MADRONE
environmental services ltd.

1081 Canada Avenue
Duncan, BC V9L 1V2
P: 250.746.5545
F: 250.746.5850
www.madrone.ca
info@madrone.ca

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TO: Andrew Sinclair (Platform Properties) – andrew@platformproperties.ca

Closure of Reclamation Activities

Sandown Agricultural Property

Glamorgan Road, District of North Saanich

1 Introduction

This Closure of Reclamation Activities report is a summary of the current reclaimed agricultural status of the Sandown Agricultural Property. This report is a product of observations, made during a June 26, 2019 field review, of reclamation activities intended to resolve deficiencies noted in a previous assessment for substantial completion of agricultural reclamation activities[1], evaluation of all prior reclamation and drainage management activities on the Sandown Agricultural Property, and consideration of the District of North Saanich Community Agricultural Commission (CAC) meeting attended on September 11, 2019. This letter style report is intended to only address previously noted deficiencies, and any pertinent agricultural observations noted by Qualified Professional Agrologists (QPs) at time of recent field review – in context of the Phased Development Agreement (PDA) terms which are under purview of the proponent.

2 Background

Thomas R Elliot PhD, P.Geo., PAg., of Madrone Environmental Services Ltd. (Madrone) was retained by the proponent, Platform Properties Ltd. (Platform), to act as a Qualified Professional Agrologist (QP) for the reclamation of a former horse racing facility

[1] *"Summary of Reclamation Activities for the Sandown Agricultural Property on Glamorgan Road, District of North Saanich"* Madrone Environmental Services Ltd. 31/12/2018.

(hereafter referred to as the 'Site' or 'Sandown') located at 1810 Glamorgan Road, within the District of North Saanich (DNS) as part of an Agricultural Land Commission (ALC) approved Reclamation and Drainage Plan (the Plan), which was meant to fulfill the PDA between DNS and Platform. The PDA requires that the Plan shall return the land to a *state suitable for general agricultural purposes* (District of North Saanich Sandown Phased Development Agreement, Schedule A. Jan 07, 2014).

Madrone fulfilled the duties of QP for the reclamation according to the ALC requirements as set out in the PDA. Furthermore, Thomas R Elliot was identified as the Agrologist of Record with the ALC, which can be defined as the QP accepting responsibility for development and implementation of sound practices toward improving agricultural capability of the Site, as established within the Plan.

The primary purposes of this letter-style report is to:

- update the December 31, 2018 '*Summary of Reclamation Activities*' letter issued by Madrone,
- establish the state of reclamation activities implemented by Platform at time of recent field review ('Project Closure' or 'Closure'), and
- provide final certification that reclamation activities are complete in accordance with the Plan and PDA.

3 Reclamation Scope

The Site was subset into polygons which were to be subject to specific reclamation activities, as per the approved Plan, in order to improve the agricultural capability of the Site "*to a state suitable for agricultural purposes*" [PDA & ALC Resolution #357/2011; #383/2011]. The ALC's requirement, as per the approved Plan, is interpreted as a land capability suitable for general agricultural production of standard rotation crops (i.e. non-specialty produce) of **Class 1 (optimal) through 4 (agriculturally viable - suboptimal)** of the Canada Land Inventory System[2]. A 'deficiency' of implementing the Plan results in a limitation to agricultural capability that exceeds Class 4 (e.g. Class 5 through 7), or if a new Class 5 or greater limitation is introduced[3].

[2] Smith, 2012. A Work in Progress - The British Columbia Farmland Preservation Program. Brunaby, British Columbia. http://www.alc.gov.bc.ca/assets/alc/assets/library/archived-publications/alr-history/a_work_in_progress_-_farmland_preservation_b_smith_2012.pdf

[3] 'Introduced' limitations include such things as limited areas of stoniness resulting from removal of structures and required earthworks.

4 Reclamation Summary

This section serves as a summary of the key components of Madrone's QP observations during reclamation and in the latter stages of the Sandown project.

4.1 Reclamation Activities

The reclamation activities for each polygon and the observations and QP evaluation of completion are summarized in the table below, which should be read in conjunction with the map provided. The map is annotated with Polygons that correspond to the numeration of noted deficiencies/recommendations in Table 1 below.

