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Agricultural Capability Report 34252 King Road, Abbotsford

Prepared for: Pacific Land Group

REV A.2

February 2025

Document title	McTavish Agricultural Capability Report 34252 King Road, Abbotsford
Document subtitle	Prepared for: Pacific Land Group
Date	January 2025
Version	A.2

Document History

Version	Date	Author	Comments
0.1	31 October 2024	Max Hoyer, A.Ag	Initial draft
0.2	1 November 2024	Theresa Loewen P.Ag	Draft 2
0.3	4 November 2024	Justin McTavish P.Ag	Draft 3
0.4	7 November 2024	Max Hoyer, A.Ag	Issue for Review (Internal)
0.5	11 November 2024	Geoff Hughes-Games, PAg	Internal Review
0.6	12 November 2024	Justin McTavish PAg	Issued for client review (Draft)
A.1	20 November 2024	Justin McTavish PAg	Issued for client (Draft)
A.2	18 February 2025	Justin McTavish PAg	Issued for client

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1. INTRODUCTION

McTavish Resource & Management Consultants Ltd. (McTavish) was retained by Pacific Land Group (the "Client") to conduct an agricultural capability assessment of a property located at 34252 King Road, Abbotsford, BC (the "Site"). The purpose of the assessment was to document existing conditions and determine the agricultural capability of the Site (the "Project") as supporting information for a non-farm use and subdivision application from the Agricultural Land Reserve. The Project involved a desktop review to provide context to historic and on-going land use, a field assessment, and the collection of soil samples for laboratory analysis and photographic images.

The Site assessed is an approximately 34.7 ha parcel (PID 013-380-508) that is located within the BC Agricultural Land Reserve (ALR) and is therefore subject to the *Agricultural Land Commission Act* (2002) and its associated regulations.

This report summarizes the methodology, desktop and field assessments, laboratory analysis, agricultural capability revisions, crop suitability comments, and recommendations related to the subdivision of the Site.

2. METHODOLOGY

To determine agricultural capability and document existing conditions on the Site, McTavish reviewed the following information:

- Site elevations, topography, drainage, surrounding land use and agricultural activities from available aerial imagery and mapping (Google Earth, 2024; City of Abbotsford Map Viewer, 2024).
- British Columbia Biogeoclimatic Ecosystem Classification (BEC) Zones (BC MOF 2023).
- Published soils and agricultural capability from BC Soil Information Finder Tool (SIFT) (Province of BC 2018).
- Agricultural Capability Mapping and Classifications (Province of BC 2018).
- Climate and moisture data (Government of Canada 2022).
- Client correspondence for land use history and prospective plan for the Site.

The field assessment was conducted on October 17, 2024, by Justin McTavish, P.Ag, and Max Hoyer, A.Ag. The assessment comprised:

- Recording observations of conditions on the Site that may promote or limit agriculture (e.g., existing farm infrastructure, environmental conditions, drainage, topography, debris content). Topography was assessed based on the definitions provided by Luttmerding (1981).
- Conducting a detailed soil survey following the requirements of the ALC Policy P-10 (BC ALC 2017). ALC Policy P-10 requires that the soil survey meet the Survey Intensity Level 1 (SIL1), as outlined in the *Soil Inventory Methods for British Columbia* (Resources Inventory Committee, 1995). SIL1 requires one detailed soil pit per 1 to 5 ha.
- Collection of soil samples for chemical analysis.

A total of eight detailed soil pits were installed across the Site. Each soil pit was hand dug to the C horizon, or until shovel refusal. The detailed soil survey included the documentation of soil characteristics based on *Soils Illustrated – Field Descriptions, 1st Edition* (Watson 2007).

Based on the desktop and field results the agricultural capability was confirmed or revised. The Project adhered to BC Agricultural Land Commission (ALC) Criteria for Agricultural Capability Assessments Policy P-10 (BC ALC 2024).

Soil samples were collected from the topsoil (A) and subsurface (B) horizons of representative soil pits during the field assessment. Pits that did not share similar characteristics were sampled individually.

Soil samples were analyzed to determine soil physical and chemical properties that may promote or limit agriculture. The samples were analyzed at Element Materials Testing Laboratory accredited by the Standards Council of Canada (SCC) to ISO17025.

Topsoil samples were analyzed to determine particle-size analysis (PSA), soil macro[1]- and micro[2]- nutrient content, pH, electrical conductivity (EC), base saturation (BS), organic matter (OM) content, and cation exchange capacity (CEC). Subsurface soil samples were analyzed to determine particle-size analysis (PSA), soil nitrogen (as Nitrate-N), soil sulfur (as sulfate-S), pH, and electrical conductivity (EC).

3. RESULTS

The following provides the results from the desktop assessment, field assessment and soil laboratory analysis.

3.1 Site Location and Historical Use

Located in Abbotsford, the Site is bordered to the north by residential developments, to the east by forested parkland adjacent to industrial/commercial sites, to the south by a gravel pit and to the west by the University of the Fraser Valley campus (**Appendix I**). The 34.7 ha parcel is zoned Rural Residential and lies with the ALR (City of Abbotsford, 2024). The site has two existing access roads, one along the north of the Site which connects to King Road and one along the west of the Site which connects to McKenzie Road. A single residential dwelling is located in the northeast corner of the Site. The Site is divided centrally by an east-to-west treed buffer which separates the property into two fields each approximately 12.5 ha in size.

Historical aerial and satellite imagery dating back to 1940 was reviewed to assess historical land use within the Site. Aerial imagery dated from 1940 shows the Site as predominately forested (Government of B.C., 2024). Subsequent aerial imagery from 1966 indicates that Site had been cleared, with imagery from 1974 depicting the Site as cultivated for agricultural production. Imagery dated from 1982 and 1983 depicts agricultural production consistent with the 1974 imagery.

Significant changes in land use within the Site are observed in the mid-1980's, with aerial imagery dated from 1986 depicting the northern half of the Site as disturbed and actively being used for gravel extraction. The southern half of the Site appears undisturbed in the 1986 imagery, with this portion of the Site still vegetated.

Aerial imagery dated from 1988 depicts disturbance consistent with the 1986 imagery. By 1990, the gravel extraction had been completed and soil appears to have been replaced. Additional disturbance is observed in the northeastern 3.8 ha of Site during the period of 2004 – 2007, with satellite imagery indicating that topsoil has been excavated and gravel extraction was taking place. Subsequent satellite imagery from 2008 indicates that topsoil had been replaced in the disturbed area and it had been returned to cultivation along with the remainder of the parcel.

[1] Plant macronutrients are essential nutrients required in relatively large amounts and include nitrogen (N), potassium (K), calcium (Ca), Magnesium (Mg), phosphorus (P), and sulfur (S).

[2] Plant micronutrients are essential nutrients used in smaller amounts (when compared to macronutrients) and include chlorine (Cl), iron (Fe), boron (B), manganese (Mn), zinc (Zn), copper (Cu), molybdenum (Mo), and nickel (Ni). However, Mo and Ni were excluded from laboratory analysis.

No other major land use changes were observed within the Site. Adjacent land use to the Site includes the University of the Fraser Valley to the west, residential properties to the north, industrial properties to the east, and an active gravel pit to the south.

Table 3-1 provides a brief summary of historical land uses within the Site.

Table 3-1 Summary of Historical Land Use

Date Range:	1940 – 1966	1974 - 1983	1986 – 1988	1990 – 2024
Land Use:	Forest in 1940. Cleared prior to 1966.	Agricultural cultivation.	Northern field disturbed by gravel mining activities.	Agricultural cultivation. Some localized gravel mining activities in northeastern corner of the Site.

3.2 Site Observations

The field assessment verified the access/egress points of the Site on King Road and McKenzie Road and confirmed Site characteristics described in the desktop review. Topsoil throughout the Site had been shaped in to raised (poly covered) beds and planted to pumpkins, which were partially harvested at the time of the field assessment. A ~1.0 ha area along the southern edge of the northern field had not been planted with pumpkins and featured well established weeds including clover (*Trifolium spp.*), orchard grass (*Dactylis spp.*) and pigweed (*Amaranthus spp.)*.

Mapping indicates that the topography of the Site varies from 47 – 64 meters above sea level (masl; City of Abbotsford, 2024). The cultivated portion of the northern field features a relatively low relief, with a general eastern aspect and slopes generally ranging from 2 - 8%. The southern field features a complex relief with slopes generally ranging from 4 – 9%. Stronger relief is observed along the eastern edge of the parcel with slopes in excess of 28%. Land use along the strongly sloping area at the eastern edge of the parcel is not cultivated and therefore this area was excluded from the assessment.

The topography observed within the Site is consistent with mapping. The northern field is generally level with a moderate eastern aspect slope along the western boundary of the parcel. The southern field features a moderately complex topography with multiple gentle to moderately rolling hills.

Site photographs from the field assessment are provided in **Appendix II.**

3.3 Climate

Biogeoclimatic Ecosystem Classification (BEC) mapping provides an indication of the overall anticipated moisture and temperature conditions. The Site is within the Coastal Western Hemlock, Very Dry Maritime (CWHxm) BEC zone (MOF, 2023). This BEC zone is found on BC's lower mainland along the south side of the Fraser River at elevations ranging from sea level to approximately 700 meters above sea level. The Coastal Western Hemlock, Very Dry Maritime BEC zone is characterized by warm, dry summers and moist, mild winters with relatively little snowfall (Green and Klinka 1994).

The Site is located approximately 6.0 km northwest of the "ABBOTSFORD A" weather station (Climate ID 1100030). Climate Normals from 1991 to 2020 indicate that the climate of the Site is characteristic of the CWHxm BEC Zone (Government of Canada, 2022). The station data indicates mean daily temperature in

December of 3.5°C and mean daily temperature in August of 18.7°C. The mean annual precipitation is 1504.6 mm, with most of the precipitation occurring as rainfall from October to March, including a mean annual snowfall of 56.4 cm. There were on average (and with 90% probability) 224 frost-free days per year with the first fall frost falling on average on November 1st, and the last spring frost of April 7th. There were on average 2288.3 growing degree days above 5°C and 1074.0 growing degree days above 10°C.

