

**Management Plan for
the Denman Island Natural Burial Cemetery**

Denman Island, British Columbia

Denman Island Memorial Society

May 27, 2013
Amendment 1 - June 27, 2014
Amendment 2 - July 20, 2015
Amendment 3 – June 27, 2016

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Management Plan for the Denman Island Natural Burial Cemetery

Denman Island, May 27, 2013

1 Introduction

The Denman Island Memorial Society (DIMS) is a volunteer organization formed to plan, establish, and maintain a natural burial ground for the residents of Denman Island and their families. DIMS partnered with the Denman Conservancy Association (DCA) through the transfer of a 1.08 hectare parcel of land from the DCA owned Central Park to DIMS for use as a natural burial ground. The land transfer and initial planning for the Denman Island Natural Burial Cemetery were guided by a Letter of Agreement, dated November 2009, between these two groups, intended to ensure the project maintained principles of conservation consistent with the mandate of DCA while providing the practical means to establish and operate a natural burial ground that met the needs of the community. The land transfer was achieved on January 23, 2013, and included registration on the land title of a Conservation Covenant held by DCA outlining conservation requirements that would be reflected in a Land Management Plan. This document represents that Land Management Plan. The Land Management Plan will be reviewed and revised at five year intervals, or more frequently as deemed necessary by either DCA or DIMS.

The Denman Island Natural Burial Cemetery is a 1.08 hectare parcel at the southeast corner of Central Park, a 59.5 hectare parcel held by DCA and located in the middle of Denman Island opposite the Marcus Isbister Old School Centre (the old school). Both of these parcels were completely logged in 2000 and have been regenerating naturally since that time. DIMS has worked since 2009 to achieve the needed regulatory and design requirements for creating a cemetery and to plan the work required to add physical elements to the burial ground such as entry features, memorial structures, burial markers, paths, and benches; to prepare the land designated for burials; and to manage the burial ground operations. This Management Plan includes a brief history and a biophysical description and makes recommendations for future management activities, balancing natural burial ground use with habitat protection.

1.1 Purpose

The purpose of the Denman Island Natural Burial Cemetery is to create a cemetery that conforms to green burial standards, maintains the conservation efforts of DCA, and provides burial service to the residents of Denman Island and their families for an estimated one hundred year period.

The purpose of this plan is to:

- provide a summary of existing environmental attributes of the site;
- establish strategies for the management of the property;
- integrate this property's use within the larger Central Park nature conservation efforts; and

- ensure that all management activities are consistent with the terms of the Conservation Covenant.

The plan provides short- and long-term guidance for the management of the Natural Burial Cemetery and the protection of its natural habitat, as set out in the Conservation Covenant. It also reflects the expressed wishes of the community. The plan should be reviewed at five-year intervals.

This first version of the Management Plan provides background information on the property and describes the activities DIMS will be undertaking during the first five years of holding the Natural Burial Cemetery or until the creation of the next version of the Management Plan.

1.2 Planning Methods

Information gathered for this report was derived from the following sources:

- site visits, studies and field mapping;
- collaboration between DCA and DIMS;
- a review of relevant Acts and Regulations pertaining to cemetery use; and
- public consultation within the community.

2 Site Information

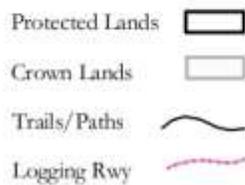
This section provides a brief overview of the Denman Island Natural Burial Cemetery land, henceforth referred to as “the Natural Burial Cemetery,” including its location and context in relation to other neighboring properties, and outlines its unique attributes and features.

2.1 Legal Description

The parcel identification is PID 028–994-965. The legal description is Lot A, Section 17, Denman Island, Nanaimo District, Plan VIP89491.

2.2 Local Context

This property, at 6400 Denman Road, is particularly suitable for a burial ground for several reasons. It is centrally located on Denman Island and is diagonally across the road from the existing Denman Island Cemetery, providing common usage and historical benefit. This location is close to the old school, an existing community asset utilized by the community as a meeting place, recycling centre, summer marketplace, etc. The property is easily accessible and is adjacent to Central Park, which provides a nature reserve and recreational trails.



Map 1: Central Park Context



Map 1: Context

Source: Management Plan for Central Park

The Natural Burial Cemetery land is located at the southeast corner of Central Park, which is strategically located within a protected corridor of wetlands and forest habitat (see Map 1). The Natural Burial Cemetery and Central Park are contiguous with a Crown Land quarter section which meets the northwest corner of Central Park connecting it with other properties held or managed by DCA and other parcels of Crown Land. As a result of provincial acquisitions in 2008, these properties are part of a corridor of protected land that extends to the north end of the Island. Thus the Natural

Burial Cemetery land contributes to a general travel corridor for wildlife and supplements a refugia for native species.

2.3 Site History

In the early 1900s a logging railroad was built on Denman Island, part of which connects the original cemetery to Denman Point (also known as Village Point), on the west coast of the Island. All of Central Park was logged in this era, the subsequent new forest being established around 1930. Today, remnants of the railway cross diagonally through the Natural Burial Cemetery land and continue through Central Park. These railway beds can be found in Crown Block SW 1/4 of section 22, Inner Island Nature Reserve, the Settlement Lands and Crown Block NW 1/4 of section 21 and emerge on Lake Road near Winter Wren Wood (see Map 1). DIMS seeks to preserve and utilize the section of this historic route as its main entry and travel corridor in the form of a central memorial path through the Natural Burial Cemetery, henceforth called “the Allee.”

In the spring of 1997 the Central Park land was partly logged by a horse-logging outfit. The owner, The John Hancock Corporation, was trying to find ways to reduce the ecological impact of its harvest. The ground was too wet at the time, making it a poor test of the method. On June 30th 1997 the land was sold to 4064 Investments Ltd., which eventually completed logging the land by conventional means in 2000. In 2006 DCA acquired Central Park through the efforts of Denise and Boyd MacKean and many generous donations from Conservancy supporters on and off Denman Island. In the spring of 2009, DIMS began collaboration with DCA towards the establishment of the Denman Island Natural Burial Cemetery.

2.4 Geology

Sloping sedimentary bedrock, which consists of marine conglomerates and sandstones of the Upper Cretaceous Age, underlies the surface features of the Natural Burial Cemetery property, as well as Central Park. Glacial ice sheets modified the underlying rock and left glacial deposits which have eroded to produce the distinctive ridges and swales we see today.

The soils continue to develop from this glacial till. If the land were left to regenerate naturally, one could expect to see forest cover similar to the prelogging vegetation, which was strongly influenced by underlying soil thickness and fertility (see Map 2).

2.5 Ecological Overview

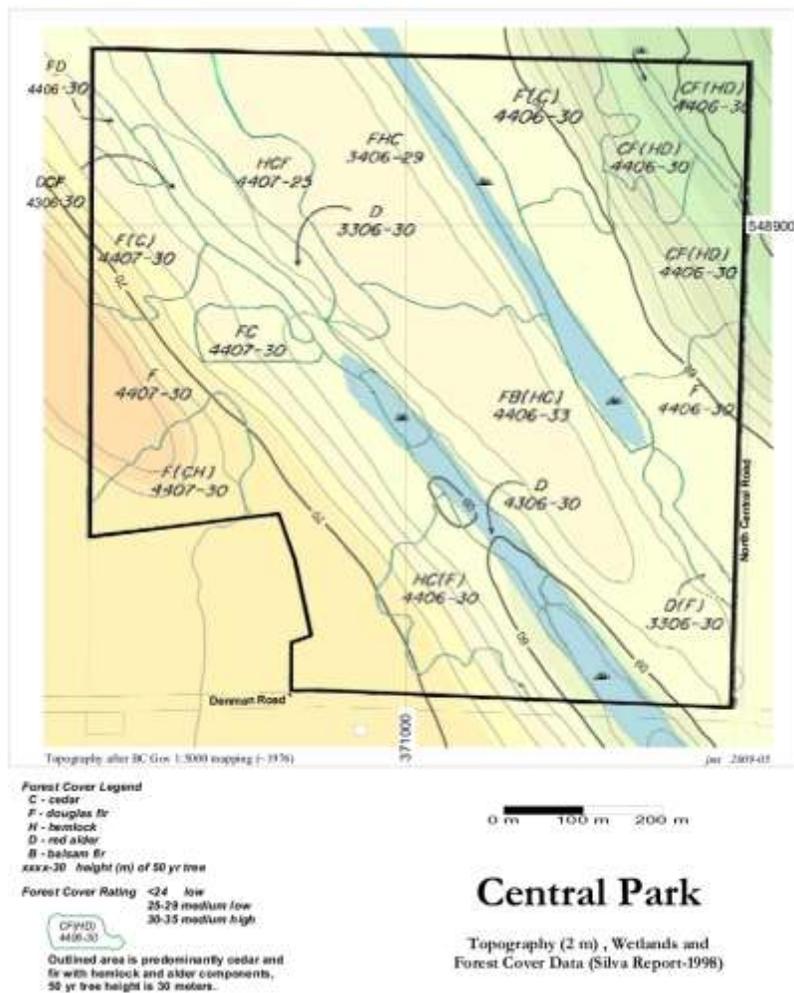
The vegetation and fauna of the Natural Burial Cemetery are described in detail in the Baseline Report prepared by Andrew Fyson (*Baseline Documentation Report of the Denman Island New Cemetery*, October 2010 – Schedule B of the Conservation Covenant). A summary is presented below.

2.5.1 Ecological Designation

The Natural Burial Cemetery property lies within the Coastal Douglas-fir moist maritime (CDFmm) biogeoclimatic region.

2.5.2 Vegetation

The current state of the forest in the Natural Burial Cemetery is best described as “residual.” The property was clear-cut in 1999–2000, when essentially all valuable timber-quality trees, mostly Douglas fir *Pseudotsuga menziesii*, were removed. The scattered mature trees left include western red cedar *Thuja plicata*, bigleaf maple *Acer macrophyllum*, western hemlock *Tsuga heterophylla*, red alder *Alnus rubra*, an occasional grand fir *Abies grandis* and a few, veteran old growth Douglas firs (see Map 2)



Map 2: Forest Cover
 Source: Management Plan for Central Park.

At this time, young red alder trees dominate as colonists of cleared areas. Red alder is particularly abundant and vigorous in the shady zone at the south end of the property, a small patch near the south end of the Allee, along the northern border of the property east of the Allee next to the Alder Trail, and in the extreme northwest corner of the property. Regenerating young conifers are found throughout the property, except for the large bracken-dominated area in the centre of the property. There are also a few, scattered, young arbutus *menziesii* trees.

Open ground is extensively colonized by bracken fern *Pteridium aquilinum* and non-native grasses, particularly sweet-vernal grass *Anthoxanthum odoratum*. There are also extensive areas of salal *Gaultheria shalon*, dull Oregon grape *Mahonia nervosa* and, in shadier areas, sword fern *Polystichum munitum*.

A few maturing Douglas firs, bigleaf maples and western red cedars are on the property. A detailed description of the vegetation on the land in 2010 is found in the Baseline Report (Schedule B of the Conservation Covenant).

2.5.3 Fauna

Black tailed deer was the only mammal observed in the area of the Natural Burial Cemetery during a baseline inventory survey conducted by DCA in 2010. A list of mammals observed or expected to be present in Central Park is provided in Table 1 of the Baseline Report (Schedule B of the Conservation Covenant).