Table 1. Summary of reclamation activities at <u>Closure</u>

Polygon	Reclamation Activities	Deficiencies	Recommendations
1	1. Subsoil	1. none	1. Reclamation program has been met. Continued incorporation of cover crops is recommended to improve soil structure.
	2. Grade	2. none	2. n/a
	3. Amend with organic matter	3. none	3. Reclamation program has been met. See additional note on soil stewardship in Section 6.1 of this document.
2	1. Land clearing	1. none	1. n/a
	2. Incorporate land clearing debris	2. none	2. Reclamation program has been met. See additional note on soil stewardship in Section 6 of this document.
	3. Subsoil	3. none	3. n/a
	<u>Incidental</u> (in Scope) Grass area (indicated on map) has been subsoiled, graded and tilled. North-South ditching has been re-established along eastern boundary.		<u>Incidental</u> (in Scope) – none
3	1. Land clearing	1. none	1. n/a
	2. Grade to level	2. none	2. n/a
	3. Till & cover-crop	3. none	3. n/a
4	Not subject to reclamation	-	-
5	Not subject to reclamation	-	-
6	DNS Class A compost facility	-	-

4.2 Compaction Monitoring

Previously identified areas in Polygon 1[4] have been subsoiled and demonstrated decreased compaction in both the near (0 – 15cm) and subsurface (15 – 30cm) through field measurement at time of closure review. Limited areas of arable and accessible land (i.e. outside of drainage ditches) within Polygon 1 resulted in a measured decrease (after compensating for lower moisture content at time of closure review) in subsurface (15 – 30cm) compaction. The presence of cover-crop and the incorporation thereof through subsequent crop-rotations will result in reduction of compacted soil within the arable layer of all areas.

4.3 Post-Reclamation Land Capability for Agriculture

The LCA of land subject to reclamation activities, as outlined in the PDA, are summarized in Table 2 below. Please note that the objective of the PDA was to deliver the lands to a '*state suitable for agriculture*' and the 'Potential LCA' indicated in Table 2 below is achievable through additional measures to address limitations. Additional measures are not within the scope of works indicated within the PDA and are the responsibility of DNS and/or the selected Operator for Sandown Farm.

[4] Such as Polygon 1 subset areas 1.A & 1.B, please see previous interim monitoring and reporting documents related to this project.

TABLE 2. LAND CAPABILITY FOR AGRICULTURE AT CLOSURE

Soil Polygon	- **Existing LCA, Post-Reclamation Explanation**	**Potential LCA with Further Improvements** - **Activity**
1	3W - Excess Water - Low permeability layer at depth perches water; 3I – Inundation - Seasonal inundation limiting early season access by machinery; 3P – Stoniness - Limited area of coarse fragment content; 2D – Unfavourable soil structure - Compaction due to soil texture that will moderately impede deep-rooting crops; 2X – Foreign Material - Anthropogenic detritus;	2W – Excess Water - Increase soil organic content; - No till management over long term; 3I – Inundation - No reasonable improvement; 3P – Stoniness - No reasonable improvement; 2D – Unfavourable soil structure - No reasonable improvement; 1 – Foreign Material - Cleared through standard Ag practice;
2	4F – Fertility - Low available nitrogen (i.e. high fixation) due to amount of organic carbon that has been incorporated to the soil; 3W – Excess Water - 1. Lowest lying lands within the region susceptible to prolonged periods of water table near surface; - 2. Natural seepage area subject to high water table/content; 2OB – Wood in the profile - Limited area in NW where land clearing has occurred, and land breaking is an ongoing process; 2X – Foreign Material - Anthropogenic detritus;	1 – Fertility - Decomposition of wood residue in soil over time (2 – 5 yrs); 3W/2W – Excess Water - 1. No reasonable improvement; - 2. Soil forming and biologic activity over time (2 – 5 yrs); 1 – Wood in the profile - Decomposition of wood residue in soil over time (2 – 5 yrs); 1 – Foreign Material - Cleared through standard Ag practice;
3	4P – Stoniness - Fine to coarse gravel within the soil profile; 3F – Fertility - Low nutrient holding capacity due to soil texture (gravelly sandy loam); 2T – Topography - Low angle simple slopes;	4P – Stoniness - No reasonable improvement; 2F – Fertility - Incorporate organic matter; 2T – Topography - No reasonable improvement;

4	Not Subject to Reclamation	Not Subject to Reclamation
5	Not Subject to Reclamation	Not Subject to Reclamation
6	DNS Yard & Garden Class A Compost Facility	DNS Yard & Garden Class A Compost Facility

4.4 Post-Reclamation Meeting with CAC

A meeting with the CAC, facilitated by DNS, held on September 11, 2019 provided opportunity for commentary to, and explanatory discussion with, the QP Agrologist of Record for the reclamation program. The meeting facilitated CAC inquiry/statements and subsequent clarifying discussion / QP opinion – provided in the scope of the PDA as well as the applicable regulatory, land use, hydrologic / stormwater and agricultural best practices.

While the CAC did not review DNS commissioned reporting produced by a consulting QP Agrologist (i.e. reporting not produced by the QP Agrologist of Record) in advance of the meeting, it is understood that DNS reporting was subsequently provided to the CAC for its information upon Council's receipt. The QP Agrologist of Record has received no further commentary from the CAC. Commentary received during the Post-Reclamation Meeting that is applicable within the PDA scope was incorporated into this QP Agrologist of Record Closure and hand-off letter, while subjects that are outside of the PDA scope (e.g. long-term financial management, regional drainage infrastructure, farm management, etc.) were not applicable to the reclamation program and therefore not considered.