Figure 3-1 shows the monthly normal (30-year-average) precipitation compared to the estimated potential evapotranspiration (PET) as estimated from local meteorological data using the Priestley-Taylor equation (Shuttleworth 1993). Between May and September, the Abbotsford region experiences a soil moisture deficit and some crops need to be irrigated to offset the deficit.

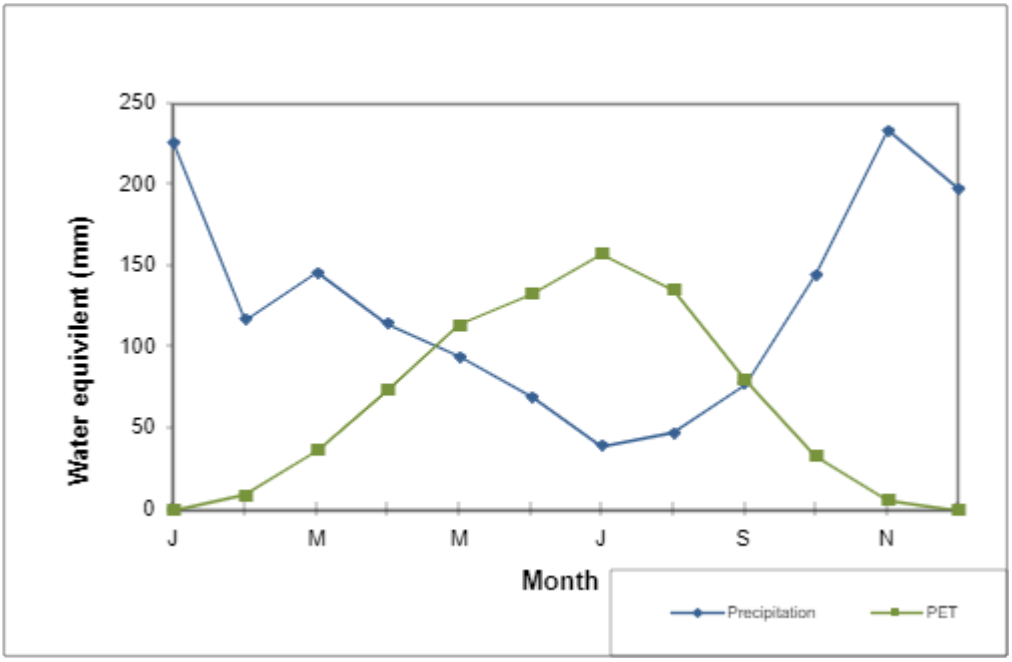

Figure 3-2 Precipitation and Potential Evapotranspiration at the Abbotsford A Climate Station

3.3.1 Climate Change Impacts

With the onset of climate change, the impacts of soil moisture regimes and air temperature will affect crop production. Within the Fraser Valley Regional District, annual temperatures are expected to rise by an average of 2.5°C (+2.1°C to +4.2°C) and summer precipitation is expected to decrease by 17.0% (-26.8% to -2.7%) over the period of 2041-2070 (PCIC 2020). This may exacerbate drought and the demand for irrigation. Overall precipitation events are expected to be more severe resulting in the increased incidents of flooding or flashy stream flows resulting in the need for improved drainage infrastructure. In addition, growing degree days and frost-free days are both expected to increase by 580 and 36 days respectively. Based on these predictions, higher crop productivity and a greater range of crops may be possible; however, agricultural challenges related to increased flooding, summer droughts, and demand for heat-tolerant plants are also likely to occur.

3.4 Soils

3.4.1 Mapped Soils Series

Three soil polygons, which include four soil series, are documented on the Site (**Table 3-2**; Province of BC 2018). The polygons in the Site occur in both pure map units (single soil series per polygon) and complexes (i.e., multiple soil series per polygon) consisting of mineral soil parent materials. The mineral soils have developed from morainal, glaciofluvial and eolian deposits (Luttmerding 1981).

An overview map indicating the published soil series and their respective descriptions is provided in **Appendix III** and descriptions of the soil series present on the site is provided in **Appendix IV**.

Figure 3-3 Summary of Published Soil Series

Mapped Soil Series 1	Soil Series 1 Classification	%	Mapped Soil Series 2	Soil Series 2 Classification	%	Mapped Soil Series 3	Soil Series 3 Classification	%	Area (ha)
Abbotsford	Orthic Humo-Ferric Podzol	100							0.3
Ryder	Orthic Humo-Ferric Podzol	80	Lonzo Creek	Orthic Humo-Ferric Podzol	20				29.4
Ryder	Orthic Humo-Ferric Podzol	60	Lonzo Creek	Orthic Humo-Ferric Podzol	20	Marble Hill	Orthic Humo-Ferric Podzol	20	4.9

3.4.2 Soil Observations

The detailed soil survey comprised the excavation of seven soil pits across the Site. Detailed soil cards for each soil pit excavated on the Site are provided in **Appendix V** and soil pit locations are shown in **Appendix VI**.

Soil pits were installed in two of the three soil polygons mapped within the Site. The polygon containing the Abbotsford soil series occupies a small (<0.5 ha) uncultivated and tree covered area along the eastern boundary of the parcel and was not accessible therefore not included in the assessment. Based on the results of the detailed soil survey, the soil series present on the Site are inconsistent with published soil mapping (**Table 3-3**).

Figure 3-4 Soil Pit Summary

Soil Pit Number	Published Soil Classification	Assessed Soil Classification	Topsoil Depth (cm)	Topography	Drainage Class
1	Orthic Humo-Ferric Podzol	Orthic Melanic Brunisol	13	Gentle (5 – 10% slopes)	Well drained
2	Orthic Humo-Ferric Podzol	Orthic Melanic Brunisol	14	Gently sloping (2 – 5% slopes)	Moderately well drained
3	Orthic Humo-Ferric Podzol	Orthic Melanic Brunisol	18	Gently sloping (2 – 5% slopes)	Moderately well drained
4	Orthic Humo-Ferric Podzol	Orthic Humic Regosol	13	Gently rolling (5 – 9%)	Well drained
5	Orthic Humo-Ferric Podzol	Orthic Humo-Ferric Podzol	34	Gentle (5 – 10% slopes)	Moderately well drained
6	Orthic Humo-Ferric Podzol	Orthic Humo-Ferric Podzol	28	Gently rolling (5 – 9%)	Moderately well drained
7	Orthic Humo-Ferric Podzol	Orthic Humo-Ferric Podzol	27	Gently rolling (5 – 9%)	Moderately well drained

Soil pits 1, 2 and 3 were installed on a gently sloping to level area of the field on the north side of the Site. Soil pits 1, 2 and 3 showed a topsoil horizon ranging between 13 – 18 cm, underlain by either a sandy loam or silt loam textured Bm horizon. Coarse fragment content increased with depth in soil pits 1, 2 and 3 with 5 % gravel content in the topsoil, 20-25% gravel content in the subsurface Bm or BC horizons and 35 – 50% gravel and cobble in the Bm 2 or C horizon. Rooting depth in soil pits 1, 2 and 3 ranged from 18 – 25 cm.

Soil pit 4 was installed along an elevated ridge within the southern field. Soil pit 4 showed a topsoil horizon of 13 cm, underlain by a sandy textured C horizon to a depth of 39 cm and a sand textured C2 horizon to a depth 47 cm. Topsoil contained 30% coarse fragments, including gravels and cobbles, with surface stones observed within the immediate vicinity of soil pit 4. The C horizon featured 85% coarse fragment content including cobbles and gravels. The C2 subsoil horizon featured 60% coarse fragment content comprised of gravel. Rooting depth was observed at 23 cm.

Soil pits 5, 6, and 7 were installed in the gently to moderately rolling slopes of the southern field. Topsoil depths in soils pits 5, 6 and 7 ranged from 24 – 34 cm, underlain by silt loam textured Bf subsurface horizons, and followed by either a silt loam textured BC or sandy loam textured C horizon. Rooting depth in soil pits 5, 6 and 7 ranged from 27 – 52 cm.

Soil pits 8 and 9 were installed within the northern field. Topsoil depth in soils pits 8 and 9 was 30cm and was underlain by a BC or C horizon. Coarse fragment content increased with depth in soil pits 8 and 9, ranging from 15 – 30% in the topsoil and 50 - 55% in the subsurface BC and C horizons. Surface water was observed in the area surrounding soil pit 9.

Soil pit 10 was installed in the uncultivated treed area along the eastern edge of the Site. No topsoil was observed in soil pit 10 and surficial soil featured 15% gravels and cobbles. No evidence of soil horizonation was observed in soil pit 10.

Due to the sand to sandy loam textures and lack of mottling, drainage class in soil pits 1, 4 and 8 were determined to be well drained. Soil pits 2, 3, 5, 6 and 7 were classified as moderately well drained based on silt loam textures and lack of mottling. Due to the presence of standing water during the field assessment, soil pit 9 was classified as imperfectly drained. Soil pit 10 was classified as well drained due to topography, soil texture and a lack of mottling.

3.5 Agricultural Land Capability

Three agricultural capability polygons from five capability classes are documented on the Site (**Table 3-4**; Province of BC 2018). The published unimproved agricultural capability within the Site ranges from Class 2 to Class 7 with limitations due to topography (T) and aridity (A). The published improved ratings range from Class 2 to Class 7 with limitations due to topography. An overview map delineating the published agricultural capability polygons is provided in **Appendix VII**. Descriptions of the limitations affecting the soils on the Site are provided in **Appendix VIII.**

The detailed soil survey and site assessment indicated that the agricultural capability of the Site is not fully consistent with mapping, and revisions relating to the limitation subclasses have been made as shown in **Table 3-5**. Note that only dominant limitations are identified in Table 3-3. An overview map delineating the revised agricultural capability polygons is provided in **Appendix VI**.

