



Provincial Agricultural Land Commission - Applicant Submission

Application ID: 106988
Application Type: Removal of Soil (Extraction) within the ALR
Status: Submitted to L/FNG
Name: Weitzel et al.
Local/First Nation Government: Peace River Regional District

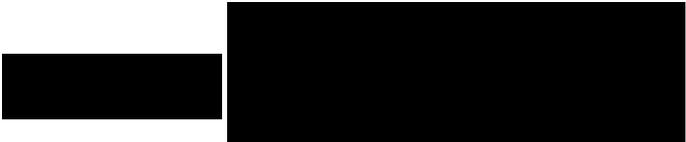
1. Parcel(s) Under Application

Parcel #1

Parcel Type Fee Simple
Legal Description THE FRACTIONAL EAST 1/2 OF DISTRICT LOT 1322 PEACE RIVER DISTRICT EXCEPT PLAN PGP37361 AND PART DEDICATED ROAD ON PLAN BCP25195
Approx. Map Area 100.3ha
PID 014-837-021
Purchase Date Jan 1, 1990
Farm Classification Yes
Civic Address 22219 Upper Halfway Road
Certificate Of Title State of Title Certificate 014 837 021.pdf

Land Owner(s)	Organization	Phone	Email	Corporate Summary
Christa Weitzel	Not Applicable			Not Applicable
Eckbert Weitzel	Not Applicable			Not Applicable
Margrit Weitzel	Not Applicable			Not Applicable

Peter Weitzel Not Applicable



Parcel #2

Parcel Type Fee Simple

Legal Description THE FRACTIONAL WEST 1/2 OF DISTRICT LOT 1322 PEACE RIVER DISTRICT EXCEPT: PART PLAN PGP37361, PART ROAD ON PLAN BCP25194

Approx. Map Area 142.98ha

PID 014-837-137

Purchase Date Jan 1, 1990

Farm Classification Yes

Civic Address 22219 Upper Halfway Road

Certificate Of Title State of Title Certificate 014 837 137.pdf

Land Owner(s)	Organization	Phone	Email	Corporate Summary
Christa Weitzel	Not Applicable			Not Applicable
Eckbert Weitzel	Not Applicable			Not Applicable
Margrit Weitzel	Not Applicable			Not Applicable



2. Other Owned Parcels

Do any of the land owners added previously own or lease other parcels that might inform this application process? Yes

Describe the other parcels including their location, who owns or leases them, and their use. 014-826-640, 22263 Upper Halfway Road

3. Primary Contact

Type	Land Owner
First Name	Eckbert
Last Name	Weitzel
Organization (If Applicable)	No Data
Phone	[REDACTED]
Email	[REDACTED]

4. Government

Local or First Nation Government: Peace River Regional District

5. Land Use

Land Use of Parcel(s) under Application

Describe all agriculture that currently takes place on the parcel(s). Cow Calf Production: Pasture and Forage Production

Describe all agricultural improvements made to the parcel(s). approx. 50 ha of cultivated land, approx. 10 ha of improved pasture, entire parcels fenced and cross fenced, Yard site with house, outbuildings and corrals on W 1/2 DL 1322

Describe all other uses that currently take place on the parcel(s). Previous Sand and Gravel Permit

Land Use of Adjacent Parcels

	Main Land Use Type	Specific Activity
North	Agricultural / Farm	Cow - Calf Production (Forage Production, Pasture)
East	Agricultural / Farm	Cow - Calf Production (Pasture)
South	Agricultural / Farm	Cow - Calf Production (Pasture)

West	Agricultural / Farm	Cow - Calf Production (Forage Production, Pasture)
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6. Proposal

Are you removing soil and placing fill in order to build a structure? No

Has the ALC previously received an application or Notice of Intent for this proposal? Yes

Application or NOI ID 106531

What is the purpose of the proposal? To continue mining a deposit of sand and gravel seams. Mining started in 2006 and has provided supplemental income to the family's cow calf operation. Mined area of land has been continuously reclaimed according to the Mine Development and Reclamation Plan and has been returned to agricultural use.

Removal of Soil Project Duration 10 -20 years

Soil to be Removed

Volume 107500 m³

Area 21000 m²

Maximum Depth 5.5 m

Average Depth 5 m

Soil Already Removed

Volume 164000 m³

Area 82000 m²

Maximum Depth 5 m

Average Depth	2 m
Describe the type of soil proposed to be removed.	Aggregate (Sand and Gravel)
What steps will be taken to reduce impacts to surrounding agricultural land?	Phasing of project with continuous reclamation of disturbed areas according to Mine Development and Reclamation Plan, Seeding of topsoil and overburden storage areas to prevent weed infestation. Grazing of Forage on undisturbed and reclaimed area, use of electric fencing and rotational grazing practices to promote plant growth. Erosion and sediment control, contouring to prevent erosion.
Proposal Map / Site Plan	Expansion Area.kml
Cross Sections	Fig3_CrossSections_25011_R1.pdf
Reclamation Plan	25011_CSR_MDRP_R0.pdf

7. Optional Documents

Type	Description	File Name
Photo of the Application Site	Reclamation Work	2018- spring, Reclamation Pictures.pdf
Photo of the Application Site	Reclamation work 2025	Reclamation 2025 Phase 2 (3).jpeg
Photo of the Application Site	Reclamation work 2025	Reclamation 2025 Phase 2 (2).jpeg
Photo of the Application Site	Reclamation work 2025	Reclamation 2025 Phase 2 (1).jpeg



Phase 2, May 5, 2018
looking west



Phase 3, May 5, 2018
looking north



Pit access, May 5, 2018
looking north



Phase 2, May 5, 2018
looking east



Phase 1, May 5, 2018,
north east corner



Phase 1, June 10, 2018,
looking north



Phase 1, May 5, 2018,
west side near phase 2



Phase 1 and 2,
May 5, 2018, view
from pit access,
Upper Halfway
Road turn off

Mine Development and Reclamation Plan

Crystal Springs Ranch Gravel Pit



Prepared for:
E&C Weitzel Holdings Ltd.

August 20, 2025

Management Plan - R0

Project No.: 25011
Client File: n/a



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Table of Revisions

Revision No.	Date	Reason/Type of Revision
R0	August 20, 2025	Original plan issued.

1 Project and Property Description

Blackbird Environmental Ltd. (Blackbird) was retained by E&C Weitzel Holdings Ltd. to prepare this mine development and reclamation plan (MDRP) for the continued operation of the existing Crystal Springs Ranch Gravel Pit to facilitate and support a renewal Notice of Work application to the British Columbia (BC) Ministry of Mining and Critical Materials and a Notice of Intent to the BC Agricultural Land Commission (ALC). Based on the provided project information and past extraction volume records, this project is not subject to review under the BC *Environmental Assessment Act*.

