



FIA Activity Standards Document

Restoration and Rehabilitation Component, Terrestrial Activity
Area – Treatments Activity – Using Native Seed

Effective Date: April 1, 2006
Ministry of Environment

Restoration and Rehabilitation Component, Terrestrial Activity Area, Treatments Activity – Using Native Seed: This activity standard addresses project planning, assessment and prioritization components for using native seed to restore ecosystem function. Eligible work includes seeding rights-of-way on Forest Service roads (FSRs), Road Permit roads (pre-1995), and non-status roads, including landings and other disturbed areas related to forest harvesting for which the licensee has fulfilled legislated and contractual responsibilities, yet treatments are still needed to restore ecosystem function. The use of native seed is also encouraged for restoration treatments, silviculture treatments and other activity treatments where revegetation is desired; the objective being to restore native species rather than introduced or species not native to the area.

Guidelines for this activity are not yet posted, and are available from MOE, Colene Wood, at Colene.Wood@gov.bc.ca.

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DESCRIPTION/ELIGIBILITY

Revegetation activities under the Restoration and Rehabilitation Component, Terrestrial Activity Area, that use seed for indigenous herbaceous species may be desirable to meet sustainable forest management objectives. Projects that treat areas on which the licensee's obligations have been met are eligible for FIA funding. Types of eligible projects include:

- (1) Ecological restoration of red- or blue-listed plant communities, as identified by the Conservation Data Centre (<http://www.env.gov.bc.ca/cdc/>). Grassland and savannah communities, often degraded by over-grazing or exotic plant invasion, may especially benefit from native plant seeding. Some red-listed examples include:
 - Garry Oak / California Brome on Vancouver Island and the Gulf Islands;
 - Ponderosa Pine / Bluebunch Wheatgrass - Lupine in the Southern Interior;
 - Saskatoon / Slender Wheatgrass in the Northern Interior.
- (2) Reintroduction of dominant understory species in open woodlands (such as drier Douglas-fir and ponderosa pine ecosystems) that have been treated (using prescribed fire, thinning or slashing) to reduce ingrowth. Herbaceous layer recovery can then be enhanced through seeding, and is often desired to enhance forage production for livestock or wild ungulates. This is especially relevant in NDT4 ecosystems (see the Forest Practices Code Biodiversity Guidebook, <http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/biodiv/biotoc.htm>)
- (3) Revegetation of recent landslides, wildfires, cutblocks and other catastrophic disturbances (natural or anthropogenic) that expose large areas of bare soil in a short period of time. The objective of seeding is usually to prevent soil erosion, inhibit exotic plant invasion, or depress non-crop brush competition while not inhibiting the establishment of trees and shrubs.
- (4) Revegetation of newly constructed roadsides, road cuts, and recently decommissioned landings, log sorts, access roads, and other activity areas such as camp sites, especially in zones being managed for non-timber forest values. Depending on the context, objectives may include erosion control and visual green-up, but may also include sustaining natural vegetation, inhibition of tree establishment, or inhibition of wildlife activity.

GUIDELINES

The use of herbaceous plant materials in ecological restoration is not as well researched or as regulated as the use of tree seeds, for which well-documented transfer guidelines have been developed (see <http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/veg/seedtoc.htm>). Nevertheless, non-tree plant materials only should be used and moved judiciously in a manner that addresses the same concerns, avoiding maladaptive plant materials and genetic contamination of locally adapted populations wherever possible. In the absence of research, the following guidelines, in order of preference, are recommended:

- (1) Use native species documented to occur, or to have historically occurred, on or adjacent to the site being sown;

- (2) Use wild-collected or cultivated seed produced from plant materials indigenous to sites as close as possible (geographically and ecologically) to the site being sown, preferably the same biogeoclimatic variant and forest district;
- (3) Use wild-collected or cultivated seed produced from plant materials found in the same biogeoclimatic (i) variant (ii) subzone, or (iii) zone;
- (4) Use wild-collected or cultivated seed produced from plant materials found in the same broad ecological region of the Province or equivalent regions in adjacent jurisdictions: Coastal; Southern Interior; Northern Interior; or Peace River regions.