The A subclass is used where crops are adversely affected by droughtiness either through insufficient precipitation or low water holding capacity of the soil (Kenk and Cotic 1983). To determine limitations relative to drought and water holding capacity, potential evapotranspiration (PET) on the property was estimated using a version of the Priestley-Taylor equation (Shuttleworth 1993) and the available climate data and using the albedo value for cultivated fields (0.23).

The estimated potential evapotranspiration (PET) values were used to determine the Climate Moisture Deficit (CMD) and the Soil Moisture Deficiency (SMD) following methods in MOE/MOF (1983). The PET was estimated using the Priestly-Taylor equation (Shuttleworth 1993) using the climate normal data. Soil conditions observed in the majority of the soil pits installed throughout the Site were consistent with the A subclass. In soil pit 1, 2, 3, 8 and 9 an SMD range of 201 - 249 was consistent with the criteria for class 4A. In soil pit 4, an SMD of 269 was consistent with the criteria for class 5A. In soil pits 5, 6 and 7, a soil moisture deficit (SMD) of 174 was consistent with the criteria for class 3A. Based on the results of the field assessment, the A subclass ratings have been updated for soils within the Site.

The P subclass describes soils with sufficient coarse fragments to significantly hinder tillage, planting, and/or harvesting operations (Kenk and Cotic 1983). Soil conditions observed in soil pits 1 – 3 and 9 were consistent with the criteria for class 4P in which total coarse fragment content is 21 to 40%. Soil pit 4 also featured a high composition of coarse fragments both within the soil profile and in the area surrounding the soil. Observations of the area surrounding pit 4 indicated that the coarse fragments were limited to the area immediately surrounding pit 4 and therefore the P subclass was not attributed to the southern field.

The D subclass is used where crops are adversely affected by undesirable soil structure and/or low perviousness (Kenk and Cotic 1983). Soil conditions observed in soil pits 2 and 3 were consistent with the criteria for class 4D in which a root restricting layer is present within 25 cm of the soil surface. Due to the presence of compacted Bm 2 horizons within 25 cm of the soil surface, the subclass 4D has been added to this area. Soil pits 2 and 3 are located within close proximately (~30 meters) to a farm access road that runs east-to-west through the parcel. Compaction in these soil pits may be attributed to vehicle and farm equipment traffic on the nearby access road.

The T subclass applies to soils for which topography limits agricultural use by affecting the use of farm machinery, decreasing the uniformity of growth and maturity of crops, and increasing the potential for water erosion. The topography in the area surrounding pits 4, 5, 6 and 7 were consistent with the 3T subclassification. Based on the results of the field assessment, the subclass ratings have been updated for soils within the Site.

The W subclass applies to soils for which excess free water limits agricultural use. A review of historical imagery in addition to soil conditions during the field assessment in the area surrounding soil pit 9 was consistent with the 4 W subclassification.

Figure 3-5 Summary of Published Agricultural Capability

Polygon	Mapped Soil Series	Slope Class	Mapped Agricultural Capability	Improvable Agricultural Capability	Area (ha)
1	Ryder (80%) / Lonzo Creek (20%)	Gently sloping to very steep slopes (CG) (80%) / Gently to Strongly Rolling (20%) (df)	^{7}3TA ^{3}4T	^{7}3T ^{3}4T	29.5
2	Ryder (60%) / Lonzo Creek (20%) / Marble Hill (20%)	Gently sloping to very steep slopes (CG) (80%) / Gently to Strongly Rolling (20%) (df)	^{6}3TA ^{4}2AT	^{6}3T ^{4}2T	4.9
3	Abbotsford	Gently sloping to gently undulating (Cb)	^{7}7T ^{3}5T	^{7}7T ^{3}5T	3.0

Note: Superscript numbers represent proportion of polygon out of 10. Published ratings are from BC SIFT (Province of BC 2018).

Figure 3-6 Field Assessed Soils Series and Agricultural Capability

Published					Revised					
Soil Pits	Soil Classification	Unimproved Capability Rating (CC)	Improved Capability Rating (IC)	Area (ha)	Soil Pits	Soil Classification	Unimproved Capability Rating (CC)	Improved Capability Rating (IC)	Area (ha)	Capability Rating Revision*
1, 2, 3, 4, 7, 8, 9	Orthic Humo-Ferric Podzol	[7]3TA [3]4T	[7]3T [3]4T	29.5	1, 8, 9	Orthic Melanic Brunisol / Orthic Humic Regosol	[9]4AP [1]4WP	[9]2AP [1]2WP	11.6	-Change in polygon area -Revised from 3A to 4A based on soil moisture deficit (SMD) -Addition of P subclass due to coarse fragments -Addition of W subclass
					2, 3	Orthic Melanic Brunisol	4AD	3DP	2.7	-Revised polygon area -Revised from 3A to 4A based on soil moisture deficit (SMD) -Addition of D subclass due to compaction -Addition of P subclass due to coarse fragments

	Published					Revised				
5, 6	Orthic Humo-Ferric Podzol	^{6}3TA ^{4}2AT	^{6}3T ^{4}2T	4.9	4, 5, 6, 7	Orthic Humic Regosol / Orthic Humo-Ferric Podzol	3TA	2T	13.6	-Revised polygon area -Revised from 40% 2AT to 100% 3TA
10	Orthic Humo-Ferric Podzol	^{7}7T ^{3}2AT	^{7}7T ^{3}2AT	0.3	10	NA	6TP	6TP	3.0	-Revised from 7T to 6T -Addition of P subclass

Note: Source of published unimproved and improved ratings area from BC SIFT (Province of BC 2018). Superscript numbers represent proportion of polygon out of 10. Published ratings are from BC SIFT (Province of BC 2018).

*Discussion of justification for revisions can be found in Section 5.1.

3.6 Laboratory Results

Soil nutrient analysis results of the topsoil samples indicated variable levels of macronutrients. On average, nitrate-N and sulfate-S levels were low while phosphorus and potassium levels were high. Organic matter content (%) in the topsoil ranged from 3.9 – 8.8%.

All samples displayed neutral pH and electrical conductivity of <1 dS/m indicating no issues with acidity or salinity.

A summary of laboratory results is provided in **Table 3-6**. Full laboratory results are provided in **Appendix IX**.

Figure 3-7 Nutrient Test Results

Sample	pH[1]	EC[2]	Total OM[3]	Available[4]			
				N (as NO_3-N)	P	K	S (as SO_4-S)
		dS/m	%	ppm	ppm	ppm	ppm
Topsoil of Pit 1 (0-13 cm)	6.5^{A}	0.31^{G}	8.8^{SH}	6^{VL}	130^{H}	198^{A}	7^{L}
Topsoil of Pit 2 (0-14 cm)	6.5^{A}	0.29^{G}	8.2^{SH}	17^{VL}	140^{H}	307^{A}	3^{L}
Subsoil of Pit 2 (14-25 cm)	6.5^{A}	0.20^{G}	-	4^{VL}	-	-	3^{L}
Topsoil of Pit 4 (0-13 cm)	6.4^{A}	0.22^{G}	3.9^{A}	3^{VL}	130^{H}	232^{A}	4^{A}
Topsoil of Pit 6 (0-28 cm)	6.2^{A}	0.33^{G}	8.7^{SH}	12^{VL}	180^{H}	183^{A}	5^{L}
Subsoil of Pit 6 (28-62 cm)	6.9^{A}	0.10^{G}	-	2^{VL}	-	-	4^{L}

Notes:

[1] pH ranges are classified as follows: B = Alkaline, N = Neutral, Acidic = A, Very Acidic = VA

[2] Salinity values are categorized according to general crop requirements and are classified as follows: E = Extreme, VH = Very High, H = High, G = Good

[3] Organic matter percentages are categorized according to general crop requirements and are classified as follows: H = High, N = Normal. L = Low, VL = Very Low

[4] Available nutrient levels are categorized according to general crop requirements are classified as follows: E = Excess, O = Optimal, M = Marginal, D = Deficient

4. DISCUSSION AND RECOMMENDATIONS

4.1 Current Land Use & Crop Suitability

The ability of the Site to support a wide range of crops is limited by soil and climatic moisture deficits, coarse fragments, root restricting layers and topography. Based on current soil conditions and a review of past crops cultivated on the Site. Crops suited to the current site conditions include annual legumes, blueberries, cereals, cole crops, corn, nursery and Christmas trees, perennial forage crops, root crops, shallow rooted annual vegetables, strawberries and tree fruits (Bertrand et al. 1991). However, the moderate slopes present on the Site may favor perennial crops such as forage, crops berry and fruit crops.

4.2 Land Improvements

Given the current agricultural ratings of 4AP, 4WP, 3AT, 4AD and 6TP the main limitations to agriculture on the Site are soil moisture deficits, coarse fragments, root restricting layers and topography.

Limitations of soil moisture can typically be mitigated via the installation of an irrigation system. Depending on soil characteristics such as texture and coarse fragment composition, soil moisture deficits may not be improvable due to inherently low soil water holding capacities. PET values for the soils encountered on the Site indicate that the soil moisture limitation is generally improvable to classes 1 – 2.

Coarse fragment limitations can typically be improved by manually or mechanically removing cobbles and stones; however, the removal of gravels is generally considered impractical and therefore limitations of classes 3 - 4 would likely remain regardless of attempted improvements. The presence of coarse fragments within the soil profile can have adverse effects on mitigation measures aimed at improving other limitations.

Limitations of root restricting layers encountered in soil pits 2 and 3 could potentially be alleviated via deep ploughing or ripping to break up compacted layers. While improvements to root restricting limitations may be expected through such practices, the frequent presence of coarse fragments within the soil profile will likely impede any potential improvements. Furthermore, limitations of adverse topography may be alleviated via land leveling, however, the frequent presence of coarse fragments in the subsoil may also make this impractical. The presence of coarse fragments and rolling topography has not restricted the use of the land for annual non root crop vegetable production.