The Crystal Springs Ranch Gravel Pit was originally permitted for an 8.2 ha footprint. However, only 1.7 ha of active extraction area and 0.2 ha of access road remain in operation today. The remaining 6.3 ha of the previously disturbed footprint has been reclaimed to agricultural standards. Field assessments confirmed adequate topsoil replacement, soil depth and distribution, as well as strong forage establishment. These areas have been in use for grazing and forage production. As such, the reclaimed lands are considered returned to agriculture and no longer form part of the active mine disturbance.

The proposed expansion is a 2.1 ha extension to the northwest of the current active phase. This location represents a logical continuation of the existing pit, minimizing new disturbance and maintaining a compact footprint. With this expansion, the mine should be considered to occupy a maximum of 4.0 ha (pit + access + extension).

The pit is located approximately 91 km northwest of Fort St. John, BC (see Figure 1 in Appendix C), and overlaps two parcels of private land. Please refer to Table 1 below for the parcel descriptions.

Table 1: Parcel Description

DLS Location	Assessment Roll Number	Parcel Identifier
FRAC E 1/2 OF DL 1322 PEACE RIVER EXC PL PGP37361 & PT DED RD ON PL BCP25195	760-041552.000	014-837-021
FRAC W 1/2 OF DL 1322 PEACE RIVER EXC PT PL PGP37361 PT RD ON PL BCP25194	760-041551.000	014-837-137

The areas of the subject properties not subject to gravel extraction activities have been previously cleared of vegetation and are currently utilized for forage production and grazing.

The objective of this MDRP is to provide a practical guide that will protect the site and surrounding ecosystems from potential negative environmental impacts such as topsoil admixing, subsidence, erosion, poor slope stability, contamination, as well as the establishment and spread of noxious weeds. Once fully implemented, the provisions of this mine development and reclamation plan will speed up the process of returning the site to agricultural production conditions which are comparable to the surrounding ecosystems.

2 Methods & Approaches

2.1 Desktop Review

As recommended in 'Soil Inventory Methods for BC' (BC RIC 1995), Blackbird's team reviewed available current and historic satellite imagery for the subject parcel (including the existing pit area) to pre-type soil map units, i.e., determine land use patterns likely related to soil, hydrology, topography, or climate factors (e.g., wetlands, cultivated areas). Potential third-party interests, as well as current geological, biological, and agricultural capability mapping within the project area were explored via imapBC and the PRRD web mapping application.

Blackbird staff accessed a variety of digitized maps and publicly available GIS layers in the desktop review, including Soil Survey Report No. 18 from the "Soils of the Halfway River Area of British Columbia" at a scale of 1:125,000 (Lord 1973) and recent soil survey data from the "Soil Information Finder Tool" (SIFT), developed by the BC Ministry of Agriculture (AGRI) and the BC Ministry of Environment (MoE).

Additional data layers accessed for the purpose of the assessment of the pit area include GIS data related to hydrology and wetlands, cultural features (e.g., roadways and industrial activities), forestry and vegetation, terrain, surficial geology, fish, and wildlife, as well as zoning and land ownership information.

The sources of information described above were incorporated into georeferenced digital maps, which were used to guide the field assessment. The resulting pre-typed soil map polygons were considered a first approximation of the map units identified through the field component of the assessment.

2.2 Field Procedures

Field procedures were based on Section 2 of the "Field Manual for Describing Terrestrial Ecosystems, 2nd Edition" (BC MFR and BC MOE 2010).

The field assessment was undertaken as an authoritative or 'free' survey. This type of survey uses known and inferred soil-landscape relationships to predict soil characteristics (BC RIC 1995). During this type of survey, the assessment professional chooses a representative sample plot within an undisturbed portion in immediate vicinity of the current pit and extrapolates the information gathered at this location to nearby sites with the same soil-landscape relationship (BC RIC 1995).

A team of environmental professionals registered in BC assessed the areas subject to this report on August 1, 2025. During the first field visit, the entire area of interest was traversed on foot to assess terrain characteristics, document existing conditions and advance several soil assessment plots.

Soil profiles were assessed via shovel test into the unmodified parent material horizon or to auger refusal to identify soil characteristics. Assessment point locations were determined on slope, vegetation, and apparent drainage characteristics.

Following the site visit, Blackbird project staff classified the assessed soils according to the Canadian System of Soil Classifications (AAFC 1998) criteria and subsequently correlated site soils to the soils described in the Soil Information Finder Tool (AGRI and BC MoE 2018) and the "Soils of the Halfway River, British Columbia", BC Report No. 18 soil survey (Lord 1973). All field documentation was compared and reconciled with existing data to determine soil types and agricultural land capability ratings for the assessed area.

3 Results

3.1 Land Use and Zoning

The properties subject to this application are currently zoned A-2 (large agricultural holdings). Per the Peace River Regional District (PRRD) Zoning Bylaw No. 1000, 1996, mining (including gravel extraction and processing) is a permitted land use in this zoning class (PRRD 2001).

The subject properties are part of the Ag-Rural zoning in the PRRD Rural OCP Bylaw No. 1940, 2011. The PRRD supports agricultural production as the principal use of land. In this zone, only agricultural development should be encouraged on lands with a Canada Land Inventory soil rating of Class 1, while developments on Class 2, 3, 4 or 5C should strive to minimize the disruption of agriculturally productive land to the extent possible. The project subject to this application has been specifically designed to minimize potential impacts to the higher-quality agricultural land base in the Halfway Valley (e.g. through a pit location on a less productive ridge, and a layout that minimizes the disruption of field patterns), while facilitating supplemental income to the applicant's farming operations.

The property subject to this application is contained in the Agricultural Land Reserve (ALR) and a Notice of Intent to the BC Agricultural Land Commission will be required.

3.2 Soil Survey

The soil map unit data within SIFT indicates that the subject aggregate operation overlaps one soil survey polygon of silt loam fluvial deposited soils.

Table 2: Soil map units and unimproved agriculture rating with limiting factors

Section of Quarry	Soil Map Unit	Dominant Texture	Soil Subgroup	Mode of Deposition	Unimproved BCLI Rating
Majority	100 % Alluvial	Silt Loam	CU.R	Fluvial	60 % 3 _C 40 % 4 _T
Southwest corner	100 % Alluvial	Silt Loam	CU.R	Fluvial	100 % 3 _C

The **Alluvial** map unit includes sorted to undifferentiated variable sandy, silty, loamy and often gravelly deposits along active river and stream floodplains, including the islands and low terraces. These soils generally occur on nearly level topography and have highly variable soil textures and drainage. Cumulic Regosol soils dominate this soil map unit.

Eight soil plots were excavated to classify area soils within the reclaimed areas of the aggregate operation's current footprint. Four additional plots were completed to the immediate northwest of the operation's current footprint in the proposed expansion area.

The soils at all plot locations were classified as well drained Cumulic Regosols. The previously plowed Ap topsoil horizons overlie calcareous clayey subsoils. No significant coarse fragments were noted on the surface or within the mineral horizon at the plots northwest of the current operational footprint. Course fragments up to 60% were observed in the mineral soils in the reclaimed areas.