2.5.4 Steep Bluff and Crest

A bluff facing southwest runs parallel to the west side of Graveyard Marsh beyond the west property boundary of the Natural Burial Cemetery property. The bluff falls westward toward Graveyard Marsh.

2.5.5 Wetlands

Nearby to the Natural Burial Cemetery and beyond this bluff is a wetland area. This wetland, Graveyard Marsh, is one of three major long, narrow wetlands in Central Park.

Graveyard Marsh runs on a diagonal, parallel to and beyond the western boundary of the Natural Burial Cemetery. This wetland comprises two major open water areas, an extensive sedge marsh dominated by slough sedge *Carex obnupta* and treed swamp sections. The portion of Graveyard Marsh near the Natural Burial Ground property is predominantly sedge marsh. Deer fern *Blechnum spicant* is abundant at the northern end of the wetland.

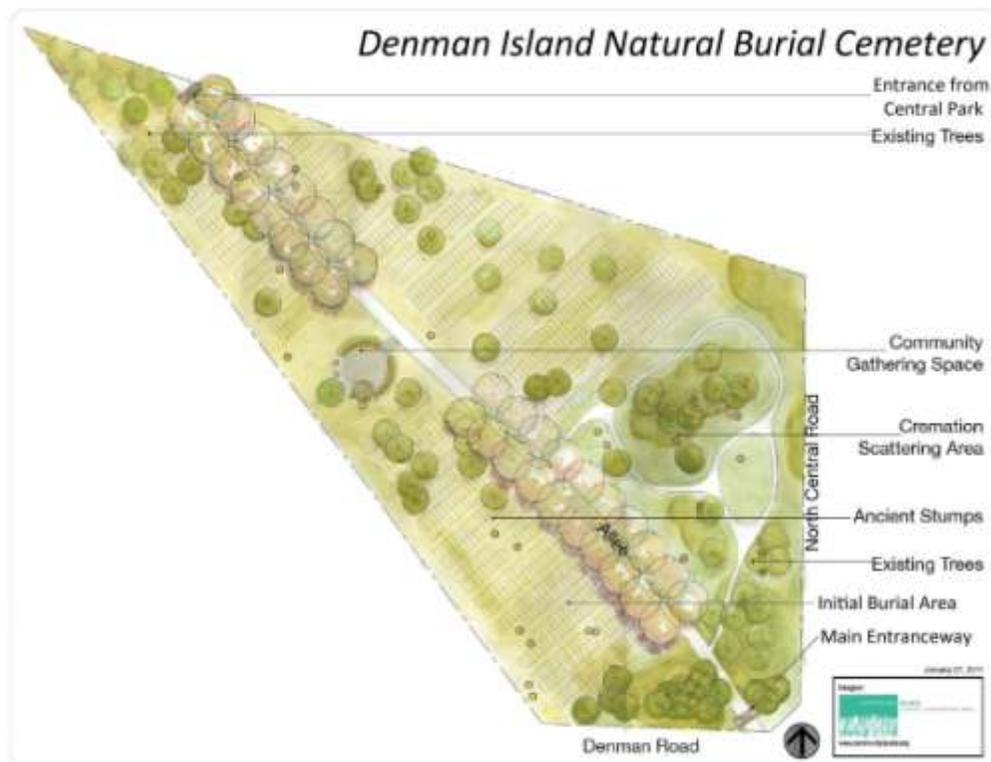
Within the cemetery property, only one area is considered “wet,” namely a small area along the northeast border of the land (identified in Map 4 of the Baseline Report as “H: Slough area wetland with Lady fern”) that is wet in the winter months but dries out in the warmer weather. This area is in the periphery of the property and is not intended for burial activities or for any activities that section 4.2 (a) of the Conservation Covenant allows in the south and east peripheral areas.

3 Public Consultation

The design and development of the Natural Burial Cemetery are guided by a public consultation process, as well as by the green burial standards and the objectives documented in the Conservation Covenant. The DIMS Board of Directors has engaged members of the community through special meetings, public presentations, interactive design charettes, published articles, and its annual general meetings in its efforts to create a cemetery that will meet the needs of Denman Islanders and their families. It is expected that the public consultation process will continue to influence the decisions of the DIMS Board of Directors in the Natural Burial Cemetery operations and maintenance practices.

4 Introduction of Physical Features and Management of the Land

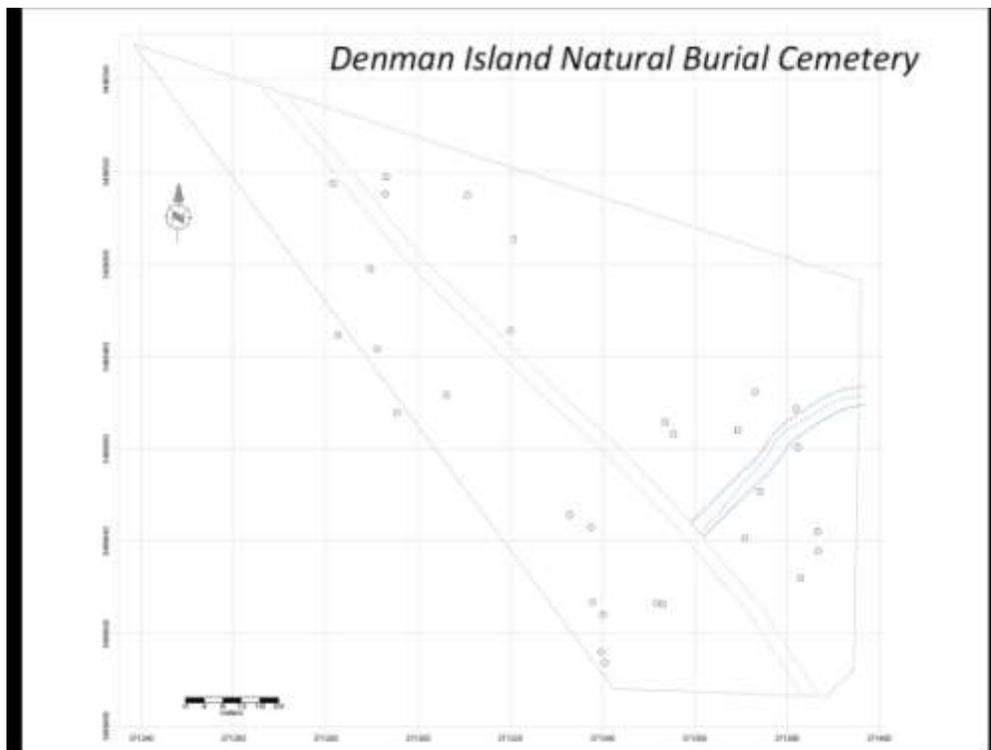
This section describes the physical structures to be built within the Natural Burial Cemetery (see Map 3). Other structures permitted in the Conservation Covenant will not be constructed until after the review and approval of a revised Management Plan. This section also describes the land preparation to be undertaken during the period covered by the first version of the Management Plan. Land alterations of some sort are planned for the next five years for all areas in the Natural Burial Cemetery to accommodate some, although not all, of the land uses permitted in sections 4.2, 4.3 and 4.6 of the of the Conservation Covenant.



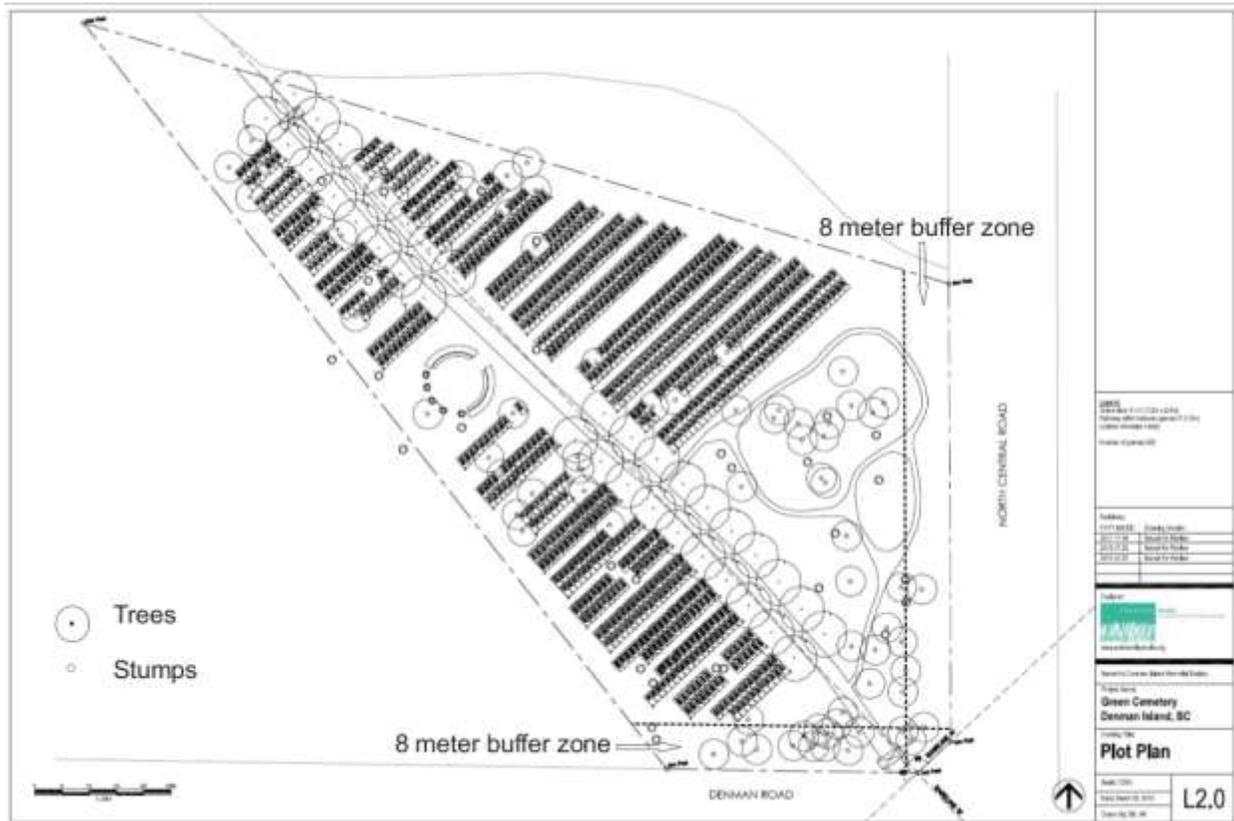
Map 3: Cemetery Design

Two aspects of these land alterations merit comment at the outset: debris and stumps. As set out in a DCA-DIMS Agreement dated Jan. 21, 2013 (see Appendix A), debris arising from the initial clearing (as defined in that Agreement) may be removed from the land and disposed of in an identified trench on the adjoining Central Park land. Debris in excess of the amount identified in this agreement will remain on the property and will be chipped and/or composted on the land intended for burials 35 years or more from now. As much as possible, the debris will be dispersed to facilitate decomposition. Further debris resulting from vegetation management over time will be moved to this same area where it will be chipped and/or composted.

In accordance with the specific stipulations in the Conservation Covenant, all large stumps remaining from pre-1995 logging will remain in the ground, with the exception of (a) those stumps that have deteriorated to ground surface level, and (b) those stumps located within the Gathering Space (the area containing the Memorial Structure). Stumps from pre-1995 logging are shown on Map 4. Stumps that are removed (other than during initial clearing) will either be broken up and chipped or will be spread out to rot in the areas within 8 meters of the west and north property boundaries. Note that the non-disturbance areas within 8 meters of the property boundaries adjacent to Denman and North Central roads (see Map 5) will not be used for this purpose.