Limitations associated with topography and stoniness encountered in soil pit 10 are generally considered unimprovable. Due to the topography and poor quality soils observed along the uncultivated eastern edge of the Site, cultivated agricultural uses are limited to natural grazing for livestock.

5. SUMMARY AND CONCLUSIONS

McTavish conducted this agricultural capability assessment based on existing information a detailed soil survey with the goals of determining agricultural capability, documenting the existing condition of the Site, and developing recommendations for the subdivision and non-farm use of the Site.

The findings from the soil survey were inconsistent with existing soil and agricultural capability mapping, and therefore, agricultural capability of the Site was revised. Revisions to the agricultural land capability and soil classification is largely due to historical gravel mining on the property which has altered local topography, soil chemical and physical properties. According to the results of the soil survey, the Site comprises mineral soils of Class 3 to Class 6 that are limited due to aridity issues, coarse fragment content, root restricting layers, wetness and topography. Potential management practices that would improve agricultural capability based on the determined site limitations include the installation of irrigation, rock picking, deep ripping and land leveling.

6. CLOSING

This report has been prepared for the exclusive use of the Client with the understanding that all available information of the Site has been disclosed. The Client has acknowledged that in order for McTavish to properly provide professional service, McTavish is relying upon full disclosure and accuracy of this information. McTavish is not liable for information that has not been provided or has been misrepresented.

We trust this is the information that you require at this time. Should you have any questions regarding this report please contact the undersigned.

Sincerely,

MCTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.

Per

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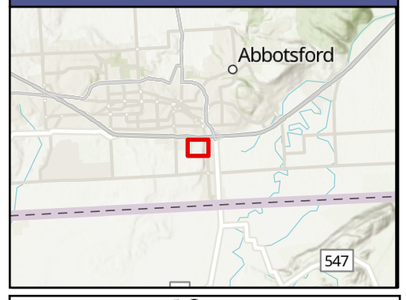
APPENDIX I. AREA OVERVIEW MAP

McTAVISH
RESOURCE & MANAGEMENT CONSULTANTS LTD.

LEGEND

- 34252 King Road Parcel
- Agricultural Land Reserve

LOCATION OVERVIEW



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Projection: NAD 1983 BC Environment Albers

Project ID: 2024-0020-AG
Project Description: King Road Agricultural Capability Assessment
Created By: MH
Date Exported: 10/30/2024

34252 King Road: Overview Map

APPENDIX II. SITE PHOTOGRAPHS

Photo 1 - Landscape of the north field looking south from soil pit 2. Weed pressure in uncultivated area is visible in foreground.

Photo 2 - Landscape of the north field looking west from soil pit 2. Slight change in elevation visible at western edge of field.

Photo 3 – Landscape of the south field looking south from soil pit 4. Partially harvested pumpkin crop visible as well as undulating topography.

Photo 4 – Landscape of the south field looking west from soil pit 4. Undulating topography visible

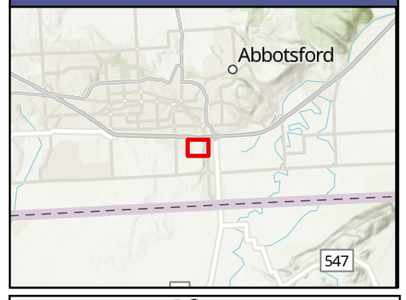
APPENDIX III. PUBLISHED SOIL SERIES MAP

McTAVISH
RESOURCE & MANAGEMENT CONSULTANTS LTD.

LEGEND

- 34252 King Road Parcel
- Agricultural Land Reserve
- BC Soil Survey Polygons

LOCATION OVERVIEW



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Scale: 1:3,000
Projection: NAD 1983 BC Environment Albers

Project ID: 2024-0020-AG
Project Description: King Road Agricultural Capability Assessment
Created By: MH
Date Exported: 10/30/2024

34252 King Road:
Published Soil Polygons

APPENDIX IV. DESCRIPTION OF SOIL SERIES PRESENT ON THE SITE

Soil series descriptions have been retrieved from Luttmerding (1981).

Abbotsford Soils (AD)

Abbotsford soils are found as pure map units to the south and east of the airport and as a dominant component of soils complexes throughout the area. These soils normally have a 20 to 50 cm of eolian deposited surface layer the overlays stratified gravelly outwash. They tend to be gently sloping to gently undulating with slopes less than 5%. The soils are well drained and moisture deficiency can be restricting to crop production and irrigation is normally required. These soils usually have an agricultural capability rating of class 1 or 2 with limitation due to moisture deficiency. With irrigation much of the class 2 can be improved to class 1.

Abbotsford soils are well suited for most agricultural crops. Annual legumes, blueberries, cereals, cole crops, corn, nursery and Christmas trees, perennial forage crops, root crops, shallow rooted annual vegetables, strawberries, and tree fruits are suitable, but may require erosion control practices for steeper grades, irrigation in shallower soils, or water management where soils with a compacted subsoil exist (Lonzo creek). Where slopes are greater than 10% an exceptional level of soil conservation management practices are required as the growth of annual crops will cause soil loss by water erosion. Instead perennial forage crops, and berry and fruit crops where a complete grass cover is maintained are recommended.

Ryder (RD)

Ryder soils are common on the uplands and lower mountain slopes to the east of Abbotsford and in the southern part of Mission Municipality. These soils have developed from medium-textured, stone-free eolian deposits that overly moderately coarse textured glacial till. Surface and subsurface textures are mostly silt loam, varying sometimes to loam or fine sandy loam. The moderately stony underlying compact glacial till is sandy loam or gravelly sandy loam, sometimes containing lenses of gravel or sand. Ryder soils vary from gently sloping to very steep slopes, with gradients between 5 and 50%. These soils are well drained. They are moderately pervious, have high water holding capacity, and slow to moderate surface runoff. Nutrient holding capacity is moderate to high.

Ryder soils are suitable for most crops but topography generally limits their agricultural use. Irrigation may be required in dry years.

Lonzo Creek Soils (LZ)

Lonzo Creek soils occupy substantial upland areas in the eastern part of the map area. Lonzo Creek soils have developed from shallow (20 to 50 cm thick), medium-textured, stone-free eolian deposits that overlie moderately coarse textured, compact glacial till. Lonzo Creek soils, in uncleared areas, generally have 5 cm of variably decomposed; organic forest litter on the soil surface. This organic material is underlain by between 20 and 50 cm of reddish-brown to yellow-ish brown, friable, silty material. The soil classification of Lonzo Creek soils is Orthic Humo-Ferric Podzol.
Lonzo soils are well to moderately well drained and have moderate water holding capacity and slow to moderate surface runoff. Lonzo Creek soils are mostly gently to strongly rolling although undulating or hilly areas also occur. Substantial areas of Lonzo Creek soils are currently cleared and cultivated for agriculture. The soils are suited to most agricultural crops although adverse topography is limiting in some areas.

Marble Hill Soils (MH)

Marble Hill soils occur as pure map units and complexes near Abbotsford and Mission. These soils have developed from medium-textured, stone-free, eolian deposits (mostly silt-loam, sometimes varying to loam or fine sandy loam), greater than 50 cm thick, which overlie glaciofluvial deposits (either sandy gravel or gravely sand). These are generally found in upland areas and can vary from gently sloping to steep slopes (between 4 and 15%). These soils are well drained with moderate perviousness, high water holding capacity, and slow surface runoff.

Marble Hill Soils are limited for agricultural use by moisture deficiency. Many climatically adapted crops are suitable. Irrigation is required for good productivity during dry growing season.

APPENDIX V. SOIL CARDS

Soil Pit 1

Location: PID 013-380-508

General Description

Land Use	Agriculture – Pumpkin Field
Mapped Soil Series	Ryder (80%) / Lonzo Creek (20%)
Mapped Soil Classification	Orthic Humo-Ferric Podzol (100%)
Assessed Soil Classification	Orthic Melanic Brunisol

General Observations

Rooting Depth	18 cm
Water Table	Not encountered
Drainage Class	Well drained
Topography	Gentle (5 - 10% slopes)
Vegetation	Pumpkins
Comments:	Pit located in area historically disturbed for gravel extraction.

Figure 1. Pit 1 representative landscape.

Figure 2. Pit 1 soil profile.

Horizon	Depth	Coarse Fragments (%)		Texture	Structure	Consistence	Colour	Comments (Von post scale, mottling, admixing, etc.)
Ap	0 – 13 cm	5%	Gravels	Silt loam	Medium subangular blocky	Firm	10YR 3/3	
Bm	13 - 23 cm	20%	Gravels	Sandy loam	Very fine subangular blocky	Loose	2.5Y 4/4	
C	23 - 47 cm	50%	Gravels	Loamy sand	Very fine subangular blocky	Loose	5Y 3/2	

Field Baseline Assessment – Soil Sampling		Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Date of field assessment: October 17, 2024. Completed by: Max Hoyer, A.Ag.	PID: 013-380-508	Soil Pit ID: 1
		Latitude: 49°01'46.45"N	Longitude: 122°16'52.34"W

Soil Pit 1

Location: PID 013-380-508

General Description

Land Use	Agriculture – Pumpkin Field
Mapped Soil Series	Ryder (80%) / Lonzo Creek (20%)
Mapped Soil Classification	Orthic Humo-Ferric Podzol (100%)
Assessed Soil Classification	Orthic Melanic Brunisol

General Observations

Rooting Depth	18 cm
Water Table	Not encountered
Drainage Class	Well drained
Topography	Gentle (5 - 10% slopes)
Vegetation	Pumpkins
Comments:	Pit located in area historically disturbed for gravel extraction.

Figure 1. Pit 1 representative landscape.

Figure 2. Pit 1 soil profile.

