulting cropland premium value, the project must include a discount (DF_{conv}) of baseline emissions. Project eligibility is based on the cropland premium, based on the conditions below:

1. Projects with a cropland premium greater than 100% are eligible without any discount for uncertainty;
2. Projects with a cropland premium greater than 40% but less than 100% are eligible, but must apply a discount to their baseline emissions (see Section 5.2.4 for a description of DF_{conv});
3. Projects with a cropland premium less than 40% are not eligible.

Projects have two options to identify the financial pressure to convert from grassland to cropland. The first option is a certified real estate appraisal and is expected to be used when the best and highest land value is cropland. Option two is an appraiser endorsed land value assessment.

3.3.1.1.1. Option 1 – Real Estate Appraisal

The certified real estate appraisal must show:

1. *The project area is suitable for conversion to cropland*. The appraisal must clearly indicate how the physical characteristics of the project area are suitable for crop cultivation, including the particular crops expected to be grown.
2. *The appraisal must conform with the following minimum standards*[2]:
    a. Appraisal reports shall include a description of the subject property and any market data relied upon, including the relationship between the location of the

[2] Adapted from Sections 5096.501 and 5096.517, Public Resources Code, State of California.

subject property and the market data. The appraisal must specify and quantify the areas of the project area that are suitable for crop production. (For example, an appraisal that identified corn production as an alternative land use must specify the approximate acres suitable for both the crops and any related roads, buildings, or other infrastructure.)

b. Appraisal reports shall include a complete description of the subject property land, site characteristics and improvements. Valuations based on a property's cropland potential shall include:
    i. A description of what would be required for a conversion to cropland to proceed (e.g., legal entitlements, infrastructure).
    ii. Presentation of evidence that sufficient demand exists, or is likely to exist in the future, to provide market support for the conversion to cropland.
    iii. The appraisal must also provide:
        1. Evidence of soil suitability for the type of expected agricultural land use.
        2. Evidence of water availability for the type of expected agricultural land use.
        3. Evidence of no limitations to crop production due to slope or other physical characteristics of the land.
c. Appraisal reports shall include a statement by the appraiser indicating to what extent land title conditions were investigated and considered in the analysis and value conclusion.
d. Appraisal reports shall include a discussion of implied dedication, prescriptive rights or other unrecorded rights that may affect value, indicating the extent of investigation, knowledge, or observation of conditions that might indicate evidence of public use.
e. Appraisal reports shall include a separate valuation for ongoing grassland management. The valuation must identify and incorporate all legal constraints that could affect the valuation of the ongoing grassland management.

3. *The cropland land use for the project area has a higher market value than maintaining the project area for sustainable grassland management, such that it meets the financial additionality threshold.* The appraisal for the property must provide an estimated fair market value for the rental rate (in CAD$ per acre per month) for the current grassland use condition of the project area (considering the land to be encumbered and thus unable to be converted to cropland) and an estimated fair market value of the rental rate for the anticipated use the project area as cropland. The appraisal must identify whether or not irrigation is considered in the valuation (or, alternatively, may provide estimations both with and without irrigation). The difference between the rental rate for cropland and the rental rate for grassland, divided by the rental rate for grassland, is the cropland premium for the project area. Eligibility is then determined according to the thresholds as outlined in the beginning of Section 3.3.1.1.

Appraisals submitted and favorably reviewed by an expert panel for EcoGift program participation which include a cropland appraisal shall be deemed sufficient to meet the requirements of this option.

3.3.1.1.2 Option 2 – Land Value Assessment

The second option to determine the financial pressure to convert grassland is a land value assessment that includes the following:

1. *Narrative that explains that the project area is suitable for conversion to cropland*. The narrative must clearly indicate how the physical characteristics of the project area are suitable for crop cultivation, including the particular crops expected to be grown.
2. *Map of project area* indicating the eligible and ineligible soil classes, slopes, open water, wetlands and forested areas. The valuation should only be performed on the eligible project area.
3. *Cropland rental rate for the project area (CAD$/acre)*
    a. Estimated based on crop rental rates in the region using public data, appraiser proprietary rental rate information and/or information from comparable properties as needed.
    b. The appropriate region for the assessment is to be defined by the qualified land appraiser in their expert judgement and justified in the valuation report.
    c. The assessment must identify whether or not irrigation is considered in the valuation (or, alternatively, may provide estimations both with and without irrigation).
4. *Grassland rental rate for the project area (CAD$/acre)*
    a. Estimated based on grassland productivity rates for pasture, haying or other uses. Datasets that can be used to estimate productivity are the Grassland Vegetation Inventory, landowner grazing records, and/or information from the Ecosystem Health Assessment.
    b. Productivity rates should be converted to CAD$/acre by using regional pasture lease and rental rates (which can be proprietary or custom rate survey data).
    c. The grassland rental rate shall be validated by the appraiser through photographs taken by the landowner or project developer, through the ecosystem health assessment or by site visits as determined by the appraiser.
    d. The grassland rental rate must consider the land to be encumbered and thus unable to be converted to cropland.
5. *Cropland premium*
    a. The difference between the rental rate for cropland and the rental rate for grassland, divided by the rental rate for grassland, is the cropland premium for the project area.

The land assessment must demonstrate that converting the project area to cropland has a higher market value than maintaining the project area for sustainable grassland management, such that it meets the financial additionality threshold. Eligibility is then determined according to the thresholds as outlined in the beginning of Section 3.3.1.1.

3.3.1.1.3 Qualifications Required of Land Appraisers

Appraisal reports shall be prepared and signed by a third-party, Licensed or Certified Real Estate Appraiser in good standing. Land value assessments must be endorsed by a third-party, Licensed or Certified Real Estate Appraiser in good standing. For option 1 and 2 the appraiser must hold a professional designation from one of the associations listed in Table 3.1:

Table 3.1. Eligible Professional Associations and Designations for Real Estate Appraisers

Professional Association	Eligible Appraiser Designations
Appraisal Institute of Canada (AIC)	Accreditor Appraiser Canadian Institute (AACI) or, Canadian Residential Appraiser (CRA)
Canadian National Association of Real Estate Appraisers	Designated Appraiser Residential (DAR) or, Designated Appraiser Commercial (DAC)
Ordre des évaluateurs agréés du Québec (OEAQ)	Chartered Appraiser (C.App./EA)
American Society of Appraisers	Accredited Senior member (ASA) – Rural Property Appraisal option
American Society of Farm Managers and Rural Appraisers	Accredited Rural Appraiser (ARA)
American Appraisal Institute	Member Appraisal Institute (MAI) or, Senior Residential Appraiser (SRA)
Royal Institution of Chartered Surveyors	Member Royal Institution of Chartered Surveyors (MRICS) Chartered Valuation Surveyor or, Fellow Royal Institution of Chartered Surveyors (FRICS) Chartered Valuation Surveyor

If a project later applies to expand the project area, they must first consult with Reserve staff to determine if a new appraisal or land value assessment is needed for the expanded project area.

2. Suitability Threshold – (CLARIFICATION – February 14, 2022)

Section: 3.3.1.2 Suitability Threshold

Context: The protocol requires that project areas contain a minimum percentage of land classes 1-4 based on the ecoregion where they are located. The protocol misses to clarify that minimum percentage applies to the *dominant* class only. The Land Suitability Rating System is presented in the following format:

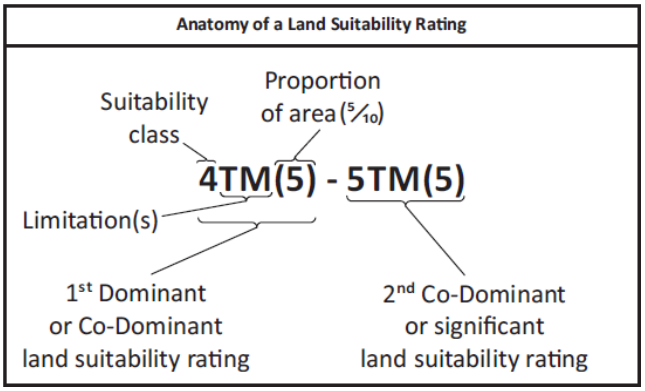

Figure 1. Example of a Land Suitability Rating[3]

[3] Land Suitability Rating System for Agricultural Crops, 1995. Agriculture and Agri-Food Canada. Available at: https://sis.agr.gc.ca/cansis/publications/manuals/1995-lsrs/lsrs.pdf

The eligibility thresholds in section 3.3.1.2 should be applied to the first dominant land suitability rating.