Map 4: Access Road and Stumps from Pre-1995 Logging



Map 5: Non-Disturbance Areas (as per s. 4.6 of the Conservation Covenant)

4.1 Entranceways

The Natural Burial Cemetery will provide two entranceways for public access. A main entranceway will be located at the south property boundary at Denman Road and a secondary entranceway at the north property line adjacent to Central Park and aligned with the Central Park trail system. Vehicular access will be limited to a single separate location for service and emergency vehicles. The following sections provide details on these entranceways.

4.1.1 Public Entranceways

Public access to the Natural Burial Cemetery will be in two locations, one at either end of the Allee, as shown on Map 3. The main public entranceway will be located at the southeast boundary abutting Denman Road. An arched entry structure, including a bench, will be constructed near the main entranceway. Signage for the Natural Burial Cemetery will be erected near the main public entranceway, and three cedar figures will be placed nearby. The secondary public entranceway will be located at the northwest boundary abutting Central Park. The secondary entranceway will have an entry

structure that is similar in design to the main entry structure but smaller. Although the south entranceway might be used at the time of a burial for a horse-drawn or bicycle-drawn cart, neither entranceway is intended to accommodate a vehicle, and appropriate barriers, either the entry structures or other means, will limit vehicular entry.

It is anticipated that the land alterations necessary to create these entranceways will be undertaken in the fall of 2013 and that the entry structures will be constructed in 2015.

1. Location

Two public entranceways will be provided into the Natural Burial Cemetery. The main public entrance will be located off Denman Road at the south boundary of the property. The secondary public entranceway will be located at the north property boundary adjacent to Central Park abutting Alder Trail.

2. Width

Public entranceways will be approximately 3 metres wide.

3. Clearing required

All vegetation will be removed from the entrance paths to allow safe pedestrian travel. Vegetation will also be removed as needed to accommodate construction of the entry structures and placement of the cedar figures. The current plan is to position the south entry structure 14 metres from the start of the south entranceway; however, the final position will be determined once the design of the structure is finalized and may be closer to the entranceway. If a position closer than 7.5 metres is desirable, DIMS will apply to the Islands Trust for permission to vary the 7.5-metre set-back from the front lot line. This structure is considered a "gate," thus qualifying as an exception to the restrictions for set out for non-disturbance areas in s. 4.6 of the Conservation Covenant. For the cedar figures, the existing alders and Douglas fir saplings will be removed in an area no larger than 5 metres x 3 metres immediately beside the entranceway. The north entry structure will be positioned approximately 7 metres from the start of north entranceway, which is beyond the required setback from the rear lot line.

4. Construction

Entranceways will be graded and crowned to shed rainfall and prevent ponding of water. Machinery to be used is anticipated to be a small bobcat or backhoe accompanied by hand raking to achieve the final grading. Entrance paths will receive a surface treatment to a depth of 5 to 10 cm using small sized gravel and/or wood chips created during rough land clearing. The surface treatment will be chosen to ensure durability and ease of maintenance.

5. Entry Structures

Two entry structures will be constructed, one at the main south public entrance and the second at the north public entrance. Both will consist of a roofed, open, arch-like structure. The main entry structure will be 3.0 metres wide and 3.6 metres deep, and constructed of native lumber. The secondary entry structure will mirror the design of the main entry structure, but will be scaled down in size.

6. Signage

A sign identifying the Natural Burial Cemetery will be placed at each entranceway to the cemetery. The sign at the south entranceway will be more prominent, as

this is the main public entranceway. Both signs will be designed to be consistent with the conservation goals of the cemetery.

DCA educational and interpretative signs may be placed at the two entrances to the cemetery, provided that such signs are designed, agreed to and approved by both DCA and DIMS.

7. Carved cedar figures

Three hand-carved cedar figures will be located at the start of the main public entranceway, on the west side of the entrance pathway. Each will stand on a separate concrete pad. The area covered by the three pads and intervening spaces will be no larger than 3 metres x 5 metres.

8. Vegetation management over time

Public entranceways and related paths will be cleared and managed as necessary to maintain them in a safe and useable condition. Anticipated management practices entail pruning of encroaching vegetation, removal of fallen trees and branches, and clearing of brush and saplings in the 3 metre area.

4.1.2 Vehicular Entranceway

The preparation, operation, and maintenance of the Natural Burial Cemetery will require the use of motorized vehicles. There is also a need to maintain vehicular access for emergency vehicles in the event of fire or medical emergencies. Vehicular access will be limited to vehicles required for the land preparation, maintenance of the paths and the Gathering Space, and operation of the Natural Burial Cemetery. It is anticipated that the land alterations necessary to create this access will be undertaken in 2013 and 2014.

1. Location

One vehicular entranceway will be provided into the Natural Burial Cemetery. The vehicular entranceway will be located on the east property boundary abutting North Central Road approximately 56 metres north of the corner post at the intersection of Denman Road and North Central Road. Although the places at which the access road crosses the buffer on the east border of the land and meets the Allee are determined (as marked on Map 4), the route through the Scattering Area will not be finalized until the road is created. This approach is intended to minimize the disturbance to existing vegetation in the area. The access road meets the Allee at a T-junction approximately 39 metres north of the corner post at the entranceway at Denman Road. There will be a break in trees along the Allee (see s. 4.2) to accommodate vehicles turning at this intersection.

2. Width

The vehicular entranceway will be approximately 4 metres wide, with a gate of the same width at the entranceway.

3. Clearing required

All vegetation will be removed from this roadway to allow safe vehicular travel. It is anticipated that no tree removal will be required. A roadside culvert will be installed to maintain existing drainage along North Central Road.

4. Construction

Consultation with a Denman contractor has indicated that the route identified for the vehicular access road through the buffer on the eastern side of the property

will avoid removing any trees over 3 metres in height and that it should be possible at the time of construction to choose a route through the Scattering Area that similarly avoids the removal of large trees.

After the initial clearing, the access road will be graded and crowned to shed rainfall and prevent ponding of water. The roadbed will be given suitable surface treatment to a depth of 10 to 15 cm to ensure stability and ease of maintenance. Machinery to be used is anticipated to be a small bobcat or backhoe accompanied by hand raking to achieve the final grading.

5. Signage

The Denman Island Fire Department has been consulted regarding this access for emergency vehicles and any requirements for roadside signage to identify the access.

6. Vegetation management over time

The vehicular entranceway and access road will be cleared and managed as necessary to maintain it in a safe and useable condition. Anticipated management practices include pruning of encroaching vegetation, removal of fallen trees and branches, clearing of brush and saplings, and occasional re-grading within the 5 metre road width.

4.2 The Allee

The main path in the Natural Burial Cemetery, referred to as the Allee, runs from the southeast corner to the northwest corner of the property, allowing the public to access to the property from both Denman Road and Central Park, as well as to access Central Park by crossing the Natural Burial Cemetery land. The Allee consists of a 3-metre-wide central path, plus 3.6 metre-wide buffers on either side of the path.

The Allee will be a key element for emphasizing the specialized use of the land as a cemetery and bringing a note of formality and sanctity. The feature intended to achieve this goal, both initially and increasingly over time, is the corridor of open space in the Allee, which will be defined by the two rows of trees. The distance between the rows, trunk-to-trunk, will be approximately 6.6 metres. A number of deciduous trees and evergreen trees are sited on or near the lines where these rows will be created. Some of these trees will be retained. A mixture of trees native to Denman Island will be planted elsewhere along the two rows; in some instances, these trees will be saplings from areas in the cemetery that are to be rough cleared.

It is anticipated that the land alterations relating to the Allee will be undertaken in the fall of 2013 and in 2014.

1. Location

The Allee follows an existing railway bed and spans the length of the Natural Burial Cemetery, running diagonally through the property from the south main entrance to the north secondary entrance. The location of the Allee is shown on Map 3.

2. Width

The central path of the Allee will be 3 metres in width.

3. Clearing required

All vegetation will be removed from the full width of the central path of the Allee to allow safe pedestrian travel and to ensure that it remains a key design feature of the cemetery.

4. Construction

The central path will be graded and crowned to shed rainfall and prevent ponding of water. The machinery needed for this purpose is anticipated to be a small bobcat or backhoe, accompanied by hand raking to achieve the final grading.

The path will receive a surface treatment to a depth of 5 to 10 cm using $\frac{3}{4}$ minus gravel and/or wood chips created during rough land clearing. The surface treatment will be chosen to ensure durability and ease of maintenance.

5. Plantings on the sides

A 3.6 metre buffer on either sides of the central path will accommodate the planting of a mixture of trees native to Denman Island. These planted trees will be located along the centre line of each side buffer area to augment some of the trees already growing along the line. Spaces will be created, or left, at the places where these lines intersect aisles within the burial sections. Suitable shrubbery and other understory plants native to Denman Island will be either encouraged or planted in these spaces (see Appendix B). Space without trees will also be created, or left, where the eastern buffer intersects the access road; young trees will be removed and regenerating shrubbery will be trimmed to keep this intersection open for vehicular use.

6. Vegetation management over time

The main path of the Allee will be cleared and managed as necessary to maintain it in a safe and useable condition. Anticipated management practices entail pruning of encroaching vegetation, removal of fallen trees and branches, and clearing of brush and saplings within the 3-metre width.

The 3.6-metre buffer areas on either side of the Allee will be managed to facilitate growth and survival of desirable regenerating trees and planted trees. These trees will be managed through pruning, watering, and top dressing to encourage a desirable aesthetic, hopefully creating a canopy over the central path. As indicated above, a suitable opening will be maintained where the access road meets the Allee.

Neither chemical fertilizers nor pesticides will be used in the management of the path or buffer areas of the Allee. Non-indigenous trees and vegetation will be removed on a regular basis.

4.3 The Gathering Space

An area will be established, henceforth called the Gathering Space, to accommodate small funeral ceremonies, family gatherings, and individual reflection, as well as a communal memorialization structure. Like the Allee, the Gathering Space will be a key element for emphasizing the use of the land as a cemetery, achieving this goal through

an open space that, over time, will be surrounded increasingly by the trees and other natural vegetation regenerating on the nearby land used for burials.

The Gathering Space will be roughly rectangular in design and include two walls, placed centrally in a circular manner, onto which memorial plaques will be affixed. It is anticipated that the necessary clearing for creating the Gathering Space will take place in the fall of 2013 and that land alterations and construction activities relating to the physical features will occur in 2014.

The Gathering Space will include a Garry oak garden comprising a number of Garry oak trees as well as shrubs, forbs and grasses typical of the Garry oak ecosystem. Four separate areas within the Gathering Space will be planted in the fall of 2015 and will require watering and wildlife fencing for the first few years.

1. Location

The Gathering Space will be centrally located in the Natural Burial Cemetery, midway along the Allee on the west side, as shown on Map 3. Access to the Gathering Space will be from the Allee.

2. Dimensions

The Gathering Space will be roughly rectangular, measuring approximately 22 x 27 metres and bordered on two sides by land designated for burials, as shown in Map 3.

3. Clearing required

All vegetation will be removed from the area to allow construction of the memorial walls in the Gathering Space. Clearing to the adjoining land designated for burials will occur to maintain a buffer around the gathering area to facilitate viewing of the memorial plaques mounted on the outside perimeter of the memorial walls. The machinery needed for this purpose is anticipated to be a small bobcat or backhoe, although an excavator may be needed for any stumps that are difficult to remove.

