

CONCEPTUAL CONSERVATION AND RECLAMATION PLAN

Enterprise Solar Power Project

Submitted to:

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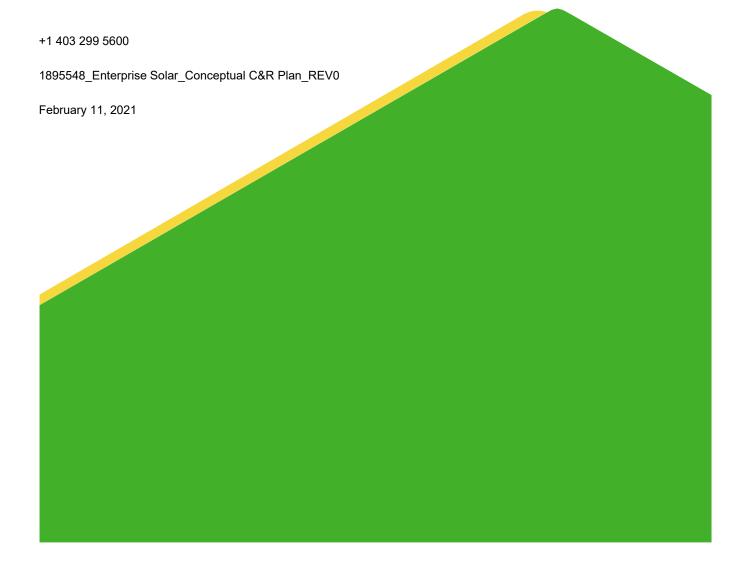
Enterprise Solar GP Inc. on behalf of Enterprise Solar LP., a wholly owned subsidiary of Renewable Energy Systems Canada Inc.

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1.0 INTRODUCTION

This Conceptual Conservation and Reclamation (CC&R) Plan for the proposed Enterprise Solar Power Project (the Project) approximately 4 km southwest of the Town of Vulcan (Figure 1), Alberta, describes the construction and operation practices, and the progressive conservation and reclamation activities that are planned to minimize Project effects and achieve final reclamation targets.

The Project consists of the construction and operation of solar panels, electrical collection line, inverters, fenceline, access roads, a Project substation, and any other project infrastructure. Construction is planned to start in August of 2021 with expected commercial operations in October 2022.

Enterprise Solar GP Inc. on behalf of Enterprise Solar LP., a wholly owned subsidiary of Renewable Energy Systems Canada Inc. (the Proponent), engaged Golder Associates Ltd. (Golder) to prepare the CC&R Plan for the Project which is outlined in this report.

1.1 Reclamation Objectives

Reclamation objectives for the Project include:

- geotechnically stable landforms that are integrated with the surrounding landforms
- drainage systems that are designed to reduce erosion rates
- reclaimed areas that meet the target end land use
- areas with Class III wetlands are left undisturbed to the extent practicable
- any areas with native grasses are left undisturbed to the extent practicable
- on-site public health and safety is protected

1.2 Regulatory Framework

The operation of the Project is governed by the provincial *Water Act, Wildlife Act*, and the *Environmental Protection and Enhancement Act* (EPEA). Under the EPEA, after a specified land activity has been decommissioned, Operators must obtain a reclamation certificate. Reclamation certificates are managed through Alberta Environment and Parks (AEP).

The Conservation and Reclamation Regulation, Alberta Regulation 115/1993 outlines the Operator's obligation to reclaim specified land to equivalent land capability. The Conservation and Reclamation Directive for Renewable Energy Operations (C&R Directive; GOA: AEP 2018) provides information on the C&R Plan requirements for renewable energy operations, such as solar power projects.

1.3 Scope of Work

This C&R Plan has been prepared to meet the requirements outlined in the C&R Directive (GOA: AEP 2018), and to provide the tools required to achieve target end land uses after reclamation. As the Project continues to evolve this plan will be amended to meet the Project needs.



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2.0 STAKEHOLDER AND INDIGENOUS ENGAGEMENT

Stakeholders within both the Project consultation and notification boundaries have been in discussions with the Proponent since mid 2019.