Correction: The new applicable text for that section is the following:

The Reserve has developed a table of default, Ecoregion-specific soil suitability thresholds. The specific default value for each Ecoregion is contained in Table 3.3, below. For any Ecoregion not listed, the default threshold is 100%. The percentage of cultivated land that is classified as Dominant Class 1-4 (rounded to the nearest whole number) represents the minimum required percentage of the project area for those land classes. For example, if the default value is 80%, the threshold for eligibility for that Ecoregion is 80% Dominant Class 1-4, allowing for up to 20% Dominant Class 5-6. Please see Appendix A for a description of how these thresholds were derived.

[Figure 3.1. will be present between these two paragraphs in the protocol]

If the project area includes more than one Ecoregion, the appropriate threshold for Dominant Class 1-4 soils shall be an area-weighted average of the Ecoregion-specific thresholds (e.g., if half of the project area is in an Ecoregion with a threshold of 80%, and the other half is in an Ecoregion with a threshold of 70%, the overall threshold for the project area will be 75%).

3. Suitability Threshold – (ERRATUM – February 14, 2022)

Section: 3.3.1.2 Suitability Threshold

Context: The last paragraph on page 17 provides guidance on how to define the threshold for a project based on the Reporting Zone (RP) or Major Land Resource Area (MLRA) where its located. The use of the term Reporting Zone or MLRA is incorrect, the correct term that should be used is Ecoregion.

Correction: The new applicable text for that paragraph is the following:

If the project area includes more than one Ecoregion the appropriate threshold for Class 1-4 soils shall be an area-weighted average of the Ecoregion-specific thresholds (e.g., if half of the project area is in an Ecoregion with a threshold of 80 percent, and the other half is in an Ecoregion with a threshold of 70 percent, the overall threshold for the project area will be 75 percent).

Section 5

4. Conversion Factor for CH_4 Emissions from Manure Deposited by Grazing Animals (ERRATUM – December 18, 2019)

Section: Project Emissions from Grazing, Equation 5.15

Context: On page 49, Equation 5.15 is used to calculate project emissions from livestock grazing. Three values integrate the sum of livestock grazing emissions: N_2O emissions from manure deposited by grazing animals (N_2O_{MN}), CH_4 emissions from manure deposited by grazing animals ($CH_{4,MN}$), and CH_4 emissions from enteric fermentation in grazing animals ($CH_{4,ENT}$). The factor used to convert from grams to tonnes in the $CH_{4,MN}$ equation is

incorrectly stated as 1,000 while it should be 1,000,000. As written, Equation 5.15 reads as follows:

$$CH_{4,MN} = \sum_{L} \left(\frac{AGD_l \times PEF_{mn,l} \times GWP_{CH_4}}{1000} \right)$$

Correction: The corrected equation reads as follows:

$$CH_{4,MN} = \sum_{L} \left(\frac{AGD_l \times PEF_{mn,l} \times GWP_{CH_4}}{1000000} \right)$$

Section 6

5. Period to Submit Ecosystem Health Assessments (ERRATUM – February 14, 2022)

Section: 6.4 Monitoring Ecosystem Health

Context: The first paragraph in section 6.4 states that "An ecosystem health assessment must be submitted for review during one of the first two project verifications." The text is incorrect as an ecosystem health assessment must be submitted during one of the first two *reporting periods*.

Correction: The sentence should be substituted with:

An ecosystem health assessment must be submitted during one of the first two reporting periods.

6. Incorrect link to the Rangeland Health Assessment Protocol by Alberta Environment and Parks (ERRATUM – February 14, 2022)

Section: Footnote number 39

Context: An incorrect link is given to the Rangeland Health Assessment Protocol by Alberta Environment and Parks

Correction: The correct link should be https://open.alberta.ca/dataset/51cad211-09f6-49bd-86ef-ca3162f2ea7a/resource/2cadf8f4-ef65-4e48-812e10f8daf027a8/download/rangelandhealthassessment-2017.pdf

Appendix B

7. Baseline Emission Factors (ERRATUM – December 18, 2019)

Section: B.5 Results, Table B.1

Context: On page 99, Table B.1 lists the baseline emission factors for grassland projects per acre per year. The values were incorrectly converted to kg of N_2O or CO_2/acre/year from

kg of N_2O or CO_2/hectare/year by multiplying by 2.47 instead of dividing by 2.47. The values have been recalculated to correctly state kg of N_2O or CO_2/acre/year.