Horizon	Depth	Coarse Fragments (%)		Texture	Structure	Consistence	Colour	Comments (Von post scale, mottling, admixing, etc.)
Ap	0 – 13 cm	5%	Gravels	Silt loam	Medium subangular blocky	Firm	10YR 3/3	
Bm	13 - 23 cm	20%	Gravels	Sandy loam	Very fine subangular blocky	Loose	2.5Y 4/4	
C	23 - 47 cm	50%	Gravels	Loamy sand	Very fine subangular blocky	Loose	5Y 3/2	

Field Baseline Assessment – Soil Sampling		Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Date of field assessment: October 17, 2024. Completed by: Max Hoyer, A.Ag.	PID: 013-380-508	Soil Pit ID: 1
		Latitude: 49°01'46.45"N	Longitude: 122°16'52.34"W

Soil Pit 2

Location: PID 013-380-508

General Description

Land Use	Agriculture – Pumpkin Field
Mapped Soil Series	Ryder (80%) / Lonzo Creek (20%)
Mapped Soil Classification	Orthic Humo-Ferric Podzol (100%)
Assessed Soil Classification	Orthic Melanic Brunisol

General Observations

Rooting Depth	22 cm
Water Table	Not encountered
Drainage Class	Moderately well drained
Topography	Gently sloping (2 - 5% slopes)
Vegetation	Uncultivated, clover, pigweed, and orchard grass dominate
Comments:	Pit located in area historically disturbed for gravel extraction.

Figure 3. Pit 2 representative landscape.

Figure 4. Pit 2 soil profile.

Horizon	Depth	Coarse Fragments (%)		Texture	Structure	Consistence	Colour	Comments (Von post scale, mottling, admixing, etc.)
Ap	0 – 14 cm	5%	Gravels	Silt loam	Fine subangular blocky	Friable	10YR 3/2	
Bm	14 - 25 cm	25%	Gravels	Silt loam	Medium subangular blocky	Friable	10YR 4/3	
BC	25 - 61 cm	35%	Gravels with some cobbles	Silt loam	Fine subangular blocky	Very firm	10YR 4/4	Compaction encountered in BC. Unable to hand excavate deeper due to compaction.

Field Baseline Assessment – Soil Sampling		Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Date of field assessment: October 17, 2024. Completed by: Max Hoyer, A.Ag	PID: 013-380-508	Soil Pit ID: 2
		Latitude: 49°01'44.13"N	Longitude: 122°16'43.76"W

Soil Pit 3

Location: PID 013-380-508

General Description

Land Use	Agriculture – Pumpkin Field
Mapped Soil Series	Ryder (80%) / Lonzo Creek (20%)
Mapped Soil Classification	Orthic Humo-Ferric Podzol (100%)
Assessed Soil Classification	Orthic Melanic Brunisol

General Observations

Rooting Depth	25 cm
Water Table	Not encountered
Drainage Class	Moderately well drained
Topography	Gently sloping (2 - 5% slopes)
Vegetation	Pumpkins
Comments:	Pit located in area historically disturbed for gravel extraction.

Figure 5. Pit 3 representative landscape.

Figure 6. Pit 3 soil profile.

Horizon	Depth	Coarse Fragments (%)		Texture	Structure	Consistence	Colour	Comments (Von post scale, mottling, admixing, etc.)
Ap	0 – 18 cm	5%	Gravels	Silt loam	Fine subangular blocky	Friable	10YR 3/3	
Bm	18 - 31 cm	25%	Gravels	Silt loam	Fine subangular blocky	Firm	10YR ¾	
BC	31 - 55 cm	35%	Gravels	Silt loam	Fine subangular blocky	Firm	10YR 4/3	Compaction encountered in BC horizon. Unable to hand excavate deeper due to compaction.

Field Baseline Assessment – Soil Sampling		Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Date of field assessment: October 17, 2024. Completed by: Max Hoyer, A.Ag	PID: 013-380-508	Soil Pit ID: 3
		Latitude: 49°01'44.41"N	Longitude: 122°16'35.68"W

Soil Pit 4

Location: PID 013-380-508

General Description

Land Use	Agriculture – Pumpkin Field
Mapped Soil Series	Ryder (80%) / Lonzo Creek (20%)
Mapped Soil Classification	Orthic Humo-Ferric Podzol (100%)
Assessed Soil Classification	Orthic Humic Regosol

General Observations

Rooting Depth	23 cm
Water Table	Not encountered
Drainage Class	Well drained
Topography	Steeply sloping (15 - 30% slopes)
Vegetation	Pumpkins
Comments:	Numerous surficial coarse fragments including stones and cobbles in area surrounding pit.

Figure 7. Pit 4 representative landscape.

Figure 8. Pit 4 soil profile.

Horizon	Depth	Coarse Fragments (%)		Texture	Structure	Consistence	Colour	Comments (Von post scale, mottling, admixing, etc.)
Ap	0 – 13 cm	30%	Gravels, cobbles, and some stones on surface	Sandy loam	Fine subangular blocky	Friable	10YR 4/2	
C	13 - 39 cm	85%	Cobbles and gravels, primarily fine gravels	Sand	Single grained	Loose	10YR 5/3	
C 2	39 - 47 cm	60%	Gravels	Sand	Single grained	Loose	10YR 5/2	

Field Baseline Assessment – Soil Sampling		Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Date of field assessment: October 17, 2024. Completed by: Max Hoyer, A.Ag	PID: 013-380-508	Soil Pit ID: 4
		Latitude: 49°01'40.57"N	Longitude: 122°16'38.14"W

Soil Pit 5

Location: PID 013-380-508

General Description

Land Use	Agriculture – Pumpkin Field
Mapped Soil Series	Ryder (60%) / Lonzo Creek (20%) / Marble Hill (20%)
Mapped Soil Classification	Orthic Humo-Ferric Podzol (100%)
Assessed Soil Classification	Orthic Humo-Ferric Podzol

General Observations

Rooting Depth	52 cm
Water Table	Not encountered
Drainage Class	Moderately well drained
Topography	Gentle (5 - 10% slopes)
Vegetation	Pumpkins
Comments:	

Figure 9. Pit 5 representative landscape.

Figure 10. Pit 5 soil profile.

Horizon	Depth	Coarse Fragments (%)		Texture	Structure	Consistence	Colour	Comments (Von post scale, mottling, admixing, etc.)
Ap	0 – 34 cm	2%	Gravel	Silt loam	Medium subangular blocky	Friable	10YR 3/3	
Bf	34 - 64 cm	0%		Silt loam	Fine subangular blocky	Friable	7.5YR 4/6	Podzolic Bf modified via cultivation at surface.
BC	64 - 86 cm	0%		Silt loam	Fine subangular blocky	Loose	10YR 4/3	

Field Baseline Assessment – Soil Sampling		Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Date of field assessment: October 17, 2024. Completed by: Max Hoyer, A.Ag.	PID: 013-380-508	Soil Pit ID: 5
		Latitude: 49°01'39.36"N	Longitude: 122°16'52.74"W

Soil Pit 6

Location: PID 013-380-508

General Description

Land Use	Agriculture – Pumpkin Field
Mapped Soil Series	Ryder (60%) / Lonzo Creek (20%) / Marble Hill (20%)
Mapped Soil Classification	Orthic Humo-Ferric Podzol (100%)
Assessed Soil Classification	Orthic Humo-Ferric Podzol

General Observations

Rooting Depth	28 cm
Water Table	Not encountered
Drainage Class	Moderately well drained
Topography	Moderately rolling (9 - 15% slopes)
Vegetation	Pumpkins
Comments:	

Figure 11. Pit 6 representative landscape.

Figure 12. Pit 6 soil profile.

Horizon	Depth	Coarse Fragments (%)		Texture	Structure	Consistence	Colour	Comments (Von post scale, mottling, admixing, etc.)
Ap	0 – 28 cm	2%	Gravel	Silt loam	Medium subangular blocky	Friable	10YR 3/1	
Bf	28 - 62 cm	2%	Gravel	Silt loam	Fine subangular blocky	Friable	7.5YR 5/6	Podzolic Bf modified via cultivation at surface.
C	62 - 75 cm	25%	Fine gravel	Sandy loam	Very fine subangular blocky	Loose	10YR 5/4	

Field Baseline Assessment – Soil Sampling		Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Date of field assessment: October 17,, 2024. Completed by: Max Hoyer, A.Ag	PID: 013-380-508	Soil Pit ID: 6
		Latitude: 49°01'34.86"N	Longitude: 122°16'46.89"W

Soil Pit 7

Location: PID 013-380-508

General Description

Land Use	Agriculture – Pumpkin Field
Mapped Soil Series	Ryder (80%) / Lonzo Creek (20%)
Mapped Soil Classification	Orthic Humo-Ferric Podzol (100%)
Assessed Soil Classification	Orthic Humo-Ferric Podzol

General Observations

Rooting Depth	27 cm
Water Table	Not encountered
Drainage Class	Moderately well drained
Topography	Gently rolling (5 - 9% slopes)
Vegetation	Pumpkins
Comments:	Excavated to 42 cm to confirm similarity to pits 5 and 6.

Figure 11. Pit 7 representative landscape.

Figure 12. Pit 7 soil profile.

Horizon	Depth	Coarse Fragments (%)		Texture	Structure	Consistence	Colour	Comments (Von post scale, mottling, admixing, etc.)
Ap	0 – 24 cm	2%	Gravel	Silt loam	Fine subangular blocky	Friable	10YR 3/1	
Bf	24 - 42 cm	2%	Gravel	Silt loam	Fine subangular blocky	Loose	10YR 5/6	Podzolic Bf modified via cultivation at surface.

Field Baseline Assessment – Soil Sampling		Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Date of field assessment: October 17, 2024. Completed by: Max Hoyer, A.Ag	PID: 013-380-508	Soil Pit ID: 7
		Latitude: 49°01'35.04"N	Longitude: 122°16'39.60"W

Soil Pit 8

Location: PID 013-380-508

General Description

Land Use	Agriculture – Pumpkin Field
Mapped Soil Series	Ryder (80%) / Lonzo Creek (20%)
Mapped Soil Classification	Orthic Humo-Ferric Podzol (100%)
Assessed Soil Classification	Orthic Humic Regosol

General Observations

Rooting Depth	35 cm
Water Table	Not encountered
Drainage Class	Well drained
Topography	Nearly level (<5% slopes)
Vegetation	Pumpkins
Comments:	Coarse fragments on surface and throughout soil profile. Likely disturbance from historic mining operations. Shovel refusal at 65cm.