Based on these soil profiles and vegetation establishment, the reclaimed areas meet agricultural standards and are considered returned to production (i.e., not active mine disturbance).

Detailed descriptions of the observed soil characteristics can be found in Appendix B.

3.3 BC Land Inventory Ratings – Agriculture

The agricultural classification system is based on the Canada Land Inventory as modified for British Columbia by Kenk and Cotic in MOE Manual 1 (1983). The capability class, which defines the degree of limitation for soil-based agriculture, is further defined by the sub-class(es) which indicates the kind of limitation applicable to the mapped polygon.

The assessment of a parcel of land's capability for agricultural use is determined by assessing both climate (which generally determines the range of crops possible in any particular area) and soil-landscape characteristics (which govern the type and relative level of management practices required). It should be noted that the BC land inventory (BCLI) classification is based on the relative degree and type of limitation and/or the range of crops; it is not related to actual productivity (i.e., yield) of any specific crop (BC MOE 1983).

Among other assumptions and limitations, the methodology guidelines for agricultural capability ratings state that ratings are subject to revisions if newer or more accurate information with regards to the underlying information becomes available (e.g., climate characteristics), or if agricultural technology enables a wider range of crops.

The majority of the subject aggregate operation are contained in a BCLI polygon described as 60 % Class 3 and 40 % Class 4 rating, with a small portion in southwest contained in a BCLI polygon with 100% Class 3 rating. The classification is based on soil, landscape and climate information. The areas subject to this application carry unimproved agricultural capability ratings of 3 and 4 as a result of adverse climatic and topographic conditions.

Class 3 describes mineral soils that have moderately severe limitations that restrict the range of crops or require special management practices. They affect one or more of the following practices: timing and ease of tillage, planting and harvesting; choice of crops; and methods of soil conservation. Under good management they are fair to moderately high in productivity for a fair range of field crops adapted to the region (BC MOE 1983).

Mineral soils in **Class 4** have severe limitations that restrict the range of crops or require special management practices, or both. They may seriously affect one or more of the following practices: timing and ease of tillage, planting and harvesting; choice of crops; and methods of soil conservation. The soils are low to medium in productivity for a narrow range of crops but may be highly productive for a few specially suited crops.

Subclass C is used on a sub-regional or local basis to indicate an adverse departure from the regional climate. The main limitation is low temperature or low or poor distribution of rainfall during the cropping season, a combination of these, or local frosty areas.

Subclass X describes soils with minor cumulative limitations, i.e. soils having a moderate limitation due to the cumulative effect of two or more adverse characteristics, which individually would not affect the class rating.

Subclass T describes soils that are subject to restrictions associated with adverse topography, which refers to either excessively steep slopes or slope patterns that limit agricultural use.

Topsoil textures encountered during the field visit were typically silt loams, with the topsoil depth consistently ranging from 11-21 cm (please refer to Table 3 below for a representative soil profile description) and admixing typically between 5-30 % as a result of normal farming practices.

Table 3: Generalized profile description for regosolic map units found in the project area

Horizon	Depth [cm]	Colour	Texture	Structure	Consistence	Coarse Fragments
Ap	0-17	10YR 3/3	SiL	granular	friable	0-50 %
C	17-100	10YR 2/2	SiL	granular	friable	> 40 %

Based on the results of the field assessment, it is the report author's professional opinion that the land subject to this report exhibits characteristics similar to parcels that were assigned an improved agricultural classification of 4_p due to locally high stoniness. Please note that these statements are not intended to disprove publicly available mapping products for agricultural capability ratings but rather represent the much finer scale of assessment used for this project.

Phase 1 of this aggregate operation was reclaimed during May/June of 2016 and reseeded with a forage seed mix on June 27, 2016. This area of the pit showed gentle, even slopes and good vegetation establishment at the time of the field assessment and has been utilized for grazing and mechanized forage production since the 2017 growing season.

Phase 2 of this aggregate operation was reclaimed during May-August of 2025 and reseeded with a forage seed mix including alfalfa, timothy, orchard grass, fall rye, and oats on August 6, 2025. This area of the pit showed gentle, even slopes and good vegetation establishment at the time of the August 2025 field assessment. Based on the soil pit results for topsoil depth and the strong vegetation establishment, it appears reasonable to conclude that these areas have been returned to agricultural use and will be fully available for forage production during the 2026 growing season.

3.4 Topography and Surficial Geology

The area subject to this application is centered on a ridge in the alluvial complex occupying the upper reaches of the lower Halfway River valley. The existing pit conditions indicate that the gravel deposit extends to approximately 5 m below the surface and is based on finely stratified sedimentary rock (shale; compare Appendix C, Figure 3).

The site's aspect is to the southeast, with gentle slopes ranging from 0-2 %. No visible evidence of significant erosion, slope movement, slumping, subsidence or tension cracks was observed at the time of the assessment.

3.5 Hydrology

The site assessment of soil and substrate conditions showed soils that are well to rapidly drained and rapidly pervious. No accumulated surface runoff or any other kind of surface water source was observed on site.

Groundwater information in the vicinity of the proposed aggregate operation is limited to historic water well construction records. Water well records for a domestic water well 1.5 km to the east of the site indicate static water tables at a depth of 16' (5 m). This well is located on a lower bench immediately adjacent to the river and may represent the water table in a gravel aquifer connected to the Halfway River. As such, it is unlikely to accurately portray the groundwater table at the project location.

A review of the BC Freshwater Atlas indicates that no previously mapped drainages directly traverse the physical footprint of the subject pit (BC MOE 2025a). No surface watercourses, lakes, ponds, or wetlands were noted within the boundaries of the pit during the field assessment. The nearest mapped surface watercourses in relation to the pit is the Halfway River located 190 m to the southeast, which is known to provide important habitat to a wide variety of fish species, including bull trout, rainbow trout, mountain whitefish, arctic grayling, as well as a variety of sucker and minnow species (BC MOE 2025b).

Table 4: Hydrological features near the aggregate operation

Watershed Code (1:50k)	Description
235	Halfway River

3.6 Vegetation

Parts of the parcels subject to this report have been cleared in the past in an effort to increase the agricultural capability of the land. The pit location is contained in a pasture on top of a small ridge, with creeping red fescue, red, white, and alsike clover, sweet clover, as well as timothy as the dominant forage species. Other vegetative species include dandelion, strawberry, and prickly rose. All species maintained good vegetative ground cover, with no obvious bare areas.

No weed species listed as provincially or regionally noxious were observed within the footprint of the subject pit or in its immediate vicinity at the time of the assessment.

4 Mine Development and Operating Plan

4.1 Development Schedule

Extraction will continue on-demand from the existing gravel pit footprint. With the proposed 2.1 ha northwest extension, the mine footprint will remain compact at a maximum of 4.0 ha. Reclaimed areas are excluded from this total, as they have been returned to agriculture.

4.2 Clearing and Grubbing

To reduce the probability of dust, visibility and stormwater impacts, additional clearing and grubbing should be restricted to the areas that will be actively used for extraction, processing and stockpiling in the near future. If possible, these areas should be cleared and grubbed immediately prior to extraction.