In general, the County of Vulcan has been supportive of both responsibly developed solar power, and of the Project specifically. Engagement with local residents, occupants, First Nations, municipal governments, governmental ministries and other special interest groups have been summarized in the Participant Involvement Program (PIP) Summary. Currently the Proponent is not aware of any outstanding concerns that have not been resolved apart from those raised by certain landowners subject to ongoing engagement. The status of stakeholder concerns regarding the Project, including governmental entities and First Nations, is summarized in the PIP Summary submitted as Attachment B of the Alberta Utilities Commission Facility Application.

There are no First Nations Reserves located within the consultation or notification zones for the Project, nor does the Project directly impact any Crown Land. The Government of Alberta Aboriginal Consultation Office (ACO) may apply if there are public lands being impacted, *Water Act* lands, or EPEA Applications through the AEP. The Project will require *Water Act* Approvals through the AEP, and the Proponent will follow any requirements identified in the ACO process at the time of Water Act Application submissions.

The Proponent will continue to engage regularly throughout the life of the Project with stakeholders who may be impacted as a result of the Project. Additionally, stakeholder input will continue to be considered and incorporated into future iterations of this plan.

3.0 SITE DESCRIPTION

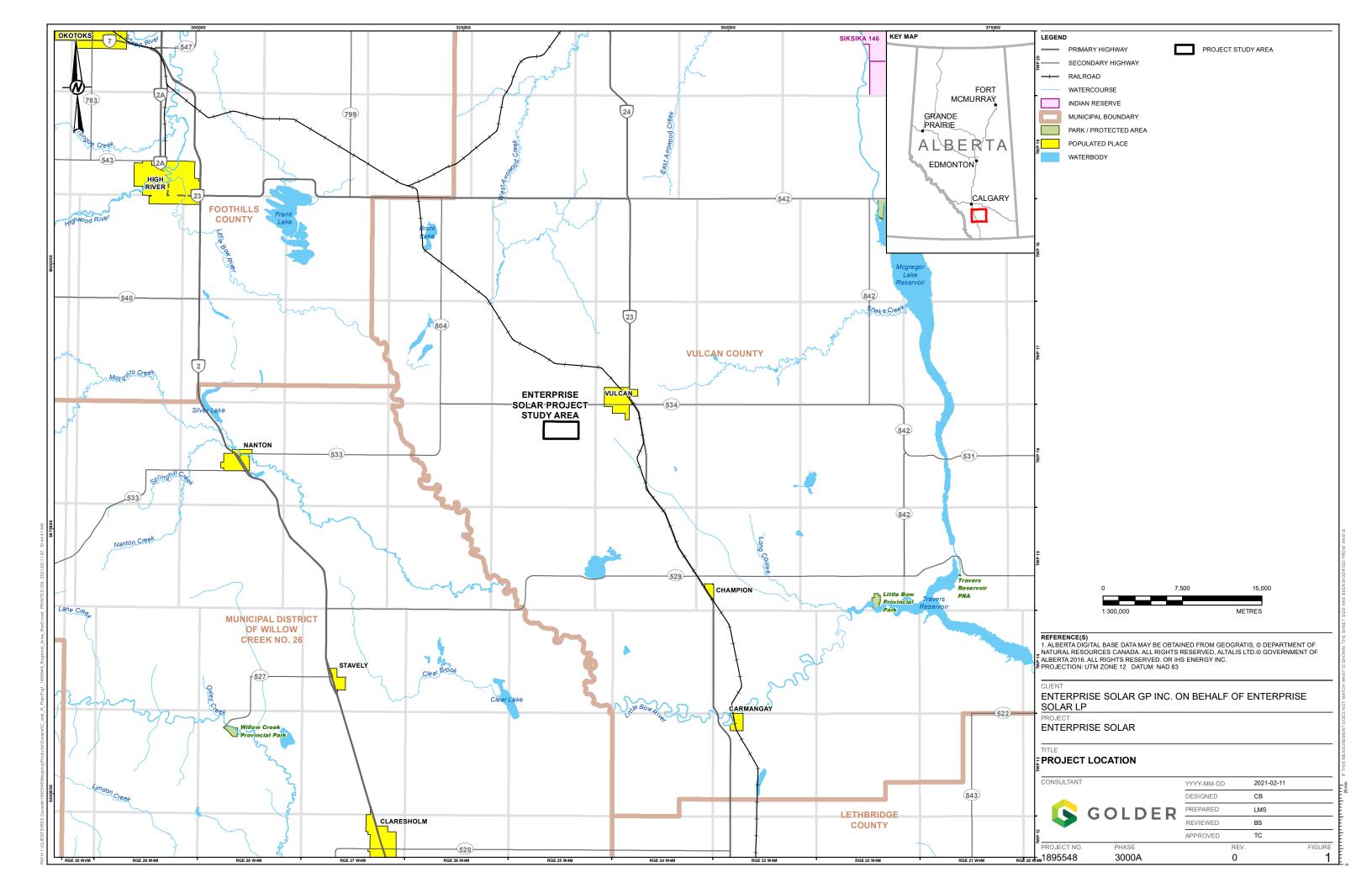
The Project will be located within the County of Vulcan, approximately 4 km southwest of the Town of Vulcan, Alberta within sections 26 and 27, Township 16, Range 25, west of the fourth meridian (W4M; Figure 3-1). The Project Study Area is anticipated to occupy approximately 355 ha of land.