Correction: The correct baseline emission factors are shown on the next page.

Table B.1. Baseline Emission Factors per Acre per Year (erratum 7)

Reporting Zone	RZ_ID	Soil Texture	Stratum ID	$BEF_{N2O,s}$ Year 1-10 (kg N_2O/ac/yr)	$BEF_{N2O,s}$ Year 11-20 (kg N_2O/ac/yr)	$BEF_{N2O,s}$ Year 21-30 (kg N_2O/ac/yr)	$BEF_{Cfert,s}$ (kg CO_2/ac/yr)	$BEF_{OC,s}$ 1-10 yr (kg CO_2/ac/yr)	$BEF_{OC,s}$ 11-20 yr (kg CO_2/ac/yr)	$BEF_{OC,s}$ 21-30 yr (kg CO_2/ac/yr)
Atlantic Maritime	6	Coarse	6_Coarse	1.67	1.53	1.42	61.47	1192	924	717
Boreal Plains	10	Coarse	10_Coarse	0.90	0.84	0.80	18.99	623	464	345
Boreal Shield East	5	Coarse	5_Coarse	1.32	1.18	1.08	38.25	1083	803	595
Boreal Shield West	9	Coarse	9_Coarse	1.16	1.07	1.00	18.87	781	550	388
Mixedwood Plains	7	Coarse	7_Coarse	1.52	1.39	1.29	25.03	1028	762	565
Montane Cordillera	14	Coarse	14_Coarse	0.53	0.50	0.48	7.58	551	453	372
Pacific Maritime	15	Coarse	15_Coarse	0.95	0.88	0.83	5.56	653	552	468
Semiarid prairies	12	Coarse	12_Coarse	0.41	0.38	0.36	12.55	509	364	260
Subhumid prairies	11	Coarse	11_Coarse	0.75	0.71	0.68	17.22	493	366	272
Atlantic Maritime	6	Medium	6_Medium	2.04	1.91	1.79	61.47	1179	975	806
Boreal Plains	10	Medium	10_Medium	0.96	0.90	0.86	18.99	799	644	519
Boreal Shield East	5	Medium	5_Medium	1.78	1.62	1.49	38.25	1349	1088	878
Boreal Shield West	9	Medium	9_Medium	1.21	1.13	1.07	18.87	850	660	512
Mixedwood Plains	7	Medium	7_Medium	1.89	1.75	1.64	25.03	1088	855	672
Montane Cordillera	14	Medium	14_Medium	0.61	0.57	0.54	7.58	817	686	577
Pacific Maritime	15	Medium	15_Medium	1.14	1.07	1.01	5.56	961	850	751
Semiarid prairies	12	Medium	12_Medium	0.47	0.43	0.40	12.55	766	574	430
Subhumid prairies	11	Medium	11_Medium	0.82	0.77	0.73	17.22	732	571	445
Atlantic Maritime	6	Fine	6_Fine	2.66	2.42	2.23	61.47	1478	1183	948
Boreal Plains	10	Fine	10_Fine	0.99	0.94	0.90	18.99	897	750	627
Boreal Shield East	5	Fine	5_Fine	2.01	1.88	1.76	38.25	1214	1029	873
Boreal Shield West	9	Fine	9_Fine	1.28	1.20	1.13	18.87	977	785	632
Mixedwood Plains	7	Fine	7_Fine	2.41	2.22	2.06	25.03	1316	1061	856
Montane Cordillera	14	Fine	14_Fine	0.58	0.55	0.53	7.58	694	623	559
Pacific Maritime	15	Fine	15_Fine	1.01	0.96	0.92	5.56	765	683	610
Semiarid prairies	12	Fine	12_Fine	0.51	0.47	0.44	12.55	957	770	619
Subhumid prairies	11	Fine	11_Fine	0.81	0.77	0.74	17.22	690	572	474