Wood debris should be burned or chipped on site. Minor wood debris may be stockpiled and used, following recontouring and topsoil replacement, as a final dressing over the topsoil on steep slopes unsuitable for agricultural production to aid in reducing erosion risks.

4.3 Topsoil Stripping and Storage

Topsoil materials will only be handled during dry to moist conditions, as any handling of wet soil can result in compaction, admixing, and ultimately soil loss. If any additional topsoil stripping is required (e.g., along the southern slopes), it is recommended that the organic duff layer and the topsoil be stripped together to a depth of approximately 17 cm from the ground surface.

No material (e.g., overburden, reject materials, processed product) is to be stockpiled on top of undisturbed topsoil).

Due to the relatively low depth of topsoil at this location and the poor fertility of the subsoil and parent material, great care should be taken not to over strip the topsoil. It may be required to strip the topsoil in horizontal increments (e.g. 30 m swaths) and haul it to the stockpile/berm location. Heavy equipment traffic on topsoil should be reduced to a minimum and avoided whenever possible.

Topsoil from any future site clearing will be stockpiled topsoil will not be used to fill berms or be used as temporary fill material and will not be allowed to leave the quarry area.

Any unvegetated sections of the topsoil stockpiles will be seeded as soon as possible (i.e., within a maximum of 30 days of when topsoil materials were added to the current topsoil pile). The topsoil stockpile will be seeded with a forage seed mixture to prevent the establishment of noxious weeds on site as well as prevent topsoil loss through erosion.

4.4 Overburden and Reject Storage

Following topsoil removal, any remaining subsoil (overburden) will be removed in a second lift. Overburden not suitable for extraction, as well as any reject material resulting from processing operations, will be used for re-contouring the site as part of final site reclamation efforts.

Any future overburden and any other rejected materials will be stored separately from the topsoil adjacent to the topsoil stockpile along the northeastern pit boundary. A one-meter separation between topsoil and overburden/reject piles and berms should be maintained at all times.

Stockpiles that will not be used within six months should be stabilized with permanent vegetation to help in preventing erosion and the establishment or spread of noxious weeds on site.

4.5 Erosion Control

During pit use, erosion risks will be of concern given the creation of exposed slopes, substrate infiltration characteristics, and gradients.

The most efficient protection from any potential erosion is the establishment of appropriate vegetation in inactive areas of the pit. Re-vegetating the stockpiled topsoil and overburden with a favourable seed mixture will be considered the primary measure to mitigate erosion risks related to topsoil and subsurface soil materials. Additional erosion control measures may include installing biodegradable erosion control blankets over any seeded areas, the use of weed-free straw bales, straw wattles, and/or sediment (silt) fencing.

4.6 Groundwater and Surface Water Protection

No excavation activities are proposed to occur within one meter of the high groundwater table. As a result, the subject pit is considered unlikely to directly affect groundwater resources. However, any aggregate operation carries the potential to increase the risk of groundwater contamination, for example, through the removal of vegetation and soil buffers or through the accidental release of pollutants during operations.

Hazardous materials will not be permanently stored on site. Fuel and required lubricants will be transported to site as needed, and impermeable barriers (e.g., drip trays) will be used if any equipment repair or maintenance work is required to be conducted within the boundaries of the aggregate operation.

If water does accumulate on site, it is expected that it will infiltrate into the ground within a relatively short period of time. If the need to discharge stormwater arises, the discharge will be designed in a manner that does not allow any sediment-laden discharge fluid to enter any surface water courses directly. Discharge will occur onto a well vegetated area through sprinklers or perforated hoses and will be closely monitored to prevent erosion.

4.7 Weed Management

A weed control program will be implemented to prevent the spread of noxious weeds.

Weed species often thrive in disturbed soils which are free of vegetative cover. In addition to seeding the stockpiled soil berms during excavation operations, operators will be trained to identify noxious weeds as early identification can prevent significant outbreaks. Once identified, weeds will be handpicked and destroyed or sprayed with herbicides. During reclamation, the site will be regularly inspected for weeds until favourable vegetation completely covers the site, is well established, and no bare areas remain.

5 Land Rehabilitation Program

Upon completion of aggregate extraction activities, the land subject to this application will be reclaimed to resemble the surrounding ecosystems. As such, it is recommended that the pit area be restored to form a gradual slope towards the Halfway River vegetated with an agronomic forage mixture which will be used to produce hay and/or enable grazing.

Prior to final reclamation, all debris and garbage must be removed from the site. No foreign material is to be buried on site.

5.1 Backfilling and Contouring

Once removal of aggregate at this site is complete, the walls of the pit will be re-contoured using overburden and reject materials to a slope not steeper than a 3:1 (horizontal to vertical). The overburden and fill material will be compacted in small increments to aid in slope stabilization. Any compacted areas will be ripped prior to topsoil replacement.

It is considered unlikely that water will accumulate within the reclaimed pit, as the final pit layout includes a self-draining slope towards the southeast.

5.2 Topsoil Replacement

Once grading of the disturbed areas is complete, salvaged topsoil will be spread evenly over the surface. It is imperative that no topsoil handling occur while the material is very wet.

The salvaged topsoil will be returned to 80 percent or more of the original topsoil depth and will be spread as evenly as possible.

Topsoil will not be compacted and only be tilled perpendicular to the dominant slope direction towards the Halfway River, which will help slow surface water runoff and reduce the potential for topsoil erosion.

5.3 Vegetation Establishment

The timely establishment of a cover of dense vegetation is essential to maintain slope stability, prevent erosion, and reduce the probability of noxious weed occurrence. Any replaced topsoil will be seeded with a forage or other ecologically suitable seed mix upon completion of reclamation. Seeding is expected to be completed in the spring, which will enable the vegetation to form a protective blanket prior to winter and the following spring melt. However, if final reclamation activities occur in the late fall or winter, the forage crop can be seeded onto the snow cover. Note that poor growth will result if either deep frost or drought occurs following germination.

Fertilizing should be considered to help establish a healthy and functional forage stand but should only be applied based on soil fertility test results.

Erosion control blankets, coconut matting, or other geotechnical erosion control measures may be used if erosion problems are encountered during reclamation.

The establishment of the protective vegetative cover must be evaluated at the end of the growing season following final reclamation, and any erosion must be reclaimed. Spot re-seeding may be required if the surface runoff concentrated seeds in certain areas, leaving other areas exposed.

6 Closure

Services provided by Blackbird for this report have been conducted in a manner consistent with the level of skill, care and competence ordinarily exercised by members of the profession of agrology currently practicing under similar conditions and like circumstances in the same jurisdiction in which the services were provided.

The evaluations contained in this report are based on professional judgement, calculations, and experience. They are inherently imprecise. Soil, landscape, and hydrological conditions other than those indicated may exist on the sites.

The recommendations and conclusions contained in this report pertain only to the site conditions observed by Blackbird at the time of the inspection. Since site conditions may change over time, this report is intended for immediate use.