4. Construction

The base of the circular area in the Gathering Space underneath and near the memorial walls will be constructed from compacted granular material, pavers or concrete. The outer diameter will be 15 metres and the inner diameter 5 metres. The inner area with a 5 metre diameter will provide suitable soils for landscaping. The two circular walls will be inset from the perimeter, consisting of curved concrete forms. The Gathering Space will also include benches.

5. Path location

The Gathering Space will be accessed from a secondary path running west from the Allee. The path will be 1.5 to 3 metres wide and will provide a safe surface for pedestrians and mobility aids.

6. Communal memorialization

Memorial plaques will be mounted on the concrete structures, giving the names and dates of birth and death of those whose remains are buried or scattered in the cemetery. The memorial structures are designed to accommodate up to 1000 plaques.

7. Plantings

Up to three similar trees will be planted in the centre of the inner section of the Gathering Space (see Appendix B). Additional plantings of native trees, shrubs and/or bulbs may occur elsewhere in the Gathering Area.

8. Vegetation management over time

The Gathering Space and access path will be cleared and managed as necessary to maintain it as a safe and attractive, usable open space. Anticipated management practices entail pruning of encroaching vegetation, removal of fallen trees and branches, and clearing of brush and saplings within the width of the path and in the Gathering Space. The central tree(s) and plantings will be managed through pruning, watering, and top-dressing to encourage a desirable aesthetic. Neither chemical fertilizers nor pesticides will be used in the management process. Non-indigenous trees and vegetation will be removed on a regular basis. Management may also include periodic mowing of the 5 metre-diameter, inner area of the Gathering Space.

A plastic water tank will be located temporarily in the 65-year section adjacent to the Gathering Space to facilitate watering of the Garry oak garden for the first two or three years after the garden is planted. Metal fencing supported by steel posts will be erected to enclose the four Garry oak garden areas and will remain in place for up to ten years.

4.4 The Scattering Area

An area will be provided in the Natural Burial Cemetery for the scattering of cremated remains (ashes). This area will be retained in a natural state and will incorporate paths to allow public access. It is anticipated that the initial land alteration for creating the Scattering Area will take place in late 2013 or early 2014. A small shed will be located in the Scattering Area facing the access road (see 4.11) for the storage of equipment used in burials and in land maintenance (rakes, shovels wheelbarrow, etc).

1. Location

The Scattering Area is located in the southeast portion of the property, as shown on Map 3.

2. Clearing required

Disturbance of the regenerating forest in the Scattering Area will be minimal, with the exception of path construction. All vegetation will be removed from the paths to allow safe pedestrian travel. Path routes will be chosen once the access road has been constructed and will minimize disturbance to the existing flora. (Note that the design for these paths shown in Map 3 is merely conceptual.) In forested areas off the paths, minor clearing such as selective pruning and removal of dead branches will be done to allow family and friends access to scatter cremated remains. A small pile of leaves and/or other small pieces of composting vegetation will be maintained in the area, which families and friends can use to cover cremated remains after they have been scattered.

3. Construction

Paths of approximately 1.5 metres wide will be constructed. The paths will be graded and crowned to shed rainfall and prevent ponding of water. Machinery to

be used is anticipated to be a small bobcat accompanied by hand raking to achieve the final grading. Paths may receive a suitable surface treatment to a depth of 5 to 10 cm to ensure stability and ease of maintenance.

4. Signage

Signage will be provided at the entrance to the Scattering Area. Signs will be designed to be consistent with the conservation goals of the cemetery.

5. Vegetation management over time

Paths will be cleared and managed as necessary to maintain them in a safe and useable condition. Anticipated management practices include pruning of encroaching vegetation, removal of fallen trees and branches, clearing of brush and saplings, and occasional re-grading and re-application of the surface treatment as necessary within the 1.5 metre width of the paths. Other minor vegetation maintenance will be undertaken periodically to retain a tidy, natural forest aesthetic for the scattering of cremated remains.

6. Storage shed

A low wooden shed, on concrete blocks and no larger than 2.5 m wide and 3.7 m deep, will be constructed in 2016 on the north side of the access road. The east side of the shed will be approximately 11 m from the eastern boundary of the property, well beyond the inner boundary of the non-disturbance area. The design will mirror that of the information kiosk, and the space will be used to store equipment used in burials (coffin rests, grave support boards, the grave frame, and the grave cover) and for property maintenance (rakes, shovels, and a wheelbarrow).

4.5 Benches

Benches will be permitted in the cemetery at the entranceways, in the Gathering Space and in the Scattering Area. Memorial benches may be permitted provided they are located in these areas. All benches, whether provided by DIMS or as a memorial, will be made locally of natural materials in keeping with the conservation goals of the cemetery.

1. Location

Up to 10 benches will be located in the entranceways, the Gathering Space and the Scattering Area.

2. Clearing required

All vegetation will be removed from the 1 by 2 metre areas where benches will be situated.

3. Vegetation management over time

Bench areas will be cleared and managed as necessary to maintain them in a safe, accessible and useable condition. Anticipated management practices entail pruning of encroaching vegetation, removal of fallen trees and branches, and clearing of brush and saplings.

4.6 Signage

Signs identifying the Natural Burial Cemetery will be erected at the south and the north public entranceways. Such signs will be made of natural materials and designed to be in

keeping with the conservation goals of the cemetery. The sign at the south entranceway will provide the road address for the property (6400 Denman Road) and may include an information panel explaining natural burial and acknowledging donors and funders.

A small sign of similar materials and design will be erected at the entrance to the Scattering Area, describing the use of the area.

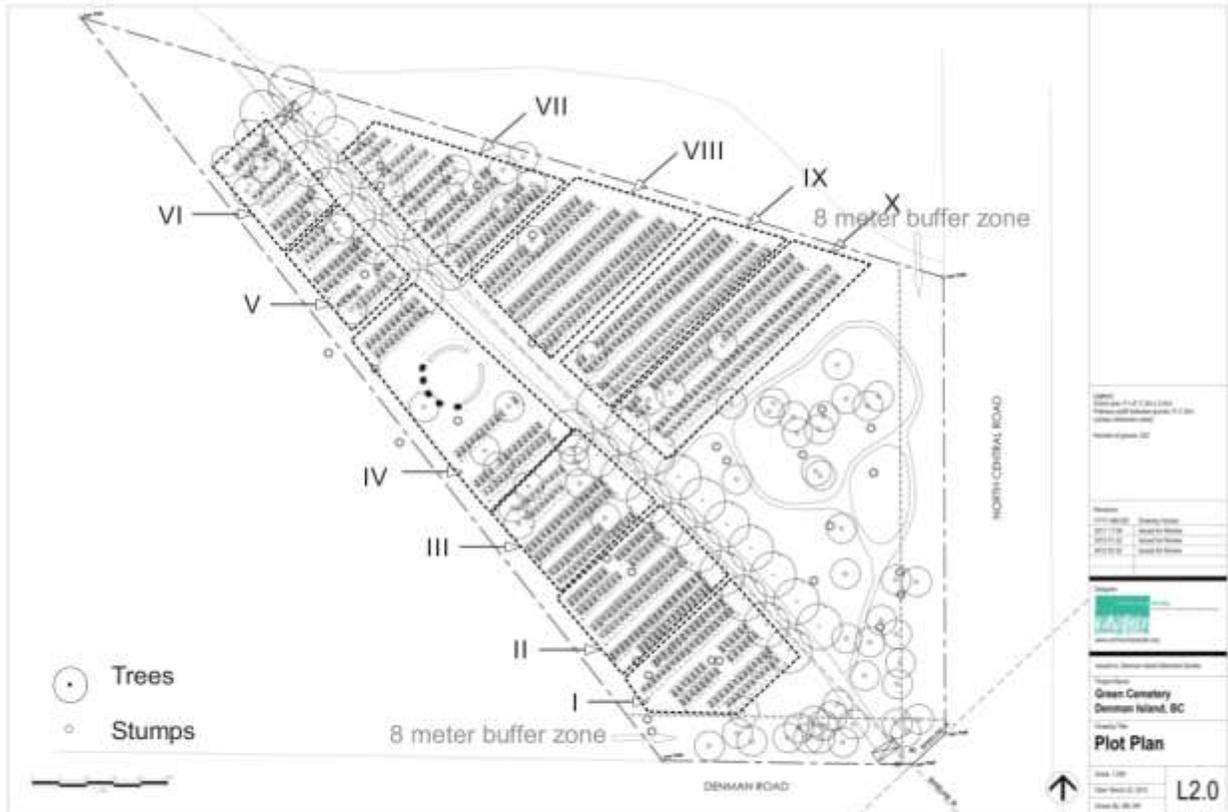
“No Hunting” signs may be placed and maintained at all access points to the cemetery. These signs will also state that horses and vehicles are not allowed, except as permitted for prescribed cemetery operations.

DCA educational and interpretative signs may be placed at the two entrances to the cemetery provided the design of such signs is approved by both DCA and DIMS.

4.7 Burial Sections

Land designated for burials is shown in Map 3.

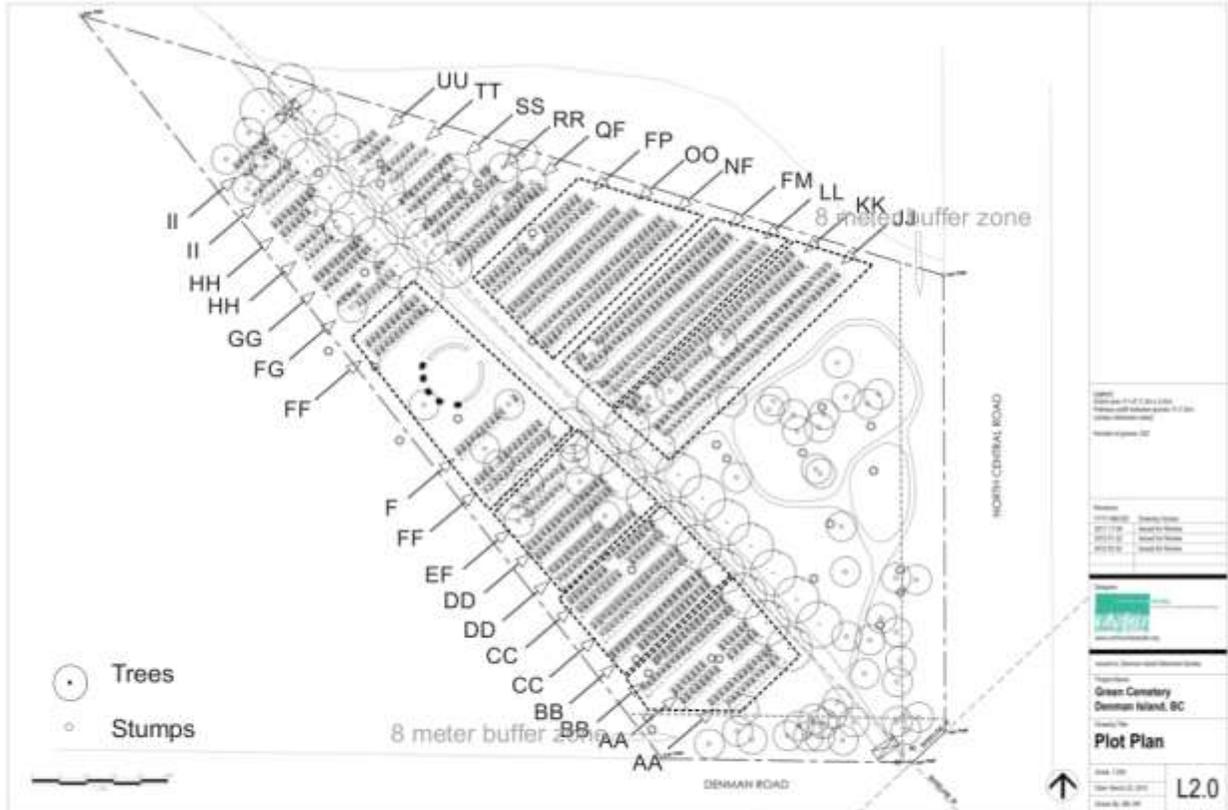
The cemetery design lays out *burial plots* (graves) in a series of linear *blocks*, which will be surveyed and delineated on the ground by metal posts placed at the corners of the Blocks to serve over time as guides for identifying the location of the Blocks. Each Block consists of two adjacent *rows* of burial plots and is bordered on either side by an *aisle* that provides access. A series of adjacent Blocks form a *burial area*. Occasionally the Blocks and the aisles include spaces intended to protect the old-growth stumps that must remain undisturbed, resulting in a few rows that are interrupted and some aisles that vary in width (see Map 6).