If a Recipient varies from this guidance, a justification should be provided in the project report. Whatever the origin of plant materials, it is imperative to document the genetic origins and provenance of the plants from which the seed was obtained.

Guidelines supporting the standards described in this document are:

- “A Manual for Growing and Using Seed from Herbaceous Plants Native to the Northern Interior of British Columbia,” available from Symbios Research & Restoration, P.O. Box 3398, Smithers, B.C. V0J 2N0 tel. 250-847-0278 [e-mail: symbios@bulkley.net](mailto:symbios@bulkley.net); also available from MOE, Colene Wood at Colene.Wood@gov.bc.ca.
- “Restoration Species Manual for the Pacific Northwest,” available from Polster Environmental Services, 5953 Deuchars Dr. Duncan, B.C. V9L 1L5 tel. 250-746-8052 e-mail d.polster@telus.net
- “A Guide to Using Native Plants on Disturbed Lands,” available from Publishing Branch, Alberta Agriculture, Food and Rural Development, 7000-113 Street, Edmonton, Alberta T6H 5T6 tel. 800-292-5697; table of contents available at <http://www.agric.gov.ab.ca/agdex/000/ppnplttc.html>
- “Restoring Canada’s Native Prairies: A Practical Manual,” available from The Manitoba Naturalists Society, 401-63 Albert Street, Winnipeg, Manitoba R3B 1G4 tel. 204-943-9029.

PLANT MATERIAL AND PRESCRIPTION STANDARDS

The following standards apply to the design and implementation of the above four types of eligible projects involving the restoration and/or revegetation of disturbed or degraded lands. These standards will be periodically updated and expanded to include technical and process guidance for conducting other important project components such as obtaining native plant materials, and conducting post-completion project inspection and monitoring. Licensee input is desired, and direct feedback should be directed to the FIA activity contact.

These standards apply to all FIA-funded use of herbaceous native plant seed in Land Base Investment Program activities. In particular, native plant seeding should be considered for use in conjunction with all activities planned for red- and blue-listed plant communities, and all restoration activities planned for addressing problems of forest ingrowth or over-grazing. These standards do not apply to standard agronomic or mixed native and agronomic seeding operations where the sole objective is erosion control and green-up on forest lands. These standards do apply to mixtures of native plant species that also include a fast-establishing, short-lived species as a cover crop or nurse crop.

1.0 General FIA Standards

1.1 The Recipient must comply with General FIA Standards, FS 1001

(<http://www.for.gov.bc.ca/ftp/hfp/external/!publish/FIA%20Documents/Standards/FS1001.pdf>).

2.0 Plant Material Standards

2.1 Before commencing work on the native plant material introduction, the Recipient must confirm in writing to the FIA Administrator that all conditions described under “Eligibility” have been satisfied. A form (attached) has been prepared to facilitate this process.

The Recipient’s representative (a Registered Professional Biologist or Registered Professional Agronomist) will act as the *Coordinating Registered Professional* for the project. This individual will take overall responsibility for the seeding project, which includes engaging and coordinating the design, and field reviews with the appropriate implementation team (e.g., Registered Forest Professional, Registered Professional Biologist, forest workers) for the seeding prescription and related activities (e.g., a burn plan or silvicultural prescription).

2.2 The Coordinating Registered Professional (CRP) will take responsibility for plant material selection, prescription development, and prescription implementation. The CRP will:

- (i) consider the biogeoclimatic zone, subzone, and variant in which the project is to occur;
- (ii) consider the site series on which the project is to occur;
- (iii) consider the dominant native herbaceous plant species naturally found in previous or nearby intact plant communities;
- (iv) consider the availability of native plant seed, cuttings, and other propagules from wild collections nearby, from regionally appropriate seed-increase plots, and from commercial seed companies;
- (v) consider the species selection, seed mixture formulation, seeding rate, and site preparation guidelines provided in the guidelines cited above.