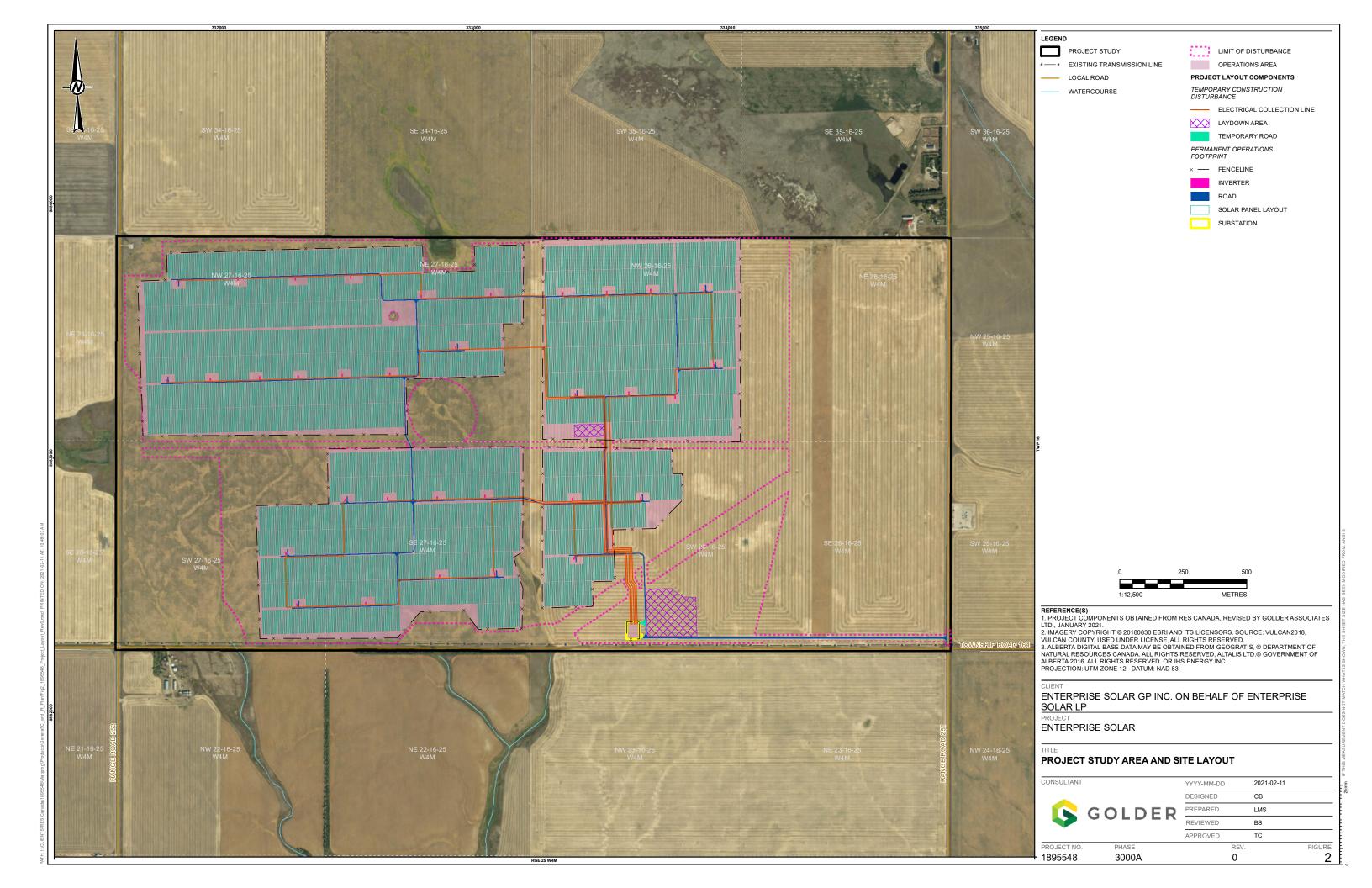
The land within the Project Study Area is almost exclusively cultivated agricultural land with three small (<0.5 ha) wet areas in the east portion of the LOD containing non-crop vegetation.