Map 6: The Ten Burial Areas

The Rows are named alphabetically starting with “A” in the southwest corner and proceeding sequentially up the west side of the Allee to the north end of the cemetery to end in “I,” and then starting with “J” directly north of the Scattering Area and proceeding up the east side of the Allee to end with “U” in the northwest corner. Most letters comprise two or more Rows, although a few are single Rows (see Map 7).

This design provides for 922 separate burials of whole body or cremated remains. Individual plots are designated alpha-numerically (i.e., “A1”, “A2”, etc.). Approximately 80% of the graves represent *standard burial plots*, which are plots designed to accommodate the remains of one person; the remaining 20% of the graves are within *family burial plots*, which are larger plots designed to accommodate the remains of two up to six persons. Family burial plots are located where the Rows are adjacent to wider aisles, thus allowing easier access for carrying out subsequent-burials, and are located in several of the Burial Areas. All rows containing family plots are named “F” in the cemetery design; as a result, their names are out of sequence with the alpha-numeric system.

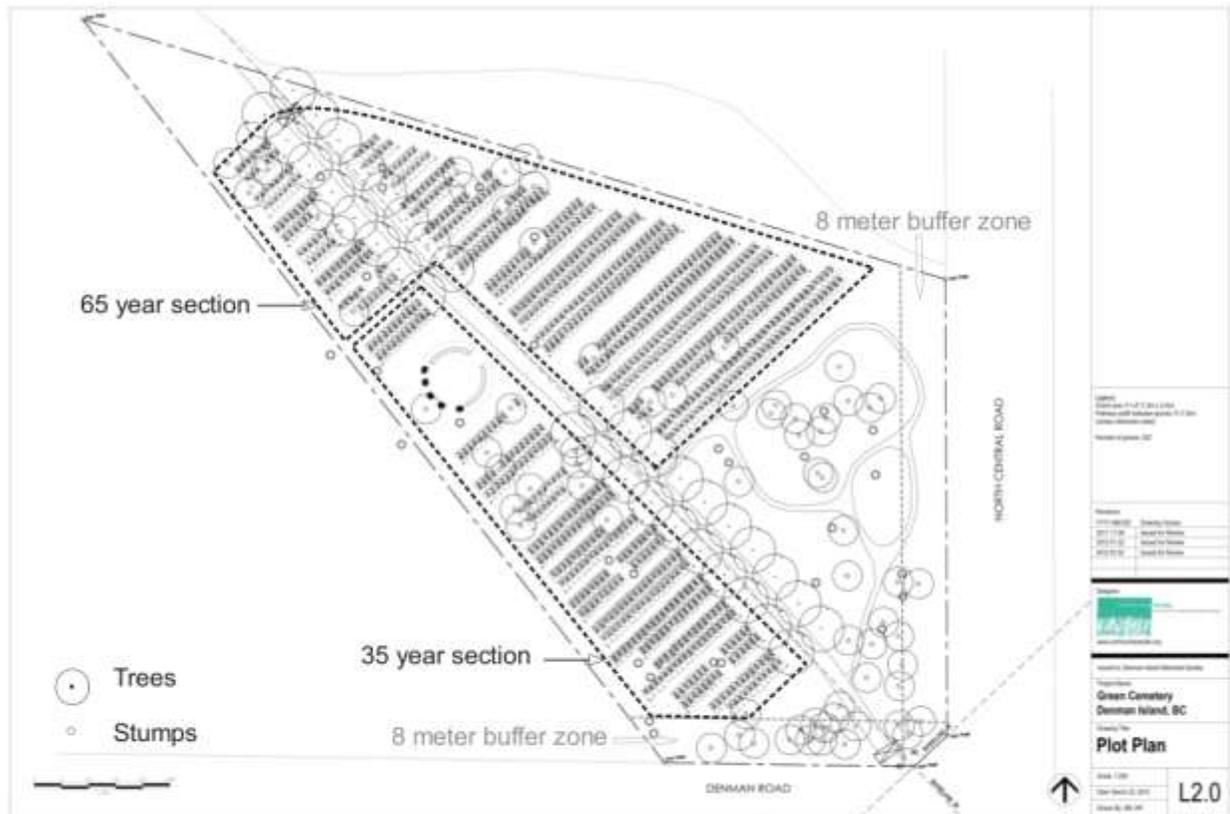


Map 7: Rows and Blocks of Burial Plots

The land designated for burials is divided into two *burial sections*, one for burials taking place during the initial 35 years of cemetery operation and the other for burials in the following 65 years or however long it takes to fill the cemetery (see Map 8). Assuming that burials will occur at a rate of about 10 per year, the 35-five-year Burial Section includes approximately 35% of the graves.

The location chosen for the 35 Year Burial Section encompasses all Blocks south of the Gathering Space on the west side of the Allee and the Block immediately north of the Gathering Space (all plots in A – E plus F1 to F70). This section comprises 251 standard burial plots, which provide 251 graves, and an unspecified number of family plots that together provide 81 graves, resulting in a total of 332 graves.

The 65 Year Burial Section encompasses the remaining Blocks on the west side of the Allee and all Blocks on the east side (all plots in G – U plus F78 to F170). Current planning provides for 498 standard burial plots, which provide 498 graves, and an unspecified number of family plots that together provide 100 graves, resulting in a total of 598 graves.



Map 8: The 35 Year and 65 Year Burial Sections

In those locations of the cemetery intended for burial, land management activities will occur in two distinct categories:

- initial 35 Year Burial Section activities, and
- future 65 Year Burial Section activities.

These categories give consideration to the challenges of preparing and maintaining the Natural Burial Cemetery for its use as a cemetery during its planned 100 year lifespan. Up to three Burial Areas will be used first, in accordance with Section 4.3 (b) of the Conservation Covenant. The overall operation of these Burial Areas will follow a “disturb and then recover” model.

The 35 Year Burial Section will require considerable initial disturbance through rough clearing to remove the trees, stumps, and root systems and thus provide for usable burial plots. As burial plots are utilized, vegetation will be allowed to regenerate naturally following the succession process of the ecosystem.

Allowing natural forest ecosystem regeneration to proceed unmanaged within the 65 Year Burial Section would compete with the need to maintain useable future burial locations. This would especially be true for trees that would render many future burial

plots unusable, or result in considerable work and expense to bring these burial plots to a usable condition again. To avoid these problems, initial land alteration and subsequent management activities will also be undertaken in the 65 Year Burial Section; however, these activities will be notably different than in the 35 Year Burial Section.

The following sections describe these land management activities, which are anticipated to start in the fall of 2013.

4.7.1 The 35 Year Burial Section

This section encompasses much of the land west of the Allee, specifically all plots in A – E plus F1 to F70 (see Map 7). The land will undergo considerable initial disturbance through clearing and tree removal to create usable burial plots. As burials take place sequentially, the land will be allowed to regenerate naturally following the succession process of the ecosystem.

1. Initial land alteration

The 35 Year Burial Section will be rough cleared, as defined in section 1(q) of the Conservation Covenant, which will entail the removal of all trees, tree branches, shrubs, recent stumps (from trees removed after 1994), shrub roots and slash. The machinery needed for this purpose is anticipated to be a small bobcat or backhoe, although an excavator may be needed for any stumps that are difficult to remove. Trees of 20 cm or greater diameter at breast height or wood products from those trees may be removed from the land. For this purpose, such trees may be milled on site. Remaining materials will be removed by machine. Thereafter the land will be machine raked to follow the contour of the land. It is anticipated that these activities will take place in the fall of 2013.

As permitted under s. 4.3 (c) (iv) (b) of the Conservation Covenant, small simple markers may be placed after this clearing at the aisles ends nearest the Allee between the Blocks of burial plots. Such markers will be made of indigenous material or such stone as is commonly used for grave markers and memorial structures (granite or grano-diorite) and will be embedded so they are flush with the ground. Over time, such markers would be kept clear of regenerating vegetation.

2. Vegetation management prior to use for burials

After rough clearing, the 35 Year Burial Section will be managed in a manner that maintains the land in a useable condition. Anticipated management practices include pruning of encroaching vegetation, removal of fallen trees and branches, and ongoing removal of brush and saplings and of unwanted non-indigenous vegetation (as set out in s. 4.9.2). Native plants typical of Denman Island, as identified in the Baseline Report (Schedule B of the Conservation Covenant), may be planted to encourage the growth of low vegetation as a means of crowding out undesirable plants (see Appendix B).

3. Use of Burial Plots

At the start two Burial Areas will be used for all burials of whole body and cremated remains: Burial Areas I and IV (see Map 6). Preparation and utilization

of a plot for the burial of whole body remains or cremated remains will be carried out according to the terms set out in section 4.3 of the Conservation Covenant and in the Rules and Regulations of the Denman Island Natural Burial Cemetery, as filed with the Consumer Protection Authority of British Columbia. Individual plots within a Block, whether standard burial plots or family burial plots, will be used sequentially from the outermost edge of the Block inwards towards the Allee in order to minimize disturbance to recovering vegetation.

At the request of the family, a small marker may be placed at the edge of an individual burial plot bordering the nearby aisle, as permitted under s. 4.3 (c) (iv) (a) of the Conservation Covenant. No steps shall be taken over time to remove or otherwise interfere with regenerating vegetation that may cover the marker.

4. Land management after use for burials

After a burial plot is utilized, the land will be allowed to regenerate naturally. For Blocks comprising standard burial plots, any disturbance of the land after a plot is used will be discouraged, in keeping with the principles of natural burial and as a means of encouraging the growth of vegetation. For Blocks comprising family burial plots, disturbance will also be discouraged, except at the time of the further ~~second~~ use of the plot, when normal cemetery operations will be needed to prepare the grave. Particular care will be taken at such times, when using machinery in the aisle and in preparing the grave, so as to minimize land disturbance on adjoining Blocks and nearby burial plots. Any areas that are planted may be watered for up to two growing seasons following the burial. Also, native plants typical of Denman Island, as identified in the Baseline Report (Schedule B of the Conservation Covenant), may be planted or propagated by seed to encourage the growth of low vegetation as a means of crowding out undesirable plants (see Appendix B). Ongoing management of such replanted areas would be carried out according to subsection 2 immediately above.