The conclusions of this report are based in part on information provided by others. Blackbird believes this information to be accurate but cannot guarantee or warrant its accuracy or completeness.

The information presented in this report was acquired, compiled, and interpreted exclusively for the client for the purposes described in this report. It is intended only for internal use by the client and for use by government agencies regulating the specific activities to which it pertains. Blackbird does not accept any responsibility for the use of this report, in whole or in part, for any purpose other than intended or to any third party for use whatsoever.

If you have questions with regards to this report, feel free to contact the lead author at your convenience by email at info@blackbird.ca.



Georgia Moneo, BSc, BIT



Erin Maxfield, BSc, PAg, RPBio

7 References

- Agriculture and Agri-Food Canada (AAFC). 1998. The Canadian System of Soil Classification. Third Edition. Can. Publ. 1646 (Revised). Ottawa, ON.
- Agriculture and Agri-Food Canada (AAFC). 2023. Annual Crop Inventory 2022. Available: <https://open.canada.ca/data/en/dataset/ba2645d5-4458-414d-b196-6303ac06c1c9> (accessed August 2025).
- Agriculture Canada. 1979. Canada Land Inventory - Soil Capability for Agriculture – Fort St. John (94A/SE). Ottawa, ON.
- Agriculture Canada. 1986. Soils of the Fort St. John – Dawson Creek Area, British Columbia. Ottawa, ON.
- Basnyat, P., McConkey, B., Meinert, B., Gatkze, C., and Noble, G. 2004. Agriculture field characterization using aerial photograph and satellite imagery. *IEEE Geoscience and Remote Sensing Letters*, 1(1), 7-10.
- British Columbia Conservation Data Centre (BC CDC). 2025. BC Species and Ecosystems Explorer. BC Ministry of Environment. Victoria, B.C. Available: <http://a100.gov.bc.ca/pub/eswp/> (accessed August 2025).
- British Columbia Ministry of Environment (BC MOE). 1983. Land Capability Classification for Agriculture in British Columbia, MOE Manual 1. Kelowna, BC: Surveys and Resource Mapping Branch, 64. Available at: http://www.alc.gov.bc.ca/assets/alc/assets/library/agricultural-capability/land_capability_classification_for_agriculture_in_bc_1983.pdf (accessed August 2025).
- British Columbia Ministry of Environment (BC MOE). 2009. Peace Region Least-Risk Timing Windows: Biological Rationale. Fort St. John, BC.
- British Columbia Ministry of Environment (BC MOE). 2025a. Freshwater Atlas. Available at: <https://www2.gov.bc.ca/gov/content/data/geographic-data-services/topographic-data/freshwater> (accessed August 2025).
- British Columbia Ministry of Environment (BC MOE). 2025b. Fish Inventory Data Queries. Available at: <https://a100.gov.bc.ca/pub/fig/welcome.do> (accessed August 2025).
- British Columbia Ministry of Forests and Range & BC Ministry of Environment (BC MFR and BC MOE). 2010. Field Manual for Describing Terrestrial Ecosystems, 2nd Edition. Victoria, BC.
- British Columbia Resource Inventory Committee (BC RIC). 1995. Soil Inventory Methods for British Columbia. Victoria, BC.
- Cohen, W.B., and Goward, S.N. 2004. Landsat's role in ecological applications of remote sensing. *AIBS Bulletin*, 54(6), 535-545.
- Peace River Regional District (PRRD). 2001. Peace River Regional District Zoning Bylaw No. 1343, 2001. Available at: <https://prrd.bc.ca/wp-content/uploads/bylaws/zoning-bylaw-1343/PRRD-Zoning-Bylaw-1343-2001-April-2025.pdf> (accessed August 2025).
- Peace River Regional District (PRRD). 2021. North Peace Fringe Area Official Community Plan Bylaw No. 2460, 2021. Available at: https://prrd.bc.ca/wp-content/uploads/bylaws/ocp-bylaw-2460/BL_2460-2021-NPFA-OCP_Text-October2023-.pdf (accessed August 2025).

Province of British Columbia (BC). 2023. BC Water Resource Atlas. Available at:
<https://maps.gov.bc.ca/ess/hm/wrbc/> (accessed August 2025).

Steyaert, L.T., Hall, F.G., and Loveland, T.R. 1997. Land cover mapping, fire regeneration, and scaling studies in the Canadian boreal forest with 1 km AVHRR and Landsat TM data. *Journal of Geophysical Research: Atmospheres*, 102(D24), 29581-29598.

United States Geological Survey (USGS). 2023. Earth Resources Observation and Science (EROS) Center Science Processing Architecture (ESPA). NASA EOSDIS Land Processes DAAC, USGS Earth Resources Observation and Science (EROS) Center, Sioux Falls, South Dakota. Available at: <https://espa.cr.usgs.gov/index> (accessed August 2025).

Appendix A – Photos



Photo 1: Aerial view of the Crystal Springs Ranch pit, facing north.



Photo 2: View of the reclaimed Phase 1 area, facing northwest.



Photo 3: View of the reclaimed Phase 2 area, facing southwest.



Photo 4: View of the proposed expansion area to the northwest of the operation area, facing west.



Photo 5: View of recently seeded Phase 2 area, facing northwest.



Photo 6: View of recently seeded Phase 2 area, facing east.

Appendix B – Soil Plot Information

Assessment Plot	Horizon	Depth (cm)	Colour	Texture	Structure	Mottling	Consistence	Coarse Fragments	Site Characteristics		Vegetation & Comments	Profile Photo
									Slope:	Aspect:		
# 1 (Phase 1) UTM 10 548660 E 6263715 N	Ap	0-21	10 YR 3/3-	Silty Clay Loam	Granular	None	Friable	50 %	Slope:	1 %	Alfalfa, alsike clover, dandelion, orchard grass, sweet clover, white clover, timothy. Auger refusal at 38 cm.	
	C	21-38	10 YR 2/2	Loam	Granular	None	Friable	60 %	Aspect:	0°		
	-	-	-	-	-	-	-	-	Drainage:	Well		
	-	-	-	-	-	-	-	-	Admixing:	10-20 %		
	-	-	-	-	-	-	-	-	Soil Order:	Regosol		
# 2 (Phase 1) UTM 10 548654 E 6263784 N	Ap	0-19	10 YR 3/3-	Silty Clay Loam	Granular	None	Friable	50 %	Slope:	0 %	Alfalfa, alsike clover, dandelion, orchard grass, red clover, sweet clover, timothy, white clover. Auger refusal at 40 cm	
	C	19-40	10 YR 2/2	Loam	Granular	None	Friable	60 %	Aspect:	-		
	-	-	-	-	-	-	-	-	Drainage:	Well		
	-	-	-	-	-	-	-	-	Admixing:	10-20 %		
	-	-	-	-	-	-	-	-	Soil Order:	Regosol		
# 3 (Phase 1) UTM 10 548632 E 6263847 N	Ap	0-20	10 YR 3/3-	Silty Clay Loam	Granular	None	Friable	30 %	Slope:	0 %	Alfalfa, alsike clover, dandelion, red clover, sweet clover, timothy, white clover. Auger refusal at 40 cm	
	C	20-40	10 YR 2/2	Loam	Granular	None	Friable	40 %	Aspect:	-		
	-	-	-	-	-	-	-	-	Drainage:	Well		
	-	-	-	-	-	-	-	-	Admixing:	10-20 %		
	-	-	-	-	-	-	-	-	Soil Order:	Regosol		