The Project components include solar panels, trackers an electrical collection system, inverters, permanent solar panel layout access roads, a fenceline, a project substation, and two temporary laydown areas. The Project layout at the time of developing this document is presented in Figure 3-2. The Project design will be refined to support an additional level of detail required for construction; however, no significant changes are anticipated.

Based on conservative estimates, the area of disturbance associated with Project infrastructure at the time of developing this document has the potential to affect a total of 355.0 ha of land during the construction through to the reclamation phase.







4.0 PROGRESSIVE RECLAMATION

No reclamation has been completed within the Project Study Area to date. During the life of the Project, progressive reclamation will be completed as areas are no longer required for construction or operations. Timely reclamation is recommended to limit erosion and invasive species establishment.

5.0 END LAND USE

Current land uses within the Project Study Area include cultivated crop land, some existing oil and gas activities, wetlands, transmission facilities, and communication towers. End land use decisions will be made following engagement with stakeholders; however, it is likely that the most suitable end land use for this area is to return it to the pre-disturbance land use, which is primarily cultivated agricultural land.

6.0 RECLAMATION CRITERIA

The 2010 Reclamation Criteria for Wellsites and Associated Facilities for Cultivated Lands (ESRD 2013) will be used to monitor reclamation progress and determine reclamation success criteria. The Project footprint will be reclaimed in such a way that it will meet the guidelines that are in place at the time of reclamation, which would currently include the requirements listed below and further described in ESRD 2013:

- Landscape Assessment does the reclaimed landscape meet or exceed the conditions of the pre-disturbed land, and/or reflect the undisturbed surrounding landscape for parameters such as drainage, erosion, and soil stability?
- Vegetation Assessment is vegetation in areas that have been reclaimed able to grow with the same vigour as they were prior to disturbance? Key measurable parameters include plant height, density, head length, plant health, and seed quality.
- Soil Assessment does replaced soil meet pre-disturbance conditions for parameters such as topsoil and subsoil depth and distribution, topsoil colour, texture, consistence, structure, and rooting restrictions?

Reclamation criteria may evolve, so careful planning from the beginning of the Project is essential. Soil management procedures will be in compliance with guidelines from the C&R Directive (AEP 2018), including any updates that are in place at the time of construction and reclamation. Further direction for an updated Conservation and Reclamation Plan is also detailed in the C&R Directive (AEP 2018).

7.0 RECLAMATION ACTIVITIES

Conservation and reclamation will be considered throughout the Project life cycle from planning through to closure. The phases of the Project life cycle include:

- **Pre-Construction Phase:** the planning phase of the Project; includes early engagement, baseline environmental field studies, completion of regulatory applications and licensing.
- **Construction Phase**: from vegetation clearing to Project start up, includes delivery and installation of solar panels and associated infrastructure construction.
- Operations Phase: the active life span of the Project including routine maintenance and monitoring.
- **Repowering Phase:** should the life of the Project be extended past 30 years, the Project will enter this phase and may involve switching/updating solar panels with new equipment and upgrading electrical equipment.



Decommissioning Phase: the end of the operational life of the Project, or when a portion of the Project Footprint infrastructure is no longer required for the operations or maintenance of the Project.

7.1 Pre-Construction Phase

Completion of this CC&R Plan, and development of other environmental management plans (e.g., Pre-Disturbance Site Assessments, Soil and Vegetation Management Plan, Environmental Protection Plan) during this stage will help efficiently manage the site throughout the lifespan of the Project.