5. Vegetation management in the aisles between Blocks

Aisles between Blocks will be managed in a manner that maintains them in a condition suitable for access by the equipment needed to prepare a burial plot. Aisles bordered by rows of standard burial plots will be allowed to regenerate naturally as the burial plots are used. Due to the unpredictable timing of the use of the family burial plots, aisles bordered by a row of family burial plots will require management until all of the plots are fully utilized; after that, aisles will be allowed to regenerate naturally. Anticipated management practices for these aisles include pruning of encroaching vegetation, removal of fallen trees and branches, and ongoing removal of brush and saplings and of unwanted non-indigenous vegetation (as set out in s. 4.9.2).

Native plants typical of Denman Island, as identified in the Baseline Report (Appendix B of the Conservation Covenant) may be planted in the aisles following rough clearing as a way to encourage the growth of low vegetation to crowd out undesirable plants (see Appendix B).

4.7.2 The 65 Year Burial Section

This section encompasses most of the land on the east side of the Allee north of the Scattering Area and a smaller area north of the 35 Year Burial Section (specifically all burial plots in G – U plus F71 to F78) (see Map 7). The land in this section will undergo less disturbance initially than the 35 Year Burial Section, and will then be managed for 35 or more years in a manner designed to minimize the use of heavy machinery at a future time when the Burial Areas in this section are made available.

1. Initial land alteration

Some non-alder trees may be relocated within the cemetery. All other non-alder trees in this section will be cut and removed, with the stumps left in the ground. Trees of 20 cm or greater diameter at breast height or wood products from those trees may be removed from the land. For this purpose, such trees may be milled onsite. As described in section 4.3 (b) of the Conservation Covenant, consultation will be undertaken with an authorized DCA representative prior to carrying out these tree cutting and relocation activities. Dead trees and fallen branches will also be removed. It is anticipated that this activity will take place in the fall of 2013.

As indicated in the introduction to s.4, some debris from the initial preparation of the cemetery land will be spread over this section to compost over time under the cover of recovering shrubbery and other understory plants.

2. Vegetation management over time

The existing alder trees in this section will be managed as “placekeepers” until the land is needed as an active Burial Area. Removal of non-alder trees and their saplings will be carried out on an ongoing basis to prevent the establishment of large non-alder trees that might interfere with the future use of burial plots and in accordance with Section 4.3 (b) (ii) of the Conservation Covenant. Woody debris may also be moved.

4.8 Peripheral Areas

As set out in the Conservation Covenant, the cemetery design includes two 8-metre-wide buffers of Non-Disturbance Area along the south border of the property (next to Denman Road) and the east border of the property (next to North Central Road) (see Map 5).

4.8.1 Areas Adjacent to Denman and North Central Roads

Activities within these two areas will be limited to those permitted in s. 4.6 of the Conservation Covenant. Activities anticipated during the coming five years are as follows.

1. Construction of the entrance structure at the south end of the Allee (see s. 4.1.1)
2. Construction of the vehicular access road (see s. 4.1.2)
3. Creation of pedestrian trails within the Scattering Area (see s. 4.4)
4. Scattering of cremated human remains (see s. 4.4)

5. Actions required to deal with dangerous trees or diseased vegetation, or to eliminate invasive plant species
6. Construction of signage at the south public entranceway and the vehicular entranceway.
7. Placement of three cedar figures immediately west of the start of the south entranceway (see s. 4.1.1).

With the exception of the cedar figures, the locations for construction activities in these areas are shown in Map 3. Construction of other permitted structures such as an outhouse toilet, apparatus for water collection or a storage facility is not anticipated during the coming five years; such activity would require an amendment to this plan.

4.8.2 Areas Adjacent to the Graveyard Marsh and the Central Park Alder Trail

Activities anticipated in the coming five years within these two areas are as follows:

1. Construction of the entrance structure at the north end of the Allee (see s. 4.1.1)
2. Relocation of some of the stumps removed during the initial clearing (as described in the introduction to s. 4).
3. Actions required to deal with dangerous trees or diseased vegetation, or to eliminate invasive plant species.

4.9 Protection of Ecosystems

Most of Central Park was clear-cut and is at an early stage of natural regeneration. The portion of Central Park that became the Natural Burial Cemetery will be managed in accordance with the Conservation Covenant and as described in the following sections.

4.9.1 Forest Regeneration

Native trees and other vegetation have been regenerating in the Natural Burial Cemetery for approximately 12 years. The long-term goal for the cemetery is to restore and protect the ecosystem that is natural to the Coastal Douglas-fir moist maritime biogeoclimatic region while, at the same time, using the land as a natural burial ground. Ecosystem restoration will vary in different areas of the cemetery, depending on the use of the area and the operational activities taking place at any given time.

Natural regeneration will be fostered in the two 8-metre-wide buffers along Denman Road and North Central Road designated in s 4.6 of the Conservation Covenant to remain relatively undisturbed. Regeneration will also be fostered in the land within the Scattering Area, where any disturbance will be limited to light clearing of the undergrowth needed to accommodate the scattering of ashes. In the Burial Sections, ecosystem regeneration will be postponed until after a Burial Area is in active use, as described in section 4.7 of this Management Plan. In the Gathering Space the forest will not be allowed to regenerate in order to promote the purpose and expected uses of this area.

4.9.2 Removal of Non-Indigenous Species

DIMS will consult with a professional biologist and work to remove unwanted non-indigenous vegetation. Plants to be removed are those identified in the Baseline Report

(Schedule B of the Conservation Covenant), namely, English ivy *Hedera helix* L., Holly *Ilex aquifolium* L., Scotch broom *Cytisus scoparius* (L.) Link, and Spurge laurel or Daphne *Daphne laureola* L.

Trapping and removal of non-indigenous wildlife, if needed, will be done under the supervision of a biologist.

4.9.3 Monitoring Program

Forest regeneration should be monitored. A professional biologist will be retained at the end of the first five years of DIMS holding the land to compare the vegetation present at that time with the information presented in the Baseline Report (Appendix B of the Conservation Covenant). Changes in the presence and distribution of native and non-native species will be documented.

Impact of path users on the environment will be also be monitored at that time, and possible modifications to path construction and/or use will be suggested to mitigate impacts, if required.

4.9.4 Native Flora Management

Cut floral tributes that accompany whole body remains or cremated remains as part of an interment or scattering are limited to flowers or foliage from local residential properties, and may be further restricted by the Board to prevent introduction of potentially invasive or nuisance flora. All such floral tributes will be removed after no later than 3 weeks: the use of undesirable plants such as holly *Ilex aquifolium* L. or English ivy *Hedera helix* L. in such tributes will not be permitted.

To maintain a balance of planting species in the Natural Burial Cemetery all plantings will be made according to a pre-established natural planting plan for the area (see Appendix B). Only indigenous trees, plants, groundcover and wildflowers native to and typical of those found in the climatic zone of Denman Island will be planted. Planting will ideally be done as seasonally recommended for the type of planting to be made. This could mean that a burial that takes place in late winter may not have vegetation planted on that burial plot until the following winter.

4.10 Dogs, Horses, Motorized Vehicles

Dogs must be leashed, kept under strict control at all times and kept on paths to protect the sanctity of the cemetery.

Horses shall not be permitted to enter the cemetery property except for the purpose of moving logs or of being used at burial-related ceremonies.

No motorized vehicles shall be permitted to enter the cemetery property except those vehicles necessary for the operation and maintenance of the cemetery or for fire or emergency services. Vehicles used for the operation and maintenance will be limited to low impact excavators, backhoes, bobcats, chippers, trucks, mowers, and hearses. All

operational and maintenance vehicles will be maneuvered in such a way as to minimize negative impacts upon the natural ecosystem.

4.11 Fire Management and Emergency Access

4.11.1 Fire Management

For reasons of public safety and health, fires within the cemetery will not be permitted. A fire/ambulance gate entrance and access road (as described in section 4.1.2) will be installed on North Central Road. A lock and chain will be used for a temporary measure until a metal gate can be installed, and a key will be given to the Fire Department. The Fire Department has assigned an address of 6400 Denman Road. The Fire Department has recorded that the emergency access is from North Central Road and will share this information with the Ambulance station. A sign will be posted on North Central Road identifying the point of access.

4.11.2 Emergency Access

Emergency vehicle access will be provided by the access road described immediately above, namely, the vehicular access road provided off of North Central Road.

4.12 Education and Research

Education programs for the public about the meaning of natural burial and about the new cemetery will be encouraged and supported.

Guided nature walks under the auspices of DCA and led by local biologists may be conducted in conjunction with programs of nature talks in the old school, but must respect the sanctity and activities of the cemetery. Similarly, research by DCA will be supported, but must respect the sanctity of the cemetery and the intended use of the land. These activities must not occur when funerals, scatterings or other ceremonies are taking place. In addition, reasonable notice (minimum 10 days) and a description of activities must be provided from DCA to DIMS prior to such activities.

4.13 Parking

Parking is available along the shoulders of Denman Road and North Central Road. These areas should provide adequate parking for the foreseeable future.

Appendix A: DCA-DIMS Agreement dated Jan. 21, 2013 (the Trench Agreement)

This Agreement is entered into the 21st day of January, 3013

Between Denman Conservancy Association (“DCA”)

And Denman Island Memorial Society (“DIMS”)

TO DATE:

DCA is about to transfer certain lands located at the junction of Denman and North Central Roads, Denman Island, (the “Lands”) to DIMS for development into a community green cemetery.

Concurrent with that Land transfer, DIMS and DCA will enter into a Conservation Covenant (the “Covenant”) to ensure the retention or reintroduction of various conservation values of that Land.

The Covenant provides in section 4.3 (i) that certain specified vegetation may be removed and only if it is relocated elsewhere on the Lands.

“Rough Clearing” is defined in the Covenant as: “the cutting and chipping of all tree branches and shrubs, and the removal by machine of all trees, recent stumps, shrubs, roots, and slash to follow the contour of the land and then machine raking the land to follow this contour.”

DCA owns the adjoining property (“Central Park “) on which a trench is located just beyond the north end of the Lands.

DCA and DIMS believe that, despite the requirements of Covenant section 4.3(i), there would be benefit in certain circumstances to allowing the removal of debris from the Lands for disposal in the Central Park trench.

THEREFORE:

For \$1.00 and other good and valuable consideration paid by DIMS to DCA (receipt of which is hereby acknowledged by DCA), DCA now agrees to waive the limitations of section 4.3 (i) of the Covenant on the following terms and for the following purposes:

- 1) “Initial Clearing” is agreed to mean that work required to:
 - a) ready that portion of the Lands intended for immediate use as a burial area, plus
 - b) attend to Rough Clearing (as defined in the Covenant) the balance of the Lands projected to be required within 35 years as a burial area, plus
 - c) fell and remove all trees in the remaining intended burial areas of the Lands but, for these remaining areas, does not include the removal of stumps existing from pre-1995 logging.

2) DIMS shall be allowed to remove such debris as arises from Initial Clearing and may dispose of it in the Central Park trench but only until the filled trench conforms to the general contour of the adjacent land and no further.

3) DIMS shall be entitled to so dispose of such debris only under the supervision of an authorized representative of DCA at the Central Park trench site or, alternatively, with the written consent of DCA to specified disposal without such supervision.

4) DIMS shall be responsible to obtain all government approvals or authorizations required for the work anticipated by this agreement and shall forthwith upon receipt provide DCA with a copy of any such documentation, and failing any of which, all DIMS rights under this agreement shall be immediately suspended until the requirements of this section have been fully complied with.

