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DISTRICT OF
**NORTH
VANCOUVER**



MEMO

Date: December 6, 2024
From: Hatfield Consultants
To: Kate Menzies, Treaty, Lands & Resources Development, Tsleil-Waututh Nation; and
Richard Burberry, District of North Vancouver. Senior Project Manager Project Delivery
Subject: **Whey-ah-Wichen/Cates Park Restoration Program – Planting Plan.**

Hatfield Ref No.: TWN12545

1.0 INTRODUCTION

The District of North Vancouver (DNV) and səliłwətał/Tsleil-Waututh Nation (Tsleil-Waututh, TWN) are seeking to implement a shoreline protection and restoration program at Whey-ah-Wichen / Cates Park: the Whey-ah-Wichen / Cates Park Shoreline Restoration Program (“the Program”). The shoreline of Whey-ah-Wichen has been eroding, threatening archeological resources, shoreline habitat, park infrastructure, and Tsleil-Waututh cultural sites. The Program aims to implement long-term strategies to restore the shoreline of the park using nature-based shoreline protection and stabilization measures in combination with habitat restoration and enhancement. The Program design includes planting native riparian and high marsh / coastal dune vegetation at Whey-ah-Wichen to enhance habitat and promote shoreline stability and resilience.

Hatfield and LEES + Associates have prepared this Planting Plan to provide growing medium and plant specifications for the riparian and high marsh / coastal dune habitats proposed at Roche Point and Little Cates (Figure 1, Figure 2). Riparian planting will include ecologically and culturally important species of trees, shrubs, and herbaceous vegetation suitable to the Coastal Western Hemlock dry maritime biogeoclimatic zone. High marsh / coastal dune vegetation will also be planted along the upper edge of the foreshore at Roche Point between +2.0 m and +3.20 m Geodetic Datum (GD¹). High marsh / coastal dune ecosystems generally experience little or no flooding, however, salt spray and inundation can occur during extreme high tides and during storm events. Planting will consist primarily of American dunegrass (*Leymus mollis*), the dominant species currently observed at Roche Point, as well as other high marsh / coastal dune species.

The specifications provided in this Planting Plan are preliminary and are subject to change following further engagement with TWN and consultation with Inlailawatash on their Invasive Species Management Plan.

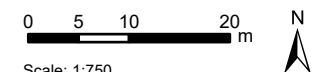
¹ Elevations are referenced to CGVD28 (Canadian Geodetic Vertical Datum of 1928).

Figure 1 Vegetation planting at Roche Point.



Legend

- Existing Bathymetry Contour (m GD)
- Program Footprint**
- Phase 1 (Roche Point, East Beach)
- Phase 1 (Roche Point Stairs)
- Dunegrass Planting Area
- Riparian Planting Area
- Big Leaf Maple



Scale: 1:750

Projection: NAD 1983 UTM Zone 10N

Data Sources:

- a) Phase 1 polygons, Northwest Hydraulic Consultants 2024.
- b) Dunegrass planting areas digitized by Hatfield 2024, based on data source b)
- c) Riparian planting areas and big leaf, maple location, LEES + Associates 2024.
- d) Orthophoto 5 cm, and contours (CGVD28), Spitfire Drone Survey 2023.



Cates Park Permitting Support

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TWN12545_RochePoint_Planting_20241126_v03_LC

Figure 2 Vegetation planting at Little Cates.



Cates Park Permitting Support

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TWN12545_LittleCates_Planting_20241119_v0_2_LC

2.0 PLANTING PLAN

2.1 PLANTING MEDIUM

The planting medium shall be free of subsoil, wood (including woody plant parts), toxic materials, stones over 30 mm, foreign objects, propagules of plant species designated as noxious under the *BC Weed Control Act*, RSBC 1996, c 487, Weed Control Regulation, BC Reg 66/85, and other invasive or undesirable plant species. The planting medium may require testing to verify that the material meets the specifications. Recommendations may be provided to amend planting medium as required (e.g., fertilizers).

Riparian

Recommended particle size distribution, acidity and drainage criteria for the riparian planting medium are provided in Table 1. Planting into native soils is not permitted at Roche Point due to the archeological sensitivity of the site. The depth of the planting medium will be determined in consultation with TWN.

After planting, a thin layer of mulch (approximately 1 cm thick) mixed with a coastal native bunchgrass seed mix (e.g., 49.5% mountain brome, 49.5% Alberni blue wildrye, 1% Schoen slender hairgrass) will be applied within the riparian area to prevent the establishment of invasive species, retain moisture and mitigate erosion of planted areas. The seed mix can also be raked in after applying the mulch. Mulch should not be applied around the stems of each plant, using a perimeter of 75 mm for shrubs and 125 mm for trees.

Table 1 Riparian habitat planting medium specifications.

Properties	Criteria
Gravel 2 – 30 mm	≤ 10% of dry weight
Sand 0.05 – 2 mm	50 – 70% of dry weight
Silt and clay combined	Max of 25% of dry weight
Organic content	5 – 10% of dry weight
Hydraulic conductivity	2 cm/hour
pH	6.0 – 7.0

High Marsh – Coastal Dune

High marsh vegetation will be planted directly into the new mixed sand and gravel substrate applied as beach nourishment at Roche Point (not into native soils). The substrate will be composed of medium to fine rounded gravel with a coarse sand base (target D50 = 10 mm).

2.2 PLANTING SPECIFICATIONS

Specified planting material has been selected based on the following criteria:

- Plants that are well-suited to site conditions (e.g., soil moisture and nutrient regime, temperature, tidal elevation, etc.);

- Plants that are native and provide ecological value to fish and wildlife (e.g., flowering plants that attract pollinators); and
- Plants with cultural significance to TWN.