In light of the professional reliance model established within the PDA, the QP Agrologist of Record is satisfied that reclamation activities are complete.

5 Summary

The areas which were found to be deficient in the December 31, 2018 review have been addressed, resolving the lands to an agricultural capability between Class 4 and Class 2.

The reclamation activities are complete in accordance with the Plan and PDA.

Upon acceptance of this assessment by DNS, I will relinquish my Agrologist of Record status for Sandown reclamation and management.

6 Closure and Future Works

The reclamation activities on Site are complete with the land capability for agriculture for all polygons evaluated at Class 4 or better. Standard management practices, as part of continued operation of the Site as a farm, will progressively improve the land capability for agriculture and address noted limitations (e.g. stoniness, CEC/Fixation/Organic matter content & limited areas of unfavourable soil structure in Polygon 1 due to texture, sparse woody debris in profile, etc.), as well as Site factors which were not noted in this document but are inherent to the Site (e.g. limited areas of seasonal inundation, soil structure due to texture, excessive soil moisture, or generally poor regional conveyance of waters).

Moving forward, there continues to be an opportunity to develop the agricultural capacity of the Site. For the near future (1 – 3 years), I make future works recommendations in Section 6.1 that are outside of the current reclamation program.

6.1 Soil Stewardship

As part of ongoing agricultural practices continue to:

- incorporate cover crop once machine trafficable (planting season);
- re-seed with Red clover (*Trifolium pretense)* or cereal rye (Secale cereale);
- incorporate crop into plow layer at maturity (fall);
- re-seed with winter wheat (*Triticum aestivum*);
- till to incorporate in subsequent season, after which establish no-till methods for commercial crops.

6.2 Ecologic considerations

1. In areas with wood residue remaining, continue standard agricultural practice of removing such debris from planting surface;
    a. Wood residue/land clearing debris can be accumulated adjacent the ditch to delineate the ditch for machine operators, enhance the watercourse buffer area, as well as providing habitat for small carnivorous mammals and raptor prey-species;
    b. At no time should woody debris be placed such that it will interfere with clearing of annual vegetation from the ditch, or otherwise impede flow within the ditch.

2 The high ratio of carbon to nitrogen (i.e. Fixation) in areas amended with organic matter will decrease to a favourable long-term nitrogen-supply in approximately 2 – 3 years time. Until such time, primary sources of commercial crop nitrogen should come from incorporation of nitrogen-fixing cover crops or alfalfa meal as opposed to commercial mineral nitrogen fertilizers. The application of nitrogen fertilizers to the heavily subsoiled & tilled land may result in an unintended conveyance of nitrogen to the drainage channel at this time due to a lack of nutrient retention capacity. Over time, the soil will not only make nitrogen available through decomposition of wood residue, but will also develop capacity to 'hold' available nitrogen which is field applied through increased available carbon content, which will mitigate this consideration in the future.

6.3 General

1 Continue to cover-crop, rotating between nitrogen fixing and high organic-matter crop types (as per Soil Stewardship, above);

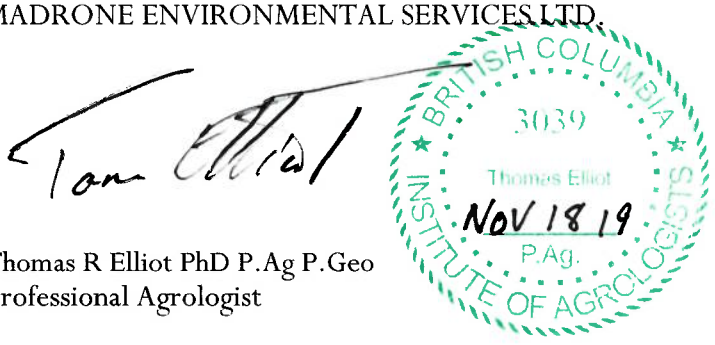
2 Conduct analytic testing of soil nutrient content after 1 year of fallow, adjust amendment or cover-crop type to suit;

3 Re-evaluate the land capability for agriculture in three-years;

We trust that this letter report meets your current needs. Madrone is available to provide any further information or guidance that may be required by Platform.

Yours truly,

MADRONE ENVIRONMENTAL SERVICES LTD.



Thomas R Elliot PhD P.Ag P.Geo
Professional Agrologist

APPENDIX

Reclamation Plan at Closure

PROJECT:
Agricultural Assessment & Drainage Plan: 1710 & 1810 North Glamorgan Road

ASSESSED BY:	LOCATION:	CLIENT:	MAP DATE:	DRAWN BY:	DOSSIER:
Thomas R. Elliot, PhD P.Ag P.Geo	North Saanich, BC	Sandown Properties Ltd.	November 11, 2019	Thomas Elliot	16.0074

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Closure Summary of Reclamation Activities