Assessment Plot	Horizon	Depth (cm)	Colour	Texture	Structure	Mottling	Consistence	Coarse Fragments	Site Characteristics		Vegetation & Comments	Profile Photo
# 4 (Phase 1) UTM 10 548587 E 6263906 N	Ap	0-19	10 YR 3/3-	Silty Clay Loam	Granular	None	Friable	30 %-	Slope:	2 %	Alfalfa, alsike clover, dandelion, orchard grass, red clover, sweet clover, timothy, white clover. Auger refusal at 52 cm.	
	C	19-52	10 YR 2/2	Loam	Granular	None	Friable	40 %	Aspect:	NW		
	-	-	-	-	-	-	-	-	Drainage:	Well		
	-	-	-	-	-	-	-	-	Admixing:	10-20 %		
	-	-	-	-	-	-	-	-	Soil Order:	Regosol		
# 5 (Phase 2) UTM 10 548532 E 6263776 N	Ap	0-11	10 YR 4/3	Silt Loam	Granular	None	Friable	30 %	Slope:	0 %	Alfalfa, alsike clover, dandelion, red clover, sweet clover, timothy, white clover. Auger refusal at 40 cm	
	C	11-40	10 YR 2/2	Sandy Loam	Granular	None	Friable	30 %	Aspect:	-		
	-	-	-	-	-	-	-	-	Drainage:	Well		
	-	-	-	-	-	-	-	-	Admixing:	10-20 %		
	-	-	-	-	-	-	-	-	Soil Order:	Regosol		
# 6 (Phase 2) UTM 10 548517 E 6263819 N	Ap	0-19	10 YR 4/3	Silt Loam	Granular	None	Friable	30 %	Slope:	0 %	Alfalfa, alsike clover, dandelion, grass sp. red clover, sweet clover, timothy, white clover. Auger refusal at 21 cm	
	C	19-21	10 YR 2/2	Sandy Loam	Granular	None	Friable	60 %	Aspect:	-		
	-	-	-	-	-	-	-	-	Drainage:	Well		
	-	-	-	-	-	-	-	-	Admixing:	10-30 %		
	-	-	-	-	-	-	-	-	Soil Order:	Regosol		

Assessment Plot	Horizon	Depth (cm)	Colour	Texture	Structure	Mottling	Consistence	Coarse Fragments	Site Characteristics		Vegetation & Comments	Profile Photo
									Slope:			
# 7 (Phase 2) UTM 10 548549 E 6263836 N	Ap	0-16	10 YR 4/3	Silt Loam	Granular	None	Friable	50 %	Slope:	1 %	Alfalfa, alsike clover, dandelion, red clover, sweet clover, timothy, white clover, yarrow sp. Auger refusal at 36 cm.	
	C	16-36	10 YR 2/2	Sandy Loam	Granular	None	Friable	60 %	Aspect:	NW		
	-	-	-	-	-	-	-	-	Drainage:	Well		
	-	-	-	-	-	-	-	-	Admixing:	10-30 %		
	-	-	-	-	-	-	-	-	Soil Order:	Regosol		
# 8 (Phase 2) UTM 10 548824 E 6263856 N	Ap	0-14	10 YR 4/3	Silt Loam	Granular	None	Friable	30 %	Slope:	1 %	Alfalfa, alsike clover, dandelion, red clover, timothy, white clover. Auger refusal at 40 cm	
	C	14-40	10 YR 2/2	Sandy Loam	Granular	None	Friable	30 %	Aspect:	NW		
	-	-	-	-	-	-	-	-	Drainage:	Well		
	-	-	-	-	-	-	-	-	Admixing:	20-30 %		
	-	-	-	-	-	-	-	-	Soil Order:	Regosol		
# 9 UTM 10 548400 E 6263938 N	Ap	0-20	10 YR 4/3	Loam	Granular	None	Friable	0 %	Slope:	0 %	Alfalfa, alsike clover, American vetch, dandelion, fireweed, prickly rose, red clover, smooth brome, timothy, white clover, yarrow sp. Auger refusal at 69 cm	
	C	20-69	10 YR 5/3	Sandy Clay Loam	Granular	None	Friable	0 %	Aspect:	-		
	-	-	-	-	-	-	-	-	Drainage:	Well		
	-	-	-	-	-	-	-	-	Admixing:	10-20 %		
	-	-	-	-	-	-	-	-	Soil Order:	Regosol		

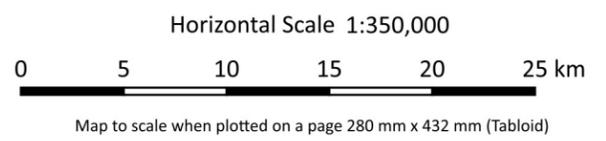
Assessment Plot	Horizon	Depth (cm)	Colour	Texture	Structure	Mottling	Consistence	Coarse Fragments	Site Characteristics		Vegetation & Comments	Profile Photo
									Slope:			
# 10 UTM 10 548329 E 6263890 N	Ap	0-18	10 YR 4/3	Loam	Granular	None	Friable	0 %	Slope:	0 %	Alfalfa, alsike clover, American vetch, dandelion, red clover, timothy, white clover, yarrow sp. Auger refusal at 55 cm	
	C	18-55	10 YR 5/3	Sandy Clay Loam	Granular	None	Friable	0 %	Aspect:	-		
	-	-	-	-	-	-	-	-	Drainage:	Well		
	-	-	-	-	-	-	-	-	Admixing:	0-10 %		
	-	-	-	-	-	-	-	-	Soil Order:	Regosol		
# 11 UTM 10 548327 E 6263961 N	Ap	0-21	10 YR 4/3	Loam	Granular	None	Friable	0 %	Slope:	0 %	Alfalfa, alsike clover, American vetch, common plantain, dandelion, red clover, strawberry sp., timothy, white clover, yarrow sp. Auger refusal at 86 cm	
	C	21-86	10 YR 5/3	Sandy Clay Loam	Granular	None	Friable	0 %	Aspect:	-		
	-	-	-	-	-	-	-	-	Drainage:	Well		
	-	-	-	-	-	-	-	-	Admixing:	0-10 %		
	-	-	-	-	-	-	-	-	Soil Order:	Regosol		
# 12 UTM 10 548274 E 6263934 N	Ap	0-12	10 YR 4/3	Loam	Granular	None	Friable	0 %	Slope:	3 %	Alfalfa, alsike clover, American vetch, dandelion, prickly rose, red clover, smooth brome, strawberry sp., timothy, white clover, yarrow sp.	
	C	12-100	10 YR 5/3	Sandy Clay Loam	Granular	None	Friable	0 %	Aspect:	N		
	-	-	-	-	-	-	-	-	Drainage:	Well		
	-	-	-	-	-	-	-	-	Admixing:	10-20 %		
	-	-	-	-	-	-	-	-	Soil Order:	Regosol		

Appendix C – Maps and Sketches



E&C Weitzel Holdings Ltd.