Figure 13. Pit 8 representative landscape.

Figure 14. Pit 8 soil profile.

Horizon	Depth	Coarse Fragments (%)		Texture	Structure	Consistence	Colour	Comments (Von post scale, mottling, admixing, etc.)
Ap	0 – 30 cm	15%	Gravel and cobbles	Silt loam	Fine subangular blocky	Friable	10YR 3/2	
BC	30 - 65 cm	55%	Gravel	Sandy loam	Granular	Loose	10YR 4/3	

Field Baseline Assessment – Soil Sampling		Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Date of field assessment: November 12, 2024. Completed by: Justin McTavish, P.Ag	PID: 013-380-508	Soil Pit ID: 7
		Latitude: 49°01'35.04"N	Longitude: 122°16'39.60"W

Soil Pit 9

Location: PID 013-380-508

General Description

Land Use	Agriculture – Pumpkin Field
Mapped Soil Series	Ryder (80%) / Lonzo Creek (20%)
Mapped Soil Classification	Orthic Humo-Ferric Podzol (100%)
Assessed Soil Classification	Orthic Humic Regosol

General Observations

Rooting Depth	30+ cm
Water Table	Not encountered
Drainage Class	Imperfectly drained
Topography	Nearly level (<5% slopes)
Vegetation	Pumpkins
Comments:	Standing water at surface.

Figure 15. Pit 9 representative landscape.

Figure 16. Pit 9 soil profile.

Horizon	Depth	Coarse Fragments (%)		Texture	Structure	Consistence	Colour	Comments (Von post scale, mottling, admixing, etc.)
Ap	0 – 30 cm	30%	Gravel and cobbles	Silt loam	Fine subangular blocky	Friable	10YR 3/2	
C	30+ cm	50%	Gravel and cobbles	Sandy loam	Granular	Loose	10YR 4/3	

Field Baseline Assessment – Soil Sampling		Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Date of field assessment: November 12, 2024. Completed by: Justin McTavish P. Ag	PID: 013-380-508	Soil Pit ID: 7
		Latitude: 49°01'35.04"N	Longitude: 122°16'39.60"W

Soil Pit 10

Location: PID 013-380-508

General Description

Land Use	Agriculture – Pumpkin Field
Mapped Soil Series	Ryder (80%) / Lonzo Creek (20%)
Mapped Soil Classification	Orthic Humo-Ferric Podzol (100%)
Assessed Soil Classification	Fill

General Observations

Rooting Depth	NA
Water Table	Not encountered
Drainage Class	Well drained
Topography	Strongly sloping (15 - 30% slopes)
Vegetation	Uncultivated forest.
Comments:	Pit installed in strongly sloping treed area along eastern edge of parcel. No evidence of soil horizonation.

Figure 17. Pit 10 representative landscape. Pit installed along slope in treed area.

Figure 18. Pit 10 soil profile.

Horizon	Depth	Coarse Fragments (%)		Texture	Structure	Consistence	Colour	Comments (Von post scale, mottling, admixing, etc.)
C	0 – 25 cm	15%	Gravel and cobbles	Silt loam	Fine subangular blocky	Friable	NA	

Field Baseline Assessment – Soil Sampling		Site Information	
McTAVISH RESOURCE & MANAGEMENT CONSULTANTS LTD.	Date of field assessment: November 12th, 2024. Completed by: Justin McTavish P.Ag	PID: 013-380-508	Soil Pit ID: 7
		Latitude: 49°01'35.04"N	Longitude: 122°16'39.60"W

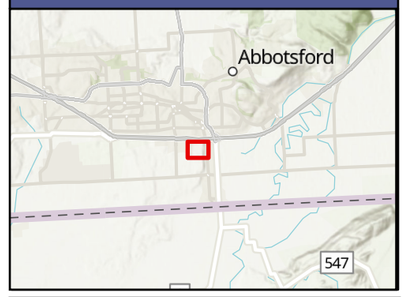
APPENDIX VI. REVISED AGRICULTURAL CAPABILITY MAP

McTAVISH
RESOURCE & MANAGEMENT
CONSULTANTS LTD.

LEGEND

- 34252 King Road Parcel
- Field Assessed Agricultural Capability Polygons
- Soil Pit Location
- Not Field Assessed (Roads and Buildings)
- Proposed Subdivision Area

LOCATION OVERVIEW



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Scale: 1:3,000
Projection: NAD 1983 BC Environment Albers

Project ID: 2024-0020-AG
Project Description: King Road Agricultural Capability Assessment
Created By: MH
Date Exported: 2/18/2025

34252 King Road: Field Assessed Agricultural Capability Polygons

APPENDIX VII. PUBLISHED AGRICULTURAL CAPABILITY MAP

McTAVISH
RESOURCE & MANAGEMENT CONSULTANTS LTD.

LEGEND

- 34252 King Road Parcel
- Agricultural Land Reserve
- BC Agricultural Capability Polygons

LOCATION OVERVIEW

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Meters

Scale: 1:3,000
Projection: NAD 1983 BC Environment Albers

Project ID: 2024-0020-AG
Project Description: King Road Agricultural Capability Assessment
Created By: MH
Date Exported: 10/30/2024

34252 King Road: Published Agricultural Capability Polygons

APPENDIX VIII. AGRICULTURAL CAPABILITY DESCRIPTIONS

In BC, land is rated for its agricultural capability through a classification system known as *The Land Capability Classification for Agriculture in British Columbia* by Kenk and Cotic (1983). Using this system, land in BC is rated between Class 1 to 7, where Class 1 is land best suited for agriculture and Class 7 is non-arable land (**Table AII-1**). For organic soils (not including peaty phases of mineral soils), the capability classes are designated as Class O1 to O7. Various subclasses describe the factor(s) that limit agriculture (**Table AII-2**).

The agricultural capability classification indicates the range of crops that can be grown and/or the management inputs required based on soil and climate parameters. The ratings can be "unimproved" based on the conditions that exist at the time of the survey without any management inputs or "improved" based on the rating after the limitations have been alleviated through improvements.

Table AII - 1 Descriptions of BC Land Capability Classes for Agriculture

Class	Description
1	Land has little or no limitations, is level or nearly level, and is easily maintained for a wide range of field crops. Soils are deep, hold moisture well, and can be managed without difficulty.
2	Land has minor limitations that either require good ongoing management practices or may restrict the range of crops (or both). Soils are deep, hold moisture well, and can be managed with little difficulty.
3	Land has limitations that require moderately intensive management practices, or may moderately restrict the range of crops, or both. Limitations may restrict choice of crop, timing and ease of tillage, planting and harvesting, and methods of soil conservation.
4	Land may only be suitable for a few crops, or a wide range of crops with low yield. Risk of crop failure is high. Soil conditions are such that special development and management practices are required. Limitations may restrict choice of crop, timing and ease of tillage, planting and harvesting, and methods of soil conservation.
5	Land has limitations that make it suitable for perennial forage or other specially adapted crops. Crops such as cranberries may be appropriate, or fruit trees or grapes if area is climatically suitable (stoniness and/or topography are not significant limitations to these crops). Productivity of these suited crops may be high. Class 5 lands may be used to cultivate field crops, provided intensive management is employed. If adverse climate is the main limitation, cultivated crops may be grown, however crop failure is expected under average conditions.
6	Land in class is non-arable but is capable of growing native and/or uncultivated forage crops. Land may be placed in this class because the terrain is unsuitable for cultivation or the use of farm machinery, the soils may not respond to intensive improvement practices, or in a region with severe climate. Diking, draining, and/or irrigation may improve Class 6 lands.

Table AIII – 2 Descriptions of BC Land Capability Subclasses for Agriculture

Subclass	Description
A Soil Moisture Deficits	The A subclass is used where crops are adversely affected by drought either through insufficient precipitation or low water holding capability in the soil. This limitation is determined for all lands subject to soil moisture deficits (SMD) during the growing season for the upper 50 cm of mineral soil. Class ratings are differentiated by the SMD: **Class 1** land, SMD occurs within 40 mm; **Class 2A**, between 40 and 115 mm; **Class 3A**, between 116 and 190 mm; **Class 4A**, between 191 and 265 mm; **Class 5A**, between 266 to 340 mm; and **Class 6A**, 341 to 415 mm and the land in present condition provides sustained natural grazing for domestic livestock.
D Undesirable soil structure and/or low perviousness	The D subclass is used when soil may be difficult to till, may pose problems for farm equipment operation and movement, and require special management for seedbed preparation. Land may have insufficient aeration, absorb, and distribute water slowly, have consolidated bedrock or permafrost, or have the depth of rooting zone restricted by conditions other than wetness such as a high-water table. In **Class 1** land, no root restricting layer is present in the upper 75 cm of the mineral soil surface and the upper 25 cm has a texture coarser than silty loam that is non-sticky. **Class 2D** has a root restricting layer that occurs from 50 to 75 cm of the mineral soil surface; or the upper 25 cm has a texture of silty loam, clay loam, or sandy clay that is slightly sticky-wet. **Class 3D** has a root restricting layer that occurs within 25 to 50 cm of the mineral soil surface, or the upper 25 cm has a texture of silty clay or clay that is sticky-wet. **Class 4D** has a root restricting layer that occurs within 25 cm of the soil surface, or the upper 25 cm has a texture of heavy clay that is very sticky-wet. **There are no subclasses 5D, 6D, or 7D.**
P Stoniness	The P subclass describes the presence of coarse fragments such as gravels (0.2 cm to 7.5 cm diameter), cobbles (7.5 cm to 25 cm diameter), stones (25 cm to 60 cm diameter), and boulders (>60 cm diameter). Coarse fragments may hinder tillage, planting, and/or harvesting. On **Class 1** land, the total coarse fragments is less than 5 percent and offers no, or very slight hindrance to cultivation. **Class 2P** has between 6 and 10% coarse fragments and less than 1 percent cobbles or stones resulting in a very slight hindrance to cultivation. **Class 3P** has between 11 and 20 % coarse fragments with cobbles and stones occupying 2 to 5% volume leading to a significant hindrance to cultivation. **Class 4P** has between 21 and 40% coarse fragments with cobbles and stones occupying 16 to 30% volume. In areas that are climatically suitable for growing tree fruits and grapes, Class 4P may not be significantly limiting. **Class 5P** has 41 to 60% of coarse fragments, or cobbles and stones occupying 6 to 15% volume, which prevents sustained cultivation unless considerable picking has taken place. **Class 6P** has 41 to 60% coarse fragments, or cobbles and stones occupying 61 to 90% volume, which prevents sustained cultivation and are impractical to pick to improve agricultural capability.
Subclass	**Description**
T Topography	The T subclass describes how topography may limit agriculture. Adverse topography may prevent the use of farm machinery, limit the types and uniformity of growth of crops, and increase the potential for water erosion. Depending on the region and crop type, topography may not be a significant limiting factor (e.g., tree fruits or grapes). Classification is based on the slope and complexity of slopes. **Class 1** land has simple slopes of 5% or less or complex slopes 2% or less. **Class 2T** has simple slopes between 6 and 10% or complex slopes between 3 and 5%; **Class 3T** has simple slopes between 11 and 15% or complex slopes between 6 and 10%; **Class 4T** has simple slopes between 16 and 20% or complex slopes between 11 and 15%; **Class 5T** has simple slopes between 21 to 30% or complex slopes between 16 to 30%; **Class 6T** has either simple or complex slopes, range from 31 to 60% and the land in its present condition provides sustained natural grazing for domestic livestock.