2.3 The provisions of the *Canada Seed Act* do not apply to seed traded for the purposes of ecological restoration or reclamation, so there is no need to use Canadian Seed Growers Association (CSGA) certified seed. CSGA certification (e.g., labelled as “Canada No. 1”) assures that the designated seed lot is of the stated variety and contains a maximum number of non-crop seeds, but it does not imply that it is free of contamination by weeds. Whether certified or not, the native seed used for terrestrial restoration should have the following attributes documented by the seed vendor or collectors:

- (i) scientific name of the species, and subspecies or variety if applicable;
- (ii) the location and date of collection or harvesting; if grown in cultivation, the plant material’s genetic location of origin should be indicated or on file;
- (iii) viability (% germinability by a specified date) of the seeds, and purity (% of the seed lot, by weight, that consists of apparently whole, mature, viable seeds); and
- (iv) presence of seeds of any exotic species and restricted or noxious weeds in the seed lot.

2.4 Consistent with the *Forest and Range Practices Act* (47), *Forest Planning and Practices Regulation* (17), *Invasive Plants Regulation*, *Range Planning and Practices Regulation* (15), and *Woodlot Planning and Practices Regulation* (14), the CRP must limit the spread of noxious weeds. Since use of seedlots containing noxious weeds contributes to their spread, the CRP must ensure that no seedlots containing seeds from plants designated as noxious weeds are used in the terrestrial restoration project. Plants classified as noxious under the British Columbia Weed Control act are listed at <http://www.agf.gov.bc.ca/cropprot/weedguid/weedguid.htm#noxious>.

2.5 Prior to implementation, the CRP must make all required referrals to government agencies and obtain all required approvals and permits. The CRP is responsible for forwarding a copy of the completed prescription to the Recipient to keep on file and be included in the project report.

3.0 Prescription Standards

3.1 The CRP must document the following information:

- (i) A brief site description, including its:
 - location (latitude and longitude, or UTM coordinates);
 - elevation,
 - biogeoclimatic variant;
 - site series and/or SMR and SNR;
 - slope and aspect;
 - soil/substrate description (including texture, compaction, estimated organic matter content); and
 - disturbance history.
- (ii) The planning requirements, including:
 - objectives for seeding;
 - coordination with other site management activities, such as grazing, timber harvesting, silvicultural activities, prescribed burning, or the maintenance of access; and
 - the recommended season or window of dates or weather criteria under which seeding should occur.
- (iii) A seeding prescription that lists:
 - the species and origins of plant materials to be sown (as per 1.0 Plant Material Standards);
 - the total density of pure live seed (PLS) to be sown, specified in PLS/m²;
 - the seeding rate, based on available seed lots, in kg/ha (or in g/m² for small projects);
 - the PLS or proportion of total PLS to be made up by each species;
 - the total area of land under prescription;
 - the rate and formulation of recommended soil amendments to be added at the same time as seed (peat moss, lime, fertilizer, straw, etc.); and
 - the methods of site preparation and sowing.
- (iv) Monitoring needs and evaluation criteria:
 - method and frequency of monitoring (typically for percent cover, plant density, or composition, but sometimes for wildlife or ungulate use, forage production, etc.); and
 - expected performance levels for which the prescription was developed (e.g., exotic cover kept <5%; sown plant cover >50% after end of first growing season; average vascular plant richness >8 native plant species per m²; production of elk-palatable forage >180 dry g/m² after second growing season).

A template is provided (attached) to assist in the preparation and reporting of a native plant seeding prescription.

- 3.2 The CRP must, as necessary, provide suitable site supervision and field reviews before, during and upon completion of the work.
- 3.3 Modifications to a prescription or associated activities may be necessary to address unforeseen site conditions.
- 3.4 Upon completion of the work, the CRP will prepare a project abstract, "Prescription and Statement of Activity Completion." The abstract should include clear project objectives and indicators for evaluation, the seeding prescription (as described in 3.1), comments on any changes or alterations to the prescription as implemented, a monitoring plan, and a location map and site map (enabling others to find the site, and providing a drawing of the configuration of the area sown, complete with a scale and key to features mapped) The abstract should be submitted in the format used in the attached template. The CRP will submit a copy of the abstract to the Recipient who will forward it to the FIA Administrator and to the FIA repository ForProdres@gov.bc.ca.