5) Once the said trench has been filled as set out in section 2 or once Initial Clearing is concluded, whichever occurs first, this agreement shall be at an end and the requirements of Section 4.3 (i) of the Covenant shall be immediately reinstated.

For its part, DIMS accepts and agrees to abide by the terms of this agreement.

Denman Conservancy Association

Denman Island Memorial Society

By its duly authorized representative

By its duly authorized representative

Appendix B: Planting Plan for the Denman Island Natural Burial Cemetery

1. Overview

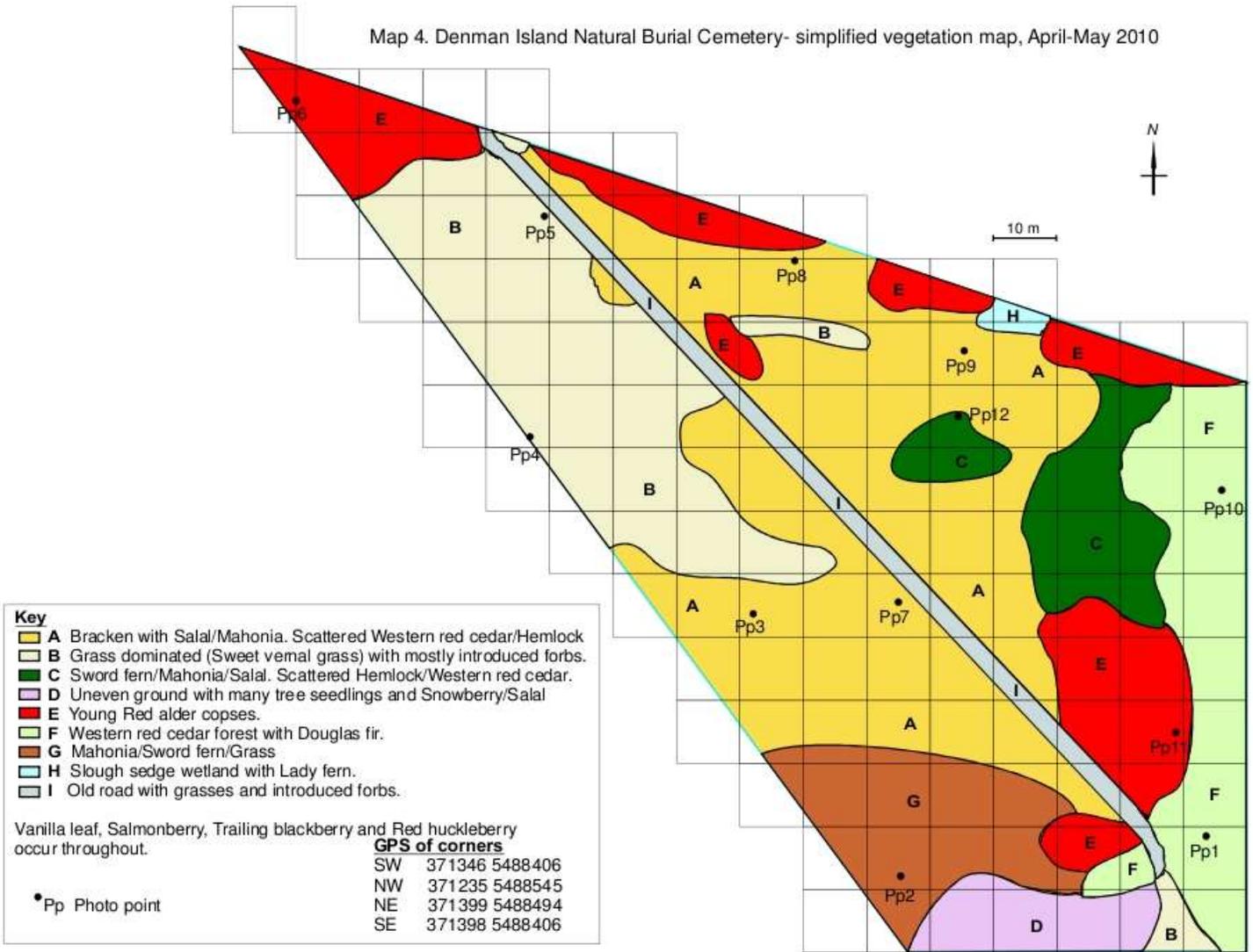
The long-term goal for the cemetery is to restore and protect the ecosystem typical of this part of Denman Island while using the land as a natural burial ground. The most effective way to promote ecosystem restoration is normally through natural regeneration of native species. This approach will be fostered in the cemetery where feasible; however, plantings will likely be needed in some of the cleared areas to discourage the growth of undesirable plants and to maintain the Burial Areas awaiting use for burials.

This appendix provides information on the species recommended for such plantings, as provided by Andrew Fyson and reproduced below in s. 2. In addition it describes the areas where such plantings may occur.

An over-riding objective in this consideration will be to use as few plantings/seedings as possible in order to minimize disturbance, costs, and maintenance. Where plants and/or seeds are to be used, they will be species native to Denman Island. In order of preference they will be obtained, first, from the cemetery land; second, from elsewhere on Denman Island; and, third, from a source as close to Denman island as possible.

To a large degree, the decision whether to use plantings or to rely on natural regeneration will be guided by the nine vegetation zones identified in the Baseline Report (Schedule B of the Conservation Covenant) and shown in Map 9. Where plantings are to be undertaken, the choice of plants/seeds will also be guided by these zones.

Map 4. Denman Island Natural Burial Cemetery- simplified vegetation map, April-May 2010



Map 9: The Nine Vegetation Zones in the Cemetery Land
Source: Baseline Report (Schedule B of the conservation Covenant)

2. Recommended Species

*Recommended Species for Plantings in the Denman Island Green Cemetery
Prepared by Andrew Fyson, Ph.D., April 19, 2013*

The following page provides a list of native species currently found in the cemetery area.

Native Flora of Denman Island Green Cemetery

Species	Common name	Tree	Shrub	Climber	Fern	Groundcover	Others	Sun	Shade
Arbutus	<i>Arbutus menziesii</i>	X							
Baldhip rose	<i>Rosa gymnocarpa</i>		X						X
Bigleaf maple	<i>Acer macrophyllum</i>	X							
Black raspberry	<i>Rubus leucodermis</i>		X					X	
Bracken	<i>Pteridium aquilinum</i>				X	X		X	
Brome	<i>Bromus</i> sp.					X		X	
Cascara	<i>Rhamnus purshiana</i>	X							
Common rush	<i>Juncus effusus</i>							X	X
Common snowberry	<i>Symphoricarpos albus</i>		X						X
Cooley's hedge nettle	<i>Stachys cooleyae</i>						X	X	
Creeping bent	<i>Agrostis stolonifera</i>					X	X		
Creeping yellow violet	<i>Viola sempervirens</i>					X	X	X	
Deer fern	<i>Blechnum spicant</i>				X			X	X
Dewey's sedge	<i>Carex deweyana</i>						X		X
Douglas fir	<i>Pseudotsuga menziesii</i>		X						
Dull Oregon grape	<i>Mahonia nervosa</i>					X			X
Fireweed	<i>Epilobium angustifolium</i>						X	X	
Foamflower	<i>Tiarella trifoliata</i>						X		X
Grand fir	<i>Abies grandis</i>		X						
Grey sedge	<i>Carex canescens</i>						X	X	
Gummy gooseberry	<i>Ribes lobbii</i>		X					X	
Hairy willowherb	<i>Epilobium ciliatum</i>						X	X	
Lady fern	<i>Athyrium filix-femina</i>				X				X
Large-leaved avens	<i>Geum macrophyllum</i>						X		X
Little western bittercress	<i>Cardamine oligosperma</i>						X	X	
Lyall's anemone	<i>Anemone lyallii</i>						X		X
Many-flowered woodrush	<i>Luzula multiflora</i>						X	X	
Mountain sweet cicely	<i>Osmorhiza chilensis</i>						X		X
Oceanspray	<i>Holodiscus discolor</i>		X					X	X
Orange honeysuckle	<i>Lonicera ciliosa</i>			X				X	
Pacific bleeding heart	<i>Dicentra Formosa</i>						X		X
Pacific crab apple	<i>Malus fusca</i>	X						X	
Pathfinder	<i>Adenocaulon bicolor</i>							X	X
Pearly everlasting	<i>Anaphalis margaritacea</i>						X	X	
Red alder	<i>Alnus rubra</i>	X							
Red elderberry	<i>Sambucus racemosa</i>		X						X
Red fescue	<i>Festuca rubra</i>					X		X	
Red huckleberry	<i>Vaccinium parviflorum</i>		X						X
Salal	<i>Gaultheria shallon</i>		X			X			X
Salmonberry	<i>Rubus spectabilis</i>		X						X
Scouler's bellflower	<i>Campanula scouleri</i>						X	X	
Short-styled thistle	<i>Cirsium brevistylum</i>						X	X	
Siberian miner's lettuce	<i>Claytonia sibirica</i>						X		X
Slough sedge	<i>Carex obnupta</i>						X	X	X
Small-flowered buttercup	<i>Ranunculus uncinatus</i>						X		X
Small-flowered nemophila	<i>Nemophila parviflora</i>						X		X
Spiny wood fern	<i>Dryopteris expansa</i>				X				X
Sword fern	<i>Polystichum munitum</i>				X				X
Stinging nettle	<i>Urtica dioica</i>						X		X
Thick-headed sedge	<i>Carex pachystachya</i>						X	X	
Thimbleberry	<i>Rubus parviflorus</i>		X					X	
Trailing blackberry	<i>Rubus ursinus</i>					X		X	
Twinflower	<i>Linnaea borealis</i>					X			X
Vanilla leaf	<i>Achlya triphylla</i>								X
Western hemlock	<i>Tsuga heterophylla</i>	X							
Western red cedar	<i>Thuja plicata</i>	X							
Western starflower	<i>Trientalis latifolia</i>						X		X
Wild strawberry	<i>Fragaria vesca</i>						X	X	
Yerba buena	<i>Satureja douglasii</i>						X	X	

Notes

The species described below (and in bold script in the preceding table) are considered particularly suitable for plantings in the cemetery area. These plants are also considered easy to propagate and will be attractive to most people. Large tree species are excluded. Other Denman Island native species may not thrive on the site because of unsuitable soil or microclimate. However, Garry oak *Quercus garryana* and Pacific dogwood *Cornus nuttallii* and Douglas maple *Acer glabrum* are three trees native on Denman Island worth considering.

Where possible, plantings should be of material from the site, either as transplants (when areas are cleared etc), cuttings or seed. More information on propagation of these and other native species may be found on the Garry Oak Ecosystem Restoration Trust (GOERT) website:

http://www.goert.ca/gardeners_restoration/introduction.php

and on that of the University of Washington:

<https://courses.washington.edu/esrm412/protocols/protocols.htm>

Stratification in the refrigerator can be substituted for by planting outside in the late autumn with germination in spring.

Trees

Arbutus menziesii

Arbutus is a slow-growing tree adapted to grow in dry, sunny places (once established) but will survive in shade. It is present in the cemetery area. Transplanting of anything but the smallest seedlings is unlikely to be successful. Propagation from seed is the best way. Separate seeds from fruit pulp. Cold stratify for 40-60 days in the refrigerator.

Cascara Rhamnus purshiana

Cascara is present on site. It likes sunshine. This attractive small tree can be propagated by seed or softwood cuttings. Layering works.