7.2 Construction Phase

Infrastructure associated with the construction phase includes access roads, temporary laydown areas, installation of pilings, solar panel array assembly and installation, a substation, collection system, gates and fencing, and parking areas. Conservation and reclamation activities will include salvaging and storing soils in stockpiles as required (see Section 10.0 for further details).

The temporary laydown yards and other temporary construction disturbance areas around Project infrastructure will undergo remediation, decompaction (if necessary), soil placement, and revegetation when it is no longer required. Reclamation will be completed in a timely manner to minimize erosion and ingress of invasive plants.

7.3 Operations Phase

No reclamation activities are scheduled during the operating phase of the Project. The Project footprint, including any disturbed sites, ditches, exposed soils, access roads and stockpiles, will be monitored for erosion and invasive plant growth. Erosion and invasive plants will be mitigated as described in Sections 10.0 and 11.0 respectively.

7.4 Decommissioning Phase

The decommissioning phase will begin when a part of the Project footprint infrastructure is no longer required for the operations or maintenance of the Project. Decommissioning of each piece of infrastructure will occur in a timely manner and the following general procedures will be undertaken:

- Above ground structures (solar panel arrays, associated above ground collection lines, inverters, project substation, and fenceline) will be removed and will be reused, recycled, or disposed of in a suitable landfill.
- Below-ground structures (pilings, foundations of the project substation) will be removed to a depth of 1.2 m below surface to allow for reclamation and restoration of the site to equivalent land capability.
- Large foundations will be cut off and buried by at least 1.2 m of clean soil that will be recontoured to be compatible with the overall landscape and drainage patterns (will not interfere with restoring the site to equivalent land capability).
- Underground collector lines will be terminated and capped at connection points and left in place at a depth of 1 m or more.
- Where required, sites will be remediated, and any contaminated soils will be removed such that the site is suitable for reclamation.
- Waste and debris associated with decommissioning will be removed from the development footprint.
- Areas to be reclaimed will be contoured to drain naturally, blend with the surrounding landscape, and provide for the target end land use.



As infrastructure is removed reclamation will be completed progressively. Areas with compacted soils will be decompacted if required, stockpiled soils will be replaced in the order they were salvaged, and areas will be revegetated as required depending on the target end land use.

Access roads will be reclaimed unless a landowner expresses preference to have them left in place.

8.0 CONTAMINATED SITES

No contaminated site clean up is anticipated to be required; however, if needed, spills will be contained, and contaminated soil or water will be cleaned up as per the Environmental Protection Plan for the Project (to be developed) and will meet AEP *Tier 2 Soil and Groundwater Remediation Guidelines* (AEP 2019).

9.0 LANDSCAPE

Where feasible, the post-reclamation landscape will mimic the pre-disturbance topography. The land will be reclaimed in a manner that blends into the surrounding landscape allowing for integration of drainage that does not erode more than natural systems or cause unacceptable environmental impacts.

10.0 SOIL HANDLING PLAN

10.1 Soil Management Procedure

Soil management procedures will be in compliance with guidelines from the C&R Directive (AEP 2018), including any updates that are in place at the time of construction. The goal for soil salvage is to preserve the quality and quantity of topsoil and subsoil available for use in reclamation of disturbed landscapes. Soil materials will be salvaged to maximize the volume of suitable soil that contains the highest amount of organic matter and is effective for root growth. A detailed soil handling plan will be generated and available for guidance before construction takes place.

Best management practices for soil salvage include:

- Soil salvage by sampling and/or visually identifying materials to be stripped, recommending appropriate depths for stripping, and record keeping will be monitored.
- Topsoil and subsoil will be stripped in separate lifts and stockpiled separately, where feasible.
- Low ground bearing pressure stripping machinery (e.g., scrapers and dozers) will be used.
- Where necessary, low ground bearing pressure haul trucks, such as articulated, all-wheel drive dump trucks, will be used to transport soil to stockpiles.
- Salvaging operations will be suspended if the ground becomes too wet such that stripping causes severe rutting or compaction.