FIA – Land-base Investment Program – Native Plant Seeding Projects

Prescription and Statement of Activity Completion

SECTION A – GENERAL INFORMATION

Investment Schedule #: _____

Project #: _____

Recipient's Name / Division: _____

Forest District / Region: _____

Project type (check only one):

___ restoration of CDC red- or blue-listed plant community.

___ understory enhancement after overstory thinning or prescribed burning (esp. in NDT4 ecosystems).

___ revegetation of landslide, wildfire, cutblock or soil recently bared over large area.

___ revegetation of roadside, old landing, log sort, campsite or other access or human use area.

SECTION B – SITE DESCRIPTION (if the site varies in these attributes, separate prescriptions are recommended for each stratum)

Location (prepare maps on back too):

Lat.: _____ Long.: _____

or UTM: Zone: _____

easting: _____

northing: _____

Elevation: _____ m

Dominant herb species in reference community: _____

Biogeoclimatic Ecosystem Classification:

Zone/subzone/variant: _____

Site series*: _____

SMR*: _____ SNR*: _____

Site is: water-receiving ___
water-shedding ___ neither ___

*may need to be determined from an adjacent, analogous but undisturbed/less-disturbed area.

Slope:

Steepness: _____ % gradient

Aspect: _____ ° azimuth from N

Surface/Soil Description:

Horizon: _____ OM content: _____

Texture: _____ Compaction: _____

Disturbance History: _____

SECTION C – PROJECT PLANNING

Objectives for seeding: _____Measurable performance **indicators**: _____Other site management activities that **must be completed before seeding**: _____Other site management activities that **must wait for seeding to be completed**: _____**Preferred seeding dates:** _____

and/or weather conditions: _____

and/or soil moisture or other site conditions: _____

SECTION D – SEEDING PRESCRIPTION

Area to seed: _____m ²	Plant Material Origins		Seeds per gram	Seedlot		Application Rate		Amendments or notes upon completion
	Location or Vendor	Year or Seedlot		Purity % of wt.	Viability % germ.	desired PLS/m ²	Total g or kg	
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
TOTAL:								
Seeding method:								
Site preparation:								
Fertilization:	Formulation:			Application Rate:				
Other soil amendments:								
Post-seeding instructions:								

"This prescription is consistent with the requirements of the applicable FIA Activity Standards Document and applicable legislation."

Prescription prepared by Coordinating Registered Professional: _____ (signature)

SECTION E – MAPS**Location* map:****Site** map:**

*sketch an access map, starting with a well-known place name, showing geographical features and km between all turns

** sketch a map of the project site, showing the usual point of access, overall shape, important site features, north and scale

SECTION F – MONITORING PROGRAM

(refer back to Section C objectives and indicators)

Recommended dates of **visual inspection**: _____Recommended dates of **quantitative monitoring**: _____**Monitoring methods:**

Type of sampling: _____

Number of sampling units: _____

Distribution of samples: _____

Attributes (and their units) for measurement: _____

SECTION G – RECIPIENT'S SIGNATURE

To the best of my knowledge, I confirm that:

- the requirements of the FIA General Standards (FS 1001) will be met;
- the prescription was devised by a Registered Professional Biologist or Registered Professional Agronomist, in accordance with the FIA Activity Standards Document for Using Native Seed for Terrestrial Restoration;
- the Registered Professional has signed the prescription for the project, and provided a statement (on reverse or in a separate letter) that the prescription was prepared consistent with the requirements of the applicable FIA Activity Standards Document, and all applicable legislation;
- the prescription addresses the requirements of other agencies (e.g., MoFR, MOE, LWBC and DFO).

SIGNATURE OF RECIPIENT REPRESENTATIVE:

(signature)

NAME OF RECIPIENT REPRESENTATIVE

(please print)

DATE SIGNED

YYYY MM DD

| |
| |

(please affix
professional seal here,
if desired)

RECIPIENT'S NAME AND ADDRESS (please print)

PHONE NO.

FAX NO.

E-MAIL ADDRESS

SECTION H – ADDITIONAL COMMENTS