Garry oak Quercus garryana

Garry oak is not present on site, preferring near-ocean sites on Denman. However it could do well provided it is well-watered until established. Acorns (preferably from Denman Island) should be planted soon after collection.

Pacific dogwood Cornus nuttallii

Propagation is best from seed. Propagation from semi-hardwood cuttings collected in summer is also possible.

Other trees on the site may be considered undesirable because they are too fast growing. However any species in the table, particularly Western red-cedar and Red alder, may be considered. Propagation of Western red cedar is best from seed. Seeds are collected in the autumn when cones are brown, but before scales begin to reflex. Red alder seeds can be collected in cones in the autumn (they will fall out as cones dry out). The seeds have no or little dormancy.

Shrubs

Baldhip rose *Rosa gymnocarpa*

Seeds can be collected and planted outdoors in the autumn but germination may take up to two years. Hardwood cuttings may work but will take up to a year to establish.

Black raspberry *Rubus leucodermis*

A beautiful plant with pale-blue-mauve stems and arching stems; present in the sunny areas of the Cemetery. It may be readily propagated from seed or cuttings. Seeds have a cold stratification requirement of at least a month in a refrigerator.

Common snowberry *Symphoricarpos albus*

Common snowberry is present in the Cemetery area in relatively shady spots near Denman Road. Snowberry seeds require several months of stratification in the refrigerator.

Gummy gooseberry *Ribes lobbii*

This beautiful small shrub is present in open sunny area on site. It is best propagated from cuttings but can be grown from seed. The seeds require several months of stratification in the refrigerator following dry storage.

Oceanspray *Holodiscus discolor*

A spectacular shrub when in flower, Oceanspray is present in the Cemetery area and able to grow in both open and shady spots. Ripe seeds should be collected in autumn. Seeds require several months of stratification (refrigerator) for germination. Oceanspray can also be grown from softwood cuttings collected in summer.

Red elderberry *Sambucus racemosa*

This is a beautiful shrub which thrives around wood-waste including the Cemetery area. Red elderberry can be propagated from seed or from hardwood cuttings collected in late summer or early autumn. Seed can be collected from the ripe, red berries in early autumn. The seeds require 1-2 months at room temperature followed by several months in the refrigerator.

Red huckleberry *Vaccinium parviflorum*

This species grows on tree stumps and in organic-rich area in the Cemetery area. It is attractive year-round. It can be grown from seed or hardwood cuttings collected in winter. Seed can be separated from the fruit which ripens in early autumn. Dried seeds are viable for up to twelve years if refrigerated. Seeds require several months of stratification in the refrigerator.

Salal *Gaultheria shallon*

Abundant in the Cemetery area, Salal thrives in the shade but survives well in open, sunny areas. Seeds can be collected from ripe fruits (early autumn). They require 1-2 months stratification in the refrigerator. Semi-hardwood (current-year's growth) can be

taken in late summer.

Salmonberry *Rubus spectabilis*

This species favours moister, nutrient rich spots in the Cemetery area. It may be propagated from hardwood cuttings collected in winter.

Climbers

Orange honeysuckle *Lonicera ciliosa*

A beautiful climber/sprawler; present in the Cemetery area. It is propagated from hardwood or softwood cuttings.

Ferns

Bracken *Pteridium aquilinum*

Bracken is abundant in the Cemetery area, particularly in dry, sunny area. Propagation is best achieved through division.

Sword fern *Polystichum munitum*

Sword fern is abundant in shady parts of the Cemetery area. It is best propagated by division in the spring.

Groundcover

Dull Oregon grape *Mahonia nervosa*

Dull Oregon grape is abundant in the Cemetery area. It thrives in shade but survives well in open, sunny areas. It can be propagated from cuttings or seed. Softwood cuttings collected in summer and hardwood cuttings collected in winter both work. Seeds require several months of stratification in the refrigerator.

Twinflower *Linnaea borealis*

This beautiful fragrant plant flowers in June-July and occurs principally around stumps and in organic soils in the Cemetery area. Propagation is easily achieved from cuttings.

Vanilla leaf *Achlya triphylla*

Vanilla leaf is common in the Cemetery area. It prefers some shade. Seeds should be sown when fresh.

Herbaceous Species

Foamflower *Tiarella trifoliata*

The Foamflower is a beautiful summer flower of shady places. It may be propagated from seed collected in late summer or early autumn. Seed requires several months of cold stratification. This species may also be propagated by plant division in spring or autumn.

Creeping yellow violet *Viola sempervirens*

This is an early spring flowerer in grassy, sunny spots. It can be propagated from rooted stems or seed.

Lyall's anemone *Anemone lyallii*

A pretty, late spring blossom, Lyell's anemone is a shade lover which can survive under Bracken. The seeds exhibit no dormancy.

Pacific bleeding heart *Dicentra formosa*

Plants maybe propagated from seed or hard wood cuttings. Cold stratification of seeds for three months is required.

Pearly everlasting *Anaphalis margaritacea*

This species occurs in open, sunny places. Propagation is from seed, which requires no stratification.

Scouler's bellflower *Campanula scouleri*

This is a delicate flower of dry, sunny areas. Scouler's bellflower may be propagated from seeds, which require light to germinate. It can also be grown from cuttings collected in the autumn.

Siberian miner's lettuce *Claytonia sibirica*

This is a plant which thrives on wood waste and other organic-rich spots in shade or sun. The plant is best propagated by seed which is sown fresh (requires no scarification).

Wild strawberry *Fragaria vesca*

Wild strawberry is common in sunny and partially shady spots. Propagated by division of plants in spring or autumn. Seeds require 3 months of cold stratification (refrigerator).

Yerba Buena *Satureja douglasii*

This is a fragrant, small plant which grows in sunny, grassy areas. It is propagated from seeds which require cold stratification or from softwood cuttings collected in spring or summer.

Seed Mixes for Sowing on Burials

Seed of the above listed herbaceous species could be collected and offered for families to sprinkle on the graves of their loved-ones.

[end of: *Recommended Species for Plantings in the Denman Island Green Cemetery*
Prepared by Andrew Fyson, Ph.D., April 19, 2013]

3. Plantings in the two Allee Buffers

To create a row of trees along the centre line of each buffer of the Allee, effort will be made during the land preparation to retain as many as possible of the thirty or so trees, large and small, deciduous and coniferous, now growing near the cemetery path. However, given that few of these trees are positioned in the centre line of one or other of the buffers and given that those adjacent to the aisles will be removed, most trees lining the Allee will be newly planted. Many of these can be saplings removed from the 35 Year Section prior to rough clearing, maintained for this purpose, and transplanted once the land preparation is completed.

Varieties for the newly planted trees will be the trees discussed in s. 2 of this appendix, including both deciduous and coniferous trees. However, preference will be given to species that will, in time, have the stature needed for the Allee to be bold and majestic, namely, Douglas fir *Pseudotsuga menziesii*, Arbutus *Arbutus menziesii*, Western red cedar *Thuja plicata*, Pacific dogwood *Cornus nuttallii*, Garry oak *Quercus garryana*, and Bigleaf maple *Acer macrophyllum*.

Plantings will be located approximately as shown in Map 3, that is, adjacent to the Burial Areas but not adjacent to the aisles. Further, no plantings will occur at the T-junction where the access road meets the Allee.

The two Allee buffers will experience disturbance during the rough clearing of the 35 Year Section, tree removal in the 65 Year Section, and planting of trees along the Allee. To promote regeneration of the natural understory after this work and discourage the introduction of invasive plants, selective plantings will likely be undertaken once the Allee trees are in place. Planting would occur over one to two years so that ferns can be divided and shrub and groundcover cuttings can be grown and transplanted in the optimal season. Plants used for this purpose will be selected from the shrubs, ferns, and groundcover discussed in s. 2 of this appendix. Because much of the Allee falls in vegetation zone A (see Map 9) it is hoped that bracken would regenerate naturally, as it is difficult to transplant; however, because Dull Oregon grape *Mahonia nervosa* is relatively easy to transplant, this species may be moved from other areas of the cemetery land.

4. Plantings in the Gathering Space

Given that the Gathering Space will remain an open area over time, the centre of this space is ideal for deciduous trees that require light. Up to three trees will be planted. Suitable species are Garry oak *Quercus garryana*, Arbutus *Arbutus menziesii* or Pacific dogwood *Cornus nuttallii*; however, the current preference is Garry oak. In order to obtain a strong root base, tree(s) will be purchased, preferably from Wildside Nursery, where the proprietor understands our need for something native to Denman Island.

Vegetation in the Inner Circle of the Gathering Space (inside the memorial structures) will be restricted to low plants in order to accommodate recurring use of this area by islanders and visitors. Plantings will be undertaken soon after the area is cleared in order to promote the growth of desirable plants and discourage invasive plants. Plants

for this area will likely be selected from the forbs and grasses described in *The Garry Oak Gardener's Handbook* (distributed by the Garry Oak Ecosystems Recovery Team) and propagated according to the instructions in this handbook.

Vegetation in the perimeter of the Gathering Space (outside the memorial structures) will vary. For the first 15 or so metres beyond the edge of the compactable surface beneath the structures, low plants will be encouraged through natural regeneration or transplanting shrubs. Steps will be taken to discourage vegetation that would block the view. Plants to be used will be selected from the shrubs, ferns, and groundcover discussed in s. 2 of this appendix. A few Garry oaks or other deciduous trees discussed in s. 2 may also be planted. Conifer saplings may be removed in this area. In the space beyond 15 metres, vegetation will be allowed to regenerate naturally. Red alder and other saplings and selected shrubbery removed before the rough clearing may be relocated to this area as a means of promoting the growth of desirable vegetation.

5. Plantings in the Burial Areas

5.1 The 35 Year Section

This area of land will experience more initial disturbance than any other area of the cemetery. As a result, it is the area most likely to be planted. However, as it is the first section to be used, it will be the first to display regenerating coastal Douglas fir forest. The initial rough clearing of this section will be done in such a way that, although damaged, the roots and stems of existing low vegetation will survive. Accordingly, plantings should not be needed prior to the use of individual plots for burials.

Given the major disturbance created by a burial, whether of whole body remains or cremated remains, plantings will be used after burials to discourage incursion of the area by undesirable plants. This approach will be used for both standard and family plots. It may also be used for areas of land within the aisles that are disturbed at the time of a burial.

Two approaches will be used. The first involves the spreading of seeds on newly filled graves. DIMS plans to prepare and make available to families packages of seeds, gathered on Denman Island, of the herbaceous plants discussed in s.11 of this appendix. The ritual of spreading these seeds will replace the opportunity for a family to plant a tree or other plant, which is frequently offered in other green cemeteries, and should avoid problems such as undesirable and unsuccessful plantings by the family. The collection, preparation, and storage of seeds for these packages will be undertaken with advice from a professional biologist.

The second approach involves transplanting selected shrubs, ferns, and groundcover from those discussed in s. 2 of this appendix. The 35 Year Section falls in vegetation zones A, B and G (see Map 9). It is hoped that bracken would regenerate naturally, but other species prominent in these zones may be moved from other areas of the

cemetery land or may be prepared from cuttings taken from plants in the cemetery. Similar propagation may also be needed earlier for areas in this section where the roots are inadvertently lost during the rough clearing.

5.2 The 65 Year Section

This area of land will experience much less disturbance than the 35 Year Section, given the nature of the initial land preparation. As a result, it is expected that vegetation will regenerate without trouble in areas disturbed by the tree removal, and no plantings are anticipated.