**Crystal Springs Ranch Gravel Pit
within DL 1322 Peace River
Location Map**



Legend

- Gravel Pit Location
- Access from Fort St. John
- Paved Roads
- Surface Waterbodies

Directions to Site

- km 0 - 1 Travel south from Fort St. John on 100 St, turn right onto Hwy 97
- km 1 - 77 Follow Hwy 97, turn left onto the Upper Halfway Road (Rd 117)
- km 77 - 127 Follow the Upper Halfway Road for 50 km, turn left onto the private quarry access.
- km 127 - 128 Follow the private driveway for 800 m - Quarry Entrance on the right

Disclaimer

UTM Zone 10, NAD 83
 Date of data acquisition: n/a
 Data Credit: Blackbird Environmental Ltd., BC Geodata Warehouse
 For representational purposes only, all locations are approximate.

Our File:	25011	Mine #:	1640568	Revision #:	1
Client File:	n/a	GIS:	ML	Date:	Jun. 9, 2025



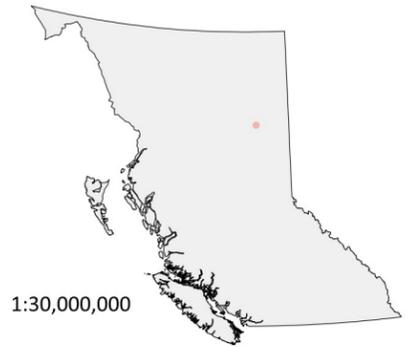
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 250.793.7262

Figure 1



E&C Weitzel Holdings Ltd.

**Crystal Springs Ranch Gravel Pit
within DL 1322 Peace River
Orthomosaic August 8, 2025**



Horizontal Scale 1:2,000
 0 20 40 60 80 100 m
 Map to scale when plotted on a page 280 mm x 432 mm (Tabloid)

Legend

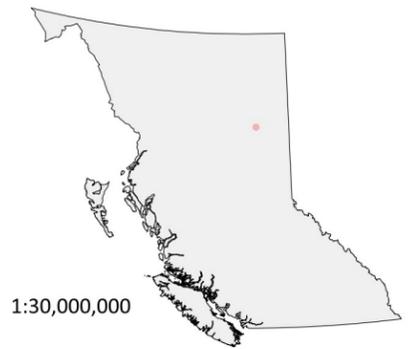
- Reclaimed Footprint (Phases 1-2) - 6.3 ha
- Active Area (Phase 3) - 1.7 ha
- Proposed Expansion (Phase 4) - 2.1 ha
- Phase 3/4 Access - 0.2 ha
- 2025 Soil Assessment Plot

Disclaimer

UTM Zone 10, NAD 83
 Date of data acquisition: Aug. 8, 2025
 Data Credit: Blackbird Environmental Ltd., BC Geodata Warehouse
 For representational purposes only, all locations are approximate.

Our File:	25011	Mine No.:	1640568	Revision #:	1
Client File:	n/a	GIS:	ML	Date:	Aug. 20, 2025

Crystal Springs Ranch Gravel Pit
within DL 1322 Peace River
Cross-Sectional Profiles



Horizontal Scale 1:2,500



Vertical Exaggeration = 2 Vertical Scale 1:1,250
Map to scale when plotted on a page 280 mm x 432 mm (Tabloid)

Legend

- Phase 3 (Active)
- Phase 4 (Proposed)
- - - Cross-Sections
- Final Reclaimed Contours
- Surface Contours