W Excess Water	The W subclass describes how imperfect or poor drainage due to high water tables, seepage, or runoff may limit or prevent agriculture. On **Class 1** land, excess water is not a limiting factor. **Class 2W** land may have occasional excess water during the growing season and without other contribution limiting factors, is not likely to significantly impact agriculture or the range of crops that can be grown. **Class 3W** has occasional occurrences of excess water during the growing season and the occurrence of excess soil water during the winter months that would adversely affect perennial crops. **Class 4W** has frequent or continues excess water during the growing season and the water level is at the surface most of the winter and into mid spring. This may force late seeding and/or restrict the crop type or production in a moderate way.

APPENDIX IX. LABORATORY RESULTS

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Farm Soil Analysis

Bill To:	McTavish Resource &	Grower Name:	King Rd PLC	Lot ID:	1769021
Address:		Site ID:		Report Number:	3062202
	203-19292 60 Ave.	Field Name:	King Rd SPS,6 Sub	Report Type:	Final Report
	Surrey, BC., Canada	Acres:		Date Received:	Oct 18, 2024
	V3S 3M2	Legal Location:		Date Reported:	Oct 22, 2024
Agreement:	36394	Previous Crop:	Crop not provided	Event Code:	

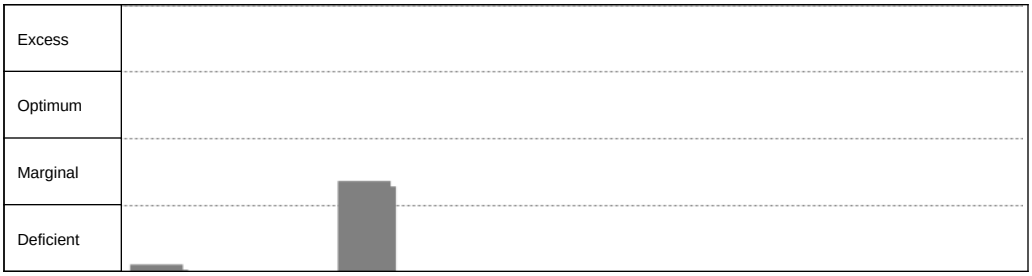
Nutrient analysis (ppm)

Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	Na
0" - 6"	2			4									
Total lbs/acre	5			8									
Estimated lbs/acre	9			16									

*Nitrate-N **Sulfate-S n/a = not analysed

Soil Quality

pH	EC(dS/m)	OM(%)	Lot Ref #
6.9	0.1		7695



Alkaline	*Extreme*	*High*
Neutral	*Very High*	*Normal*
Acidic	*High*	*Low*
Very Acidic	*Good*	*Very Low*

Texture *Silt Loam* Hand Texture *n/a*

Sand 32.0 % Silt 61.0 % Clay 7.2 %

Ammonium n/a

BS n/a CEC n/a

Ca n/a Mg n/a Na n/a K n/a

TEC n/a

Lime n/a Buffer pH n/a K/Mg Ratio n/a

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

	Crop not provided					Crop not provided				
Macro-nutrients	**Yield**	**N**	**P2O5**	**K2O**	**S**	**Yield**	**N**	**P2O5**	**K2O**	**S**
Growing Condition		To be added (lbs/acre)					To be added (lbs/acre)			
Excellent										
Average										
Your Goal										
Removal Rate (Seed/Total)										
Micro-nutrients	Iron	Copper	Zinc	Boron	Manganese	Iron	Copper	Zinc	Boron	Manganese
To be added (lbs/ac)										

Comments:

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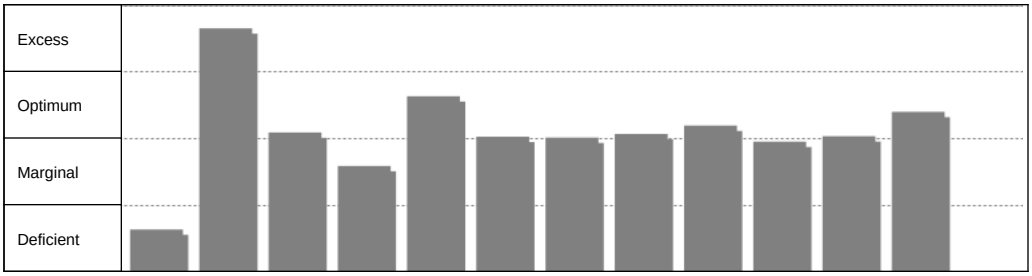
Farm Soil Analysis

Bill To:	McTavish Resource &	Grower Name:	King Rd PLC	Lot ID:	1769021
Address:		Site ID:		Report Number:	3062203
	203-19292 60 Ave.	Field Name:	King Rd SPS,6 A	Report Type:	Final Report
	Surrey, BC., Canada	Acres:		Date Received:	Oct 18, 2024
	V3S 3M2	Legal Location:		Date Reported:	Oct 23, 2024
Agreement:	36394	Previous Crop:	Crop not provided	Event Code:	

Nutrient analysis (ppm)

Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	Na
0" - 6"	12	180	183	5	709	56	26.1	1.1	4.7	0.8	3.8	45	<30



Soil Quality

pH	EC(dS/m)	OM(%)	Lot Ref #
6.2	0.33	8.7	7696

Alkaline	*Extreme*	*High*
Neutral	*Very High*	*Normal*
Acidic	*High*	*Low*
Very Acidic	*Good*	*Very Low*

Total lbs/acre	25	369	365	11
Estimated lbs/acre	51	369	365	21

Texture *Silt Loam* Hand Texture *n/a*

Sand 33.6 % Silt 54.0 % Clay 12.1 %

Ammonium n/a

BS 61 % CEC 7.4 meq/100 g

Ca 48 % Mg 6.2 % Na <1.8 % K 6.4 %

TEC 7.4 meq/100 g

Lime n/a Buffer pH n/a K/Mg Ratio n/a

*Nitrate-N **Sulfate-S n/a = not analysed

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

	Crop not provided					Crop not provided				
Macro-nutrients	**Yield**	**N**	**P2O5**	**K2O**	**S**	**Yield**	**N**	**P2O5**	**K2O**	**S**
Growing Condition		To be added (lbs/acre)					To be added (lbs/acre)			
Excellent										
Average										
Your Goal										
Removal Rate (Seed/Total)										
Micro-nutrients	Iron	Copper	Zinc	Boron	Manganese	Iron	Copper	Zinc	Boron	Manganese
To be added (lbs/ac)										

Comments:

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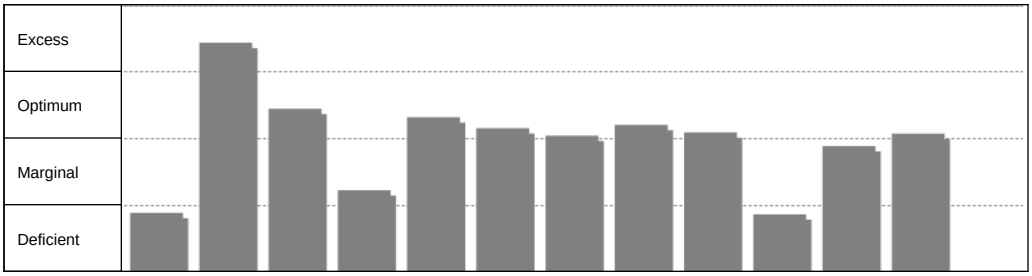
Farm Soil Analysis

Bill To:	McTavish Resource &	Grower Name:	King Rd PLC	Lot ID:	1769021
Address:		Site ID:		Report Number:	3062204
	203-19292 60 Ave.	Field Name:	King Rd SP2 A	Report Type:	Final Report
	Surrey, BC., Canada	Acres:		Date Received:	Oct 18, 2024
	V3S 3M2	Legal Location:		Date Reported:	Oct 23, 2024
Agreement:	36394	Previous Crop:	Crop not provided	Event Code:	

Nutrient analysis (ppm)

Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	Na
0" - 6"	17	140	307	3	457	82	54.3	1.7	2.8	0.3	1.9	15	41