10.2 Soil Stockpiling Procedures

The best management practices for soil stockpiling that will be implemented at the Project if required include the following:

Direct stockpiling activities on site and the effectiveness of mitigation measures implemented to protect stockpiles from erosion, degradation and contamination, recording and signage of stockpile locations, and where necessary will be monitored. Additional mitigation measures will be recommended if required.



- Stockpiles will be located in areas near the disturbance and that minimize handling requirements during site preparation.
- Stockpiles will be located away from watercourses, wetlands, and waterbodies (further than 10 m away).
- Soil stockpiles will be located at least 1 m away (3 m if stored longer than 6 months) from each other and will be recorded, mapped, and signed so it is clear what type of material is present in each stockpile.
- Where possible, stockpiles will be placed within the limit of disturbance to reduce the disturbance footprint.
- Stockpiles will be place on like material (e.g., topsoil stockpiles may be stored on areas of existing topsoil and subsoil stockpiles may be stored on areas where topsoil has been removed).
- Stockpiles will be designed, constructed, and protected to minimize soil erosion (i.e., overall slopes will not exceed 3H:1V if possible).
- Stockpiles will be placed to a maximum height of approximately 5 m.
- Track packing will be used to create rough and irregular surfaces on stockpiles to reduce the potential for erosion and increase the area for seed capture, seed germination, and moisture retention.
- Erosion control techniques will be applied to stockpiles depending on the intended duration of the stockpile. Short term (i.e., less than 6 months) stockpiles may have the addition of cover material (e.g., straw) or track packing. Long term stockpiles (i.e., over 6 months) will be seeded with an approved, rapidly establishing vegetative species.
- Stockpiles will be monitored for erosion and invasive plant establishment on an ongoing basis.
- If a tackifier is used in place of seeding long term stockpiles, stockpiles will be monitored for weeds and erosion, and if erosion is noted, the tackifier will be re-applied and seeded at a later date if required.

10.2.1 Soil Placement Procedures

Strategic soil placement can encourage plant growth to be similar to the growth observed in adjacent areas. After decommissioning, remediation, recontouring and decompaction is completed salvaged soil will be replaced in the order it was salvaged (i.e., subsoil covered by topsoil) where applicable. Soil placement depths should be as close to pre-disturbance conditions as feasible taking into account soil losses due to handling and long term storage.

Best management practices for soil placement include the following:

- Traffic will be confined to established routes during construction and operation to minimize the number of passes over undisturbed, or newly placed, soil.
- Wheeled or tracked equipment with low ground bearing pressure front ends will be used.
- Placement operations will be suspended if the ground becomes too wet such that activity causes severe rutting or compaction.
- Soil will be spread using low ground bearing pressure scrapers, dozers, and excavators to the required depths.
- Vehicle/ equipment traffic will be minimized on newly spread topsoil and subsoil.



- Soil placement operations will be monitored to confirm minimum depths are achieved and soil suitability is maintained during application activities.
- Rough and irregular surfaces will be configured to mimic natural conditions, to the extent feasible.

11.0 REVEGETATION PLAN

A primary goal of reclamation is defined as reclaimed soils and landforms that are capable of supporting the previously existing land use prior to disturbance. The final revegetation plan will depend on the final land use as determined with input from the private landowners.

Best management practices for revegetation include:

- Revegetation will be initiated as soon as possible after subsoil and topsoil placement has occurred to help control erosion and invasive species establishment. Seeding will be conducted in the spring or fall (after the ground freezes and before snow fall) to allow for good seed to soil contact.
- Commercially sourced seed mixtures will have a "certificate of seed analysis" that confirms no invasive plant species are present as outlined under the Canada Seeds Act (Government of Canada 1985). These may be available from the county or a local agronomist, provided the mixture has been approved by AEP.
- Seeding will be conducted using drill seeding or broadcast seeding based on the size the disturbance, the target end land use, and the equipment available.
- If broadcast seeding is used, the area will be raked or harrowed after application to allow for good seed to soil contact.
- Species mixes will be determined on a site by site basis to achieve end land use targets and to blend with the surrounding landscape.
- Class III (Stewart and Kantrud 1971) wetlands will be avoided during construction, operations, and decommissioning of the Project. Class I and II wetlands that are disturbed as a result of the Project will be reclaimed as per the landowner's final decisions.
- Wetlands that will be reclaimed will not be seeded and left to revegetate naturally.