Disclaimer

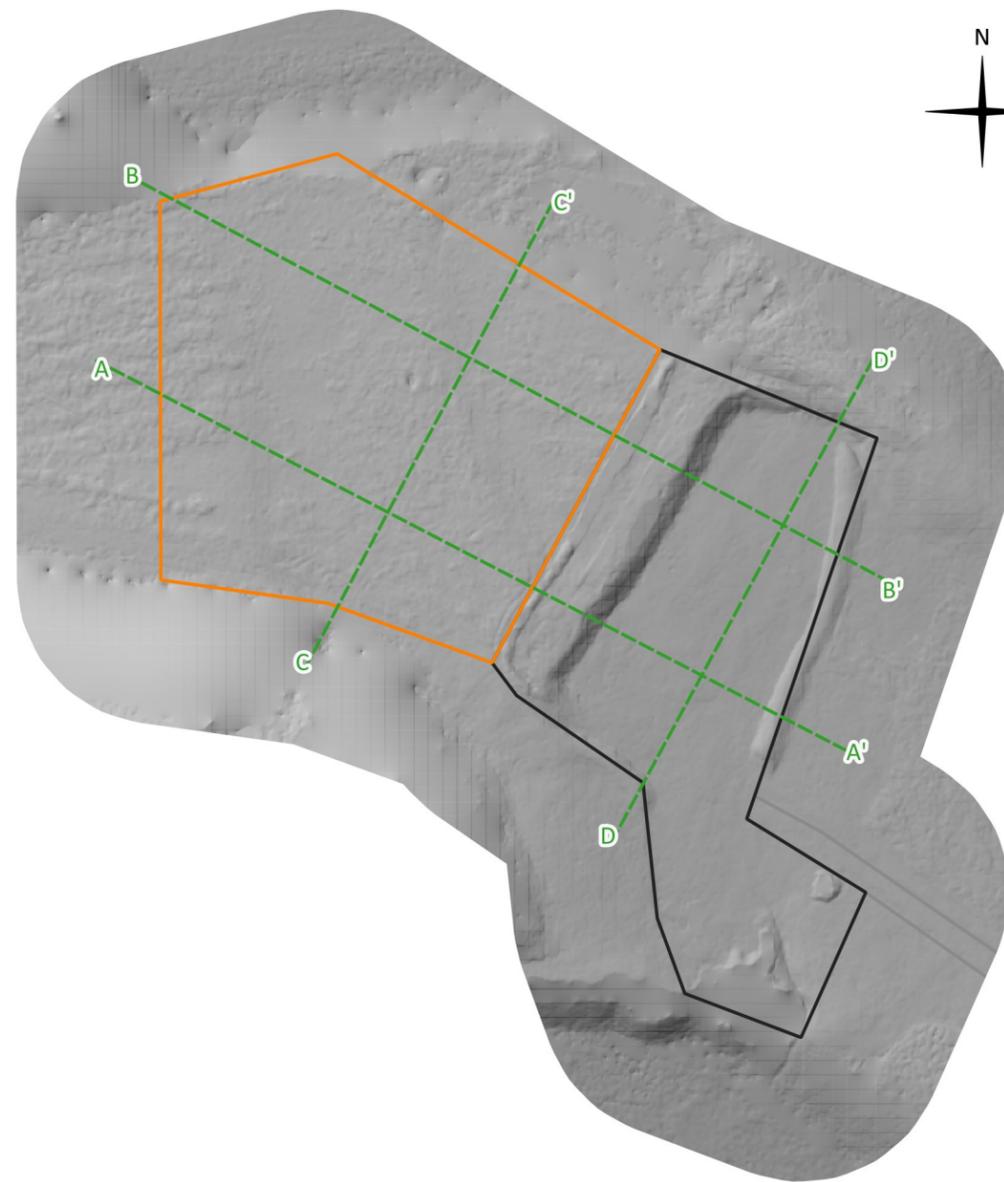
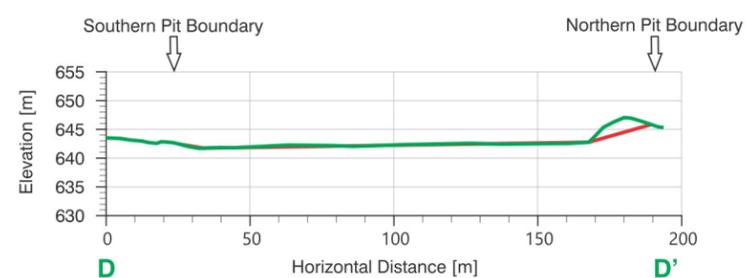
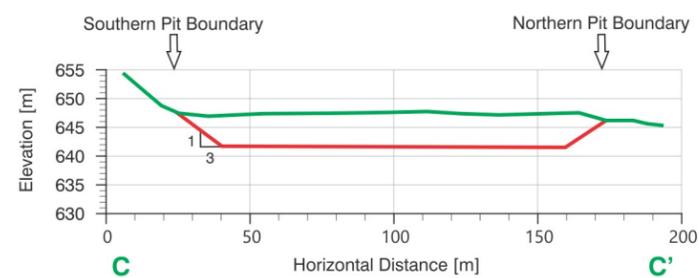
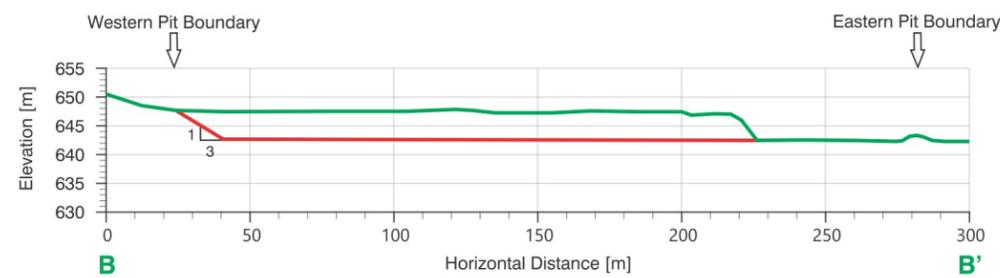
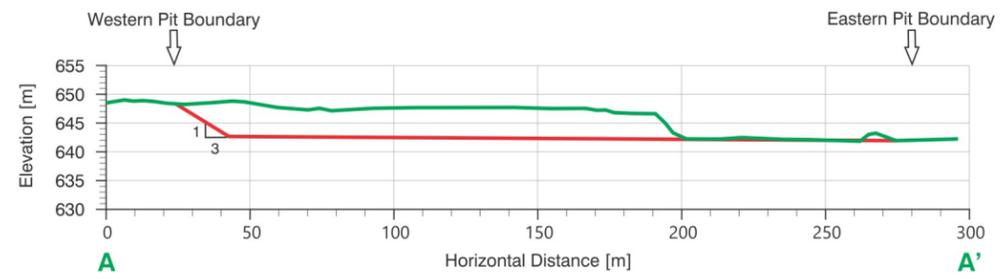
UTM Zone 10, NAD 83
Date of data acquisition: Aug. 8, 2025
Data Credit: Blackbird Environmental Ltd., BC Geodata Warehouse
For representational purposes only, all locations are approximate.

Our File:	25011	Mine No.:	1640568	Revision #:	1
Client File:	n/a	GIS:	ML	Date:	Aug. 20, 2025



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Figure 3



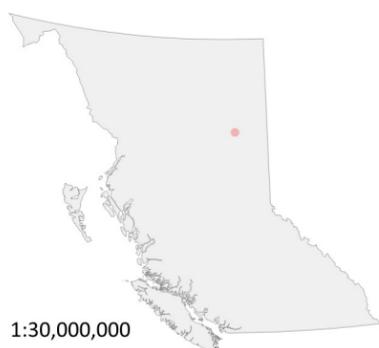


Legend

- FWA Stream Network
- Lakes
- Provincial Crown Land
- Private Parcel

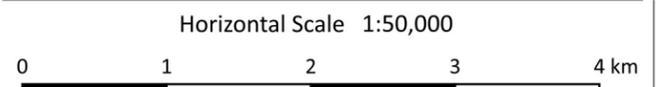
Disclaimer

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 Date of data acquisition: n/a
 Data Credit: Blackbird Environmental Ltd., BC Geodata Warehouse
 For representational purposes only, all locations are approximate.



E&C Weitzel Holdings Ltd.

**Crystal Springs Ranch Gravel Pit
 within DL 1322, Peace River District
 Regional Context Map**



Map to scale when plotted on a page 280 mm x 432 mm (Tabloid)

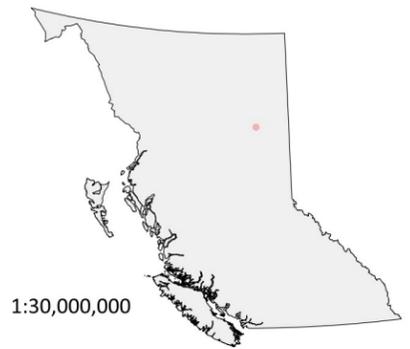
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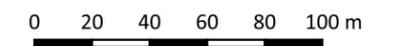
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Figure 5

Crystal Springs Ranch Gravel Pit
within DL 1322 Peace River
Cross-Sectional Profiles



Horizontal Scale 1:2,500



Vertical Exaggeration = 2 Vertical Scale 1:1,250
Map to scale when plotted on a page 280 mm x 432 mm (Tabloid)

Legend

- Phase 3 (Active)
- Phase 4 (Proposed)
- Cross-Sections
- Final Reclaimed Contours
- Surface Contours

Disclaimer

UTM Zone 10, NAD 83
Date of data acquisition: Aug. 8, 2025
Data Credit: Blackbird Environmental Ltd., BC Geodata Warehouse
For representational purposes only, all locations are approximate.

Our File:	25011	Mine No.:	1640568	Revision #:	1
Client File:	n/a	GIS:	ML	Date:	Aug. 20, 2025



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Figure 3