Soil Quality

pH	EC(dS/m)	OM(%)	Lot Ref #
6.5	0.29	8.2	7697

Alkaline	*Extreme*	*High*
Neutral	*Very High*	*Normal*
Acidic	*High*	*Low*
Very Acidic	*Good*	*Very Low*

Total lbs/acre	35	287	614	7
Estimated lbs/acre	71	287	614	13

Texture *Loam* Hand Texture *n/a*

Sand 49.0 % Silt 42.0 % Clay 8.6 %

Ammonium n/a

BS 95 % CEC 4.1 meq/100 g

Ca 55 % Mg 16 % Na 4.3 % K 19 %

TEC 4.1 meq/100 g

Lime n/a Buffer pH n/a K/Mg Ratio n/a

*Nitrate-N **Sulfate-S n/a = not analysed

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

	Crop not provided					Crop not provided				
Macro-nutrients	**Yield**	**N**	**P2O5**	**K2O**	**S**	**Yield**	**N**	**P2O5**	**K2O**	**S**
Growing Condition		To be added (lbs/acre)					To be added (lbs/acre)			
Excellent										
Average										
Your Goal										
Removal Rate (Seed/Total)										
Micro-nutrients	Iron	Copper	Zinc	Boron	Manganese	Iron	Copper	Zinc	Boron	Manganese
To be added (lbs/ac)										

Comments:

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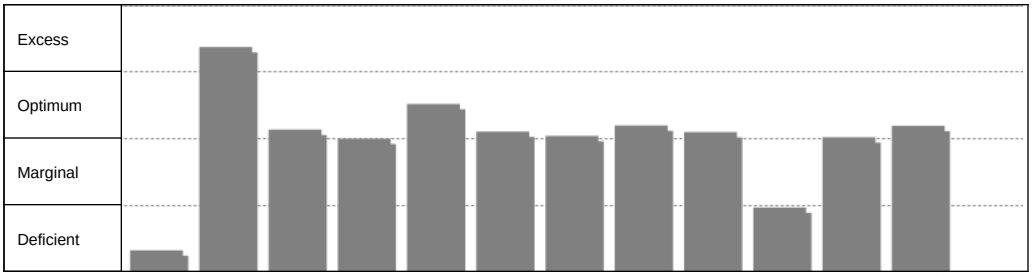
Farm Soil Analysis

Bill To:	McTavish Resource &	Grower Name:	King Rd PLC	Lot ID:	1769021
Address:		Site ID:		Report Number:	3062205
	203-19292 60 Ave.	Field Name:	King Rd SP1 Ap	Report Type:	Final Report
	Surrey, BC., Canada	Acres:		Date Received:	Oct 18, 2024
	V3S 3M2	Legal Location:		Date Reported:	Oct 23, 2024
Agreement:	36394	Previous Crop:	Crop not provided	Event Code:	

Nutrient analysis (ppm)

Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	Na
0" - 6"	6	130	198	7	616	71	50.8	1.6	2.9	0.4	3.0	26	39



Soil Quality

pH	EC(dS/m)	OM(%)	Lot Ref #
6.5	0.31	8.8	7698

Alkaline	*Extreme*	*High*
Neutral	*Very High*	*Normal*
Acidic	*High*	*Low*
Very Acidic	*Good*	*Very Low*

Total lbs/acre	13	262	395	15
Estimated lbs/acre	26	262	395	30

Texture *Loam* Hand Texture *n/a*

Sand 44.0 % Silt 46.0 % Clay 10.3 %

Ammonium n/a

BS 100 % CEC 4.3 meq/100 g

Ca 70.9 % Mg 13 % Na 3.9 % K 11.7 %

TEC 4.3 meq/100 g

Lime n/a Buffer pH n/a K/Mg Ratio n/a

*Nitrate-N **Sulfate-S n/a = not analysed

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

	Crop not provided					Crop not provided				
Macro-nutrients	**Yield**	**N**	**P_2O_5**	**K_2O**	**S**	**Yield**	**N**	**P_2O_5**	**K_2O**	**S**
Growing Condition		To be added (lbs/acre)					To be added (lbs/acre)			
Excellent										
Average										
Your Goal										
Removal Rate (Seed/Total)										
Micro-nutrients	Iron	Copper	Zinc	Boron	Manganese	Iron	Copper	Zinc	Boron	Manganese
To be added (lbs/ac)										

Comments:

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Farm Soil Analysis

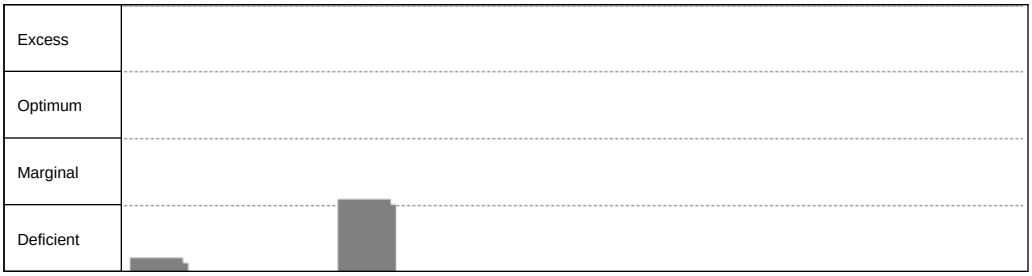
Bill To:	McTavish Resource &	Grower Name:	King Rd PLC	Lot ID:	1769021
Address:		Site ID:		Report Number:	3062206
	203-19292 60 Ave.	Field Name:	King Rd SP2 Sub	Report Type:	Final Report
	Surrey, BC., Canada	Acres:		Date Received:	Oct 18, 2024
	V3S 3M2	Legal Location:		Date Reported:	Oct 22, 2024
Agreement:	36394	Previous Crop:	Crop not provided	Event Code:	

Nutrient analysis (ppm)

Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	Na
0" - 6"	4			3									

Soil Quality

pH	EC(dS/m)	OM(%)	Lot Ref #
6.5	0.2		7699



Alkaline	*Extreme*	*High*
Neutral	*Very High*	*Normal*
Acidic	*High*	*Low*
Very Acidic	*Good*	*Very Low*

Total lbs/acre	8			5
Estimated lbs/acre	17			10

Texture *Loam* Hand Texture *n/a*

Sand 41.6 % Silt 46.0 % Clay 12.1 %

Ammonium n/a

BS n/a CEC n/a

Ca n/a Mg n/a Na n/a K n/a

TEC n/a

Lime n/a Buffer pH n/a K/Mg Ratio n/a

*Nitrate-N **Sulfate-S n/a = not analysed

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

	Crop not provided					Crop not provided				
Macro-nutrients	**Yield**	**N**	**P2O5**	**K2O**	**S**	**Yield**	**N**	**P2O5**	**K2O**	**S**
Growing Condition		To be added (lbs/acre)					To be added (lbs/acre)			
Excellent										
Average										
Your Goal										
Removal Rate (Seed/Total)										
Micro-nutrients	Iron	Copper	Zinc	Boron	Manganese	Iron	Copper	Zinc	Boron	Manganese
To be added (lbs/ac)										

Comments:

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Farm Soil Analysis

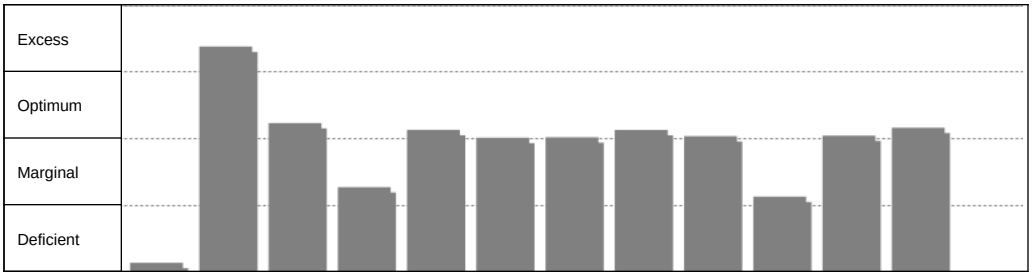
Bill To:	McTavish Resource &	Grower Name:	King Rd PLC	Lot ID:	1769021
Address:		Site ID:		Report Number:	3062207
	203-19292 60 Ave.	Field Name:	King Rd SP4 A	Report Type:	Final Report
	Surrey, BC., Canada	Acres:		Date Received:	Oct 18, 2024
	V3S 3M2	Legal Location:		Date Reported:	Oct 23, 2024
Agreement:	36394	Previous Crop:	Crop not provided	Event Code:	

Nutrient analysis (ppm)

Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	Na
0" - 6"	3	130	232	4	306	53	30.4	1.4	2	0.5	4.2	23	<30

Soil Quality

pH	EC(dS/m)	OM(%)	Lot Ref #
6.4	0.22	3.9	7700



Alkaline	*Extreme*	*High*
Neutral	*Very High*	*Normal*
Acidic	*High*	*Low*
Very Acidic	*Good*	*Very Low*

Total lbs/acre	6	265	464	7
Estimated lbs/acre	11	265	464	14

Texture *Sandy Loam* Hand Texture *n/a*

Sand 57.0 % Silt 32.0 % Clay 10.7 %

Ammonium n/a

BS 68 % CEC 3.8 meq/100 g

Ca 41 % Mg 12 % Na <3.5 % K 16 %

TEC 3.8 meq/100 g

Lime n/a Buffer pH n/a K/Mg Ratio n/a

*Nitrate-N **Sulfate-S n/a = not analysed

RECOMMENDATIONS FOR BALANCED CROP NUTRITION

	Crop not provided					Crop not provided				
Macro-nutrients	**Yield**	**N**	**P2O5**	**K2O**	**S**	**Yield**	**N**	**P2O5**	**K2O**	**S**
Growing Condition		To be added (lbs/acre)					To be added (lbs/acre)			
Excellent										
Average										
Your Goal										
Removal Rate (Seed/Total)										
Micro-nutrients	Iron	Copper	Zinc	Boron	Manganese	Iron	Copper	Zinc	Boron	Manganese
To be added (lbs/ac)										

Comments:

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