11.1 Invasive Plant Management and Monitoring

Invasive plants can pose a threat to the healthy functioning of ecosystems. They must be appropriately managed to meet end land use targets. Soil stockpiles, exposed soils, ditches, and newly reclaimed areas will be revegetated as soon as possible to limit invasive species establishment.

Soil stockpiles, exposed soils, ditches, and newly reclaimed areas will be monitored for invasive species establishment and appropriate control measures will be implemented as required, as per the Soils and Vegetation Management Plan (to be developed). Control techniques will reflect site conditions and the nature of infestation, and could include a combination of hand pulling, mowing and spot spraying with appropriate herbicides. Noxious and prohibited noxious weeds based on provincial legislation (GOA 2008) within reclaimed areas will be controlled primarily by mechanical means (i.e., mowing before seed set, hand pulling and disposal). Soil sterilants will not be used. Mitigation to limit weed ingress during operations will include:

All construction equipment will be washed or steam cleaned before arriving at the Project site.



Using weed-free certified reclamation seed mixes or seed-free tackifiers on stockpiles stored for longer than 6 months and all reclaimed soils during operations.

Selective non-residual herbicides may be used when appropriate for invasive plant control. Such usage will be by a qualified applicator in accordance with EPEA pesticide regulations (GOA 2009). If problem infestations are identified, mitigation methods appropriate to the site will be determined and applied. Invasive plants will be managed as per the *Weed Control Act* (GOA 2008).

12.0 WILDLIFE

The use of reclaimed landforms by wildlife is an important criterion for successful reclamation. By replicating the pre-disturbance environment to the extent possible, it is expected that the post reclamation landscape will encourage the same amount of wildlife utilization as the landscape prior to the disturbance.

The basis for biodiversity re-establishment on reclaimed areas will depend on terrain design, soil salvage, and reconstruction, revegetation plans, and drainage system establishment. As the reclaimed landscape matures and evolves, it will increasingly resemble conditions found on comparable sites in the surrounding region.

Where appropriate for the designated end land use, biodiversity will be enhanced using special reclamation measures during reclamation. Measures could include spreading topsoil unevenly over disturbed areas to mimic natural variability in the existing landscape and creating micro-hummocky surfaces to enhance moisture diversity. These procedures provide diversity in micro-habitats that concurrently promote species diversity.

12.1 Post-Construction Wildlife Monitoring and Mitigation

The Proponent has committed to undertaking a post-construction monitoring and mitigation program (PCMMP), as required under the Wildlife Directive for Alberta Solar Energy Projects (AEP 2017). The purpose of a PCMMP is to document direct effects of Project operation of wildlife (i.e., birds and bats).

The post-construction surveys will be completed as directed by the AEP "Post Construction Survey Protocols for Wind and Solar Energy Projects" (AEP 2020) or the version that is in effect at the time the Project commences operations.

13.0 RECLAMATION MONITORING AND MAINTENANCE

Interim Monitoring Site Assessments (IMSA) are to be conducted following construction and after any temporary/progressive reclamation activities to inform on the status of the Project's footprints, as described in Section 5.2.3 of the C&R Directive (AEP 2018). The IMSA are to include documenting the activities that were undertaken at each inspection site and assessing the status of revegetation of the sites during the next full growing season after disturbed sites have been reclaimed.

Monitoring activities will include visual inspection and photographs of the Project footprint. Records of the inspections and the success of reclamation will be maintained and included in a final monitoring report. If issues are encountered mitigations include repair of erosion control measures, re-application of seed mix, and weed control activities. Manual clearing of any encroaching weedy vegetation around the Project footprint may also be recommended to reduce competition.

The objectives of the monitoring program are to evaluate the success of reclamation activities over time and to adjust or modify practices, where necessary, to achieve reclamation objectives. Reclamation monitoring may consist of short-term erosion control monitoring and revegetation success monitoring as well.



Maintenance required during reclamation will comprise the continuation of routine monitoring of any remaining surface water drainage infrastructure, namely culverts and drainage channels, to maintain moisture conditions suitable for vegetation regrowth. This will consist of inspecting the general condition of the infrastructure, including for cracking, erosion and blockages and repairing where required.



Signature Page

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