All plant material shall be of guaranteed nursery stock, free of invasive/noxious plant material and meet the criteria specified in the Canadian Landscape Standards for container-grown stock². Plants in containers shall have a well-established root system, reaching the sides of the container to maintain a firm ball when removed from the container, but shall not be root bound. To provide the greatest chance of success, it is recommended planting be conducted in spring (March to April) or fall (September to October).

Plant species, stock size, and planting density prescribed are summarized in the following sections. Selected species and quantities are subject to nursery availability. If a specified plant species is not available, a Qualified Environmental Professional (QEP) will select a suitable alternative. It is recommended that coordination with the nursery should be conducted at least one year prior to planting. Plant material shall be sourced locally (within the province of BC).

Riparian

Species to be planted in the riparian area at Roche Point and Little Cates are summarized in Table 2 and Table 3, with example photos provided in Figure 2. For ease of movement and accessibility for pollinators, plants of the same species should be clustered in groups of three to five. Big leaf maple is to be planted at the western most end of the site to avoid blocking views (Figure 1).

Table 2 Plant species and specifications for the Roche Point riparian area (225 m²).

Common Name	Botanical Name	% of Area	Number	Stock Size	Planting Density (plants / m ²)
Big leaf maple	<i>Acer macrophyllum</i>	9	1	Sapling	1
Douglas' aster	<i>Aster subspicatus</i>	10	90	Plug	4
Common snowberry	<i>Symphoricarpos albus</i>	10	23	No. 2 Pot	1
Common yarrow	<i>Achillea millefolium</i>	10	90	Plug	4
Nootka rose	<i>Rosa nutkana</i>	10	23	No. 2 Pot	1
Large-leaved lupine	<i>Lupinus polyphyllus</i>	10	90	Plug	4
Pearly everlasting	<i>Anaphalis margaritacea</i>	10	90	Plug	4
Salal	<i>Gaultheria shallon</i>	10	45	No. 2 Pot	2
Western crabapple	<i>Malus fusca</i>	1	2	Sapling	1
Sword fern	<i>Polystichum munitum</i>	10	45	No. 1 Pot	2
Woolly sunflower	<i>Eriophyllum lanatum</i>	10	90	Plug	4
Total		100	754		

² Canadian Society of Landscape Architects and Canadian Landscape and Nursery Association. 2023. Canadian Landscape Standard – Second Edition. Vancouver (BC): Canadian Society of Landscape Architects and Canadian Landscape and Nursery Association.

Table 3 Plant species and specifications for the Little Cates riparian area (356 m²).

Common Name	Botanical Name	% of Area	Number	Stock Size	Planting Density (plants / m ²)
Douglas' aster	Aster subspicatus	10	142	Plug	4
Common yarrow	Achillea millefolium	10	142	Plug	4
Nootka rose	Rosa nutkana	10	36	No. 1 Pot	1
Large-leaved lupine	Lupinus polyphyllus	10	142	Plug	4
Pearly everlasting	Anaphalis margaritacea	10	142	Plug	4
Salal	Gaultheria shallon	10	71	No. 1 Pot	2
Western crabapple	Malus fusca	5	18	No. 3 Pot	1
Sword fern	Polystichum munitum	10	71	No. 1 Pot	2
Woolly sunflower	Eriophyllum lanatum	10	142	Plug	4
Total		85	908		

Figure 3 Representative photos of riparian vegetation.



Photo 1 Pearly everlasting.



Photo 2 Douglas' aster.



Photo 3 Nootka rose.



Photo 4 Salal.



Photo 5 Big leaf maple.



Photo 6 Western crabapple.

High Marsh – Coastal Dune

Species to be planted in the high marsh – coastal dune area at Roche Point are summarized in Table 4, with example photos provided in Figure 3.

Table 4 Plant species and specifications for the Roche Point high marsh area (534 m²).

Common Name	Botanical Name	% of Area	Number	Stock Size	Planting Density (plants per m ²)
American dunegrass	<i>Leymus mollis</i>	60	1282	Plug	4
Beach pea	<i>Lathyrus japonicus</i>	10	214	Plug	4
Coastal strawberry	<i>Fragaria chiloensis</i>	10	214	Plug	4
Common yarrow	<i>Achillea millefolium</i>	10	214	Plug	4
Pacific silverweed	<i>Argemone pacifica</i>	10	214	Plug	4
Total		100	2136		

Figure 4 Representative photos of high marsh – coastal dune vegetation.



Photo 1 Dunegrass.



Photo 2 Beach pea.



Photo 3 Yarrow.



Photo 4 Pacific silverweed.

2.3 MONITORING AND MAINTENANCE

Annual monitoring and management of planted habitats will be conducted for three years post-construction, under the direction of a QEP. Monitoring should include an assessment of plant survivorship, density, vigour, presence of invasive species, and physical stability (e.g., erosion or slumping) of the planting areas. Monthly site visits are also recommended for three months post-construction to gauge the initial success of the planting and address any immediate issues. Additional planting may be required in subsequent monitoring years depending on the success of the initial planting. Following this monitoring period, annual maintenance (e.g., weeding, mulching, etc.) by DNV park staff is recommended.

2.3.1 Invasive Species Management

Constructed shoreline habitats are prone to colonization by invasive species, particularly during the initial years of vegetation establishment when disturbed substrate is most available. For example, invasive Himalayan blackberry (*Rubus armeniacus*) is common in urban areas and has been identified at Roche Point. It is recommended the presence of invasive and exotic plant species be assessed during post-construction monitoring and active management and control measures be implemented if necessary.

An Invasive Species Management Plan will be created and implemented by Inlailawatash Limited Partnership to control invasive species before planting and monitor them post-construction.