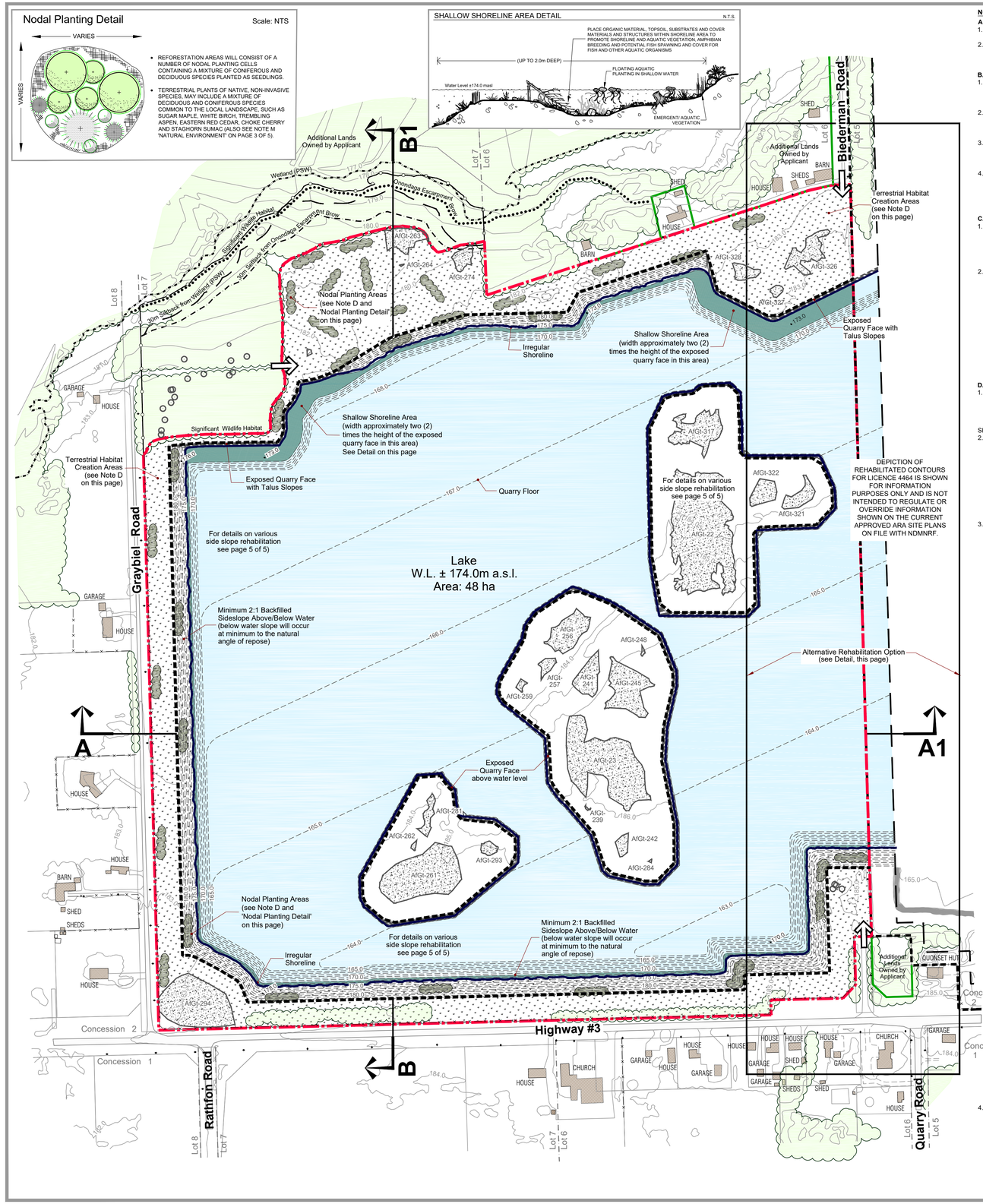

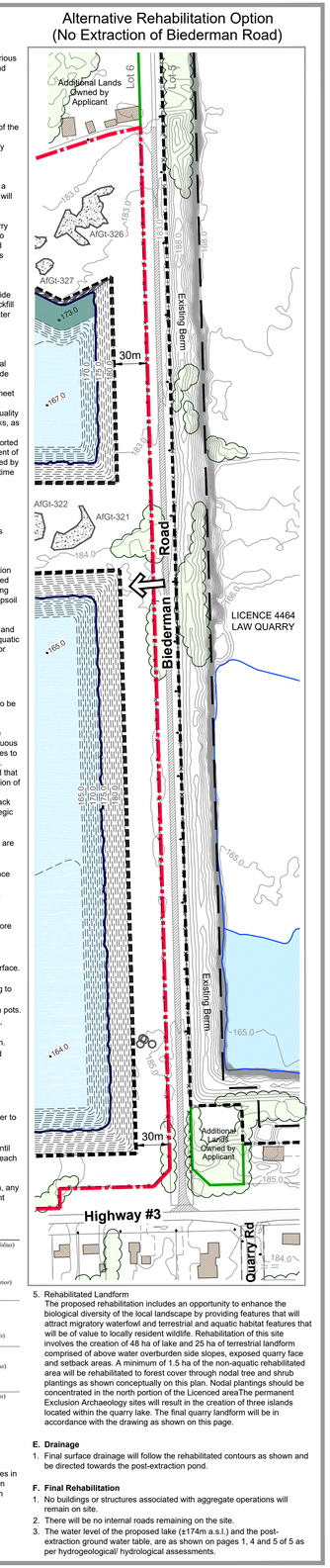

NOTES

A. General

1. Area Calculations: Licence Area: 72.3 hectares (178.7 acres)
   Limit of Extraction: 51.2 hectares (126.5 acres)
2. The rehabilitated landform of this site will include: lake, shallow shoreline area, various side slope treatments (see this page and page 5 of 5 for details) and nodal tree and shrub planting areas.

B. Phasing

1. The proposed extension to the existing Law Quarry will be rehabilitated on a progressive basis, corresponding to the operational progression of the quarry excavation, to form a quarry lake at final rehabilitation. This will be a continuation of the future quarry lake at the adjacent site.
2. As the quarry component of the Extension site is excavated to its maximum, or any other/lesser terminal limits, both horizontally and vertically on a lift-by-lift basis, progressive rehabilitation will follow provided the subject area is of an appropriate length to undergo rehabilitation (See Note H on page 3 of 5 for details)
3. The excavation perimeter will be fully side sloped (from original ground to floor) at a portion of the north, the entire west and the entire south side slope areas. Sloping will occur as the limits of the quarry excavation are reached. See Rehabilitation Plan drawing and Details 1-3, on page 5 of 5. See also Note D on this page.
4. Side slopes will be vegetated where located above the final water level of the quarry lake, and will include nodal tree and shrub plantings in suitable locations in order to introduce a diversity of vegetation types and species that are anticipated to spread around the rehabilitated side slopes (see Note D and 'Nodal Planting Detail' on this page).

C. Slopes and Grading

1. Topsoil, overburden and rock will be used in the progressive rehabilitation of the side slope areas. Overburden, rock rubble, and/or imported material will be used to backfill quarry faces to create the topography of the side slopes (i.e. 2:1 slope). Above water side slope areas that will be vegetated will be covered with a minimum 15 cm of topsoil/organic matter prior to planting.

2. Importation of fill/excess soil:
   1.1. Excess soil as defined in Ontario Regulation 406/19 under the Environmental Protection Act, may be imported to this site for top dressing or creation of side slopes.
   1.2. Excess soil imported for the rehabilitation purposes described above shall meet the soil quality standards set out in Table 1: "Full Depth Background Site Condition Standards", of the Rules for Soil Management and Excess Soil Quality Standards published by the Ministry of Environment, Conservation and Parks, as amended from time to time.
   1.3. The licensee shall ensure that the acceptance and reuse of excess soil imported for rehabilitation purposes is compliant with Part I: Rules for Soil Management of the "Rules for Soil Management and Excess Soil Quality Standards published by the Ministry of Environment, Conservation and Park and as amended from time to time.

D. Proposed Vegetation and Rehabilitated Features

1. All planting and seeding will consist of native non-invasive vegetation species. All ground covers on side slopes will be established as part of the phased stripping operations that proceed extraction and will be maintained and replaced as soon as possible if the vegetative cover fails to establish itself to control erosion.

Shallow Shoreline Area Habitat Creation

2. Shallow shoreline areas will be created along the northern boundary of the extraction area. Shallow shoreline habitats shall be created through construction of submerged benches up to 2 m deep and shall include habitat features such as boulders, varying substrates, root wads, submerged logs, woody debris etc. Organic material and topsoil shall be added to the shoreline areas to promote shoreline vegetation, and the placement of basking logs (i.e. large woody debris) and rubble/boulders along the shoreline is recommended to create turtle basking areas, waterfowl nesting areas and bird perching sites (see "Shallow Shoreline Detail" on this page). Shoreline and Aquatic plantings will coincide with the final stages of site rehabilitation. Species suitable for aquatic plantings area listed in the species planting list on this page.

3. Terrestrial Habitat Creation on sideslope and in setback areas.
   Side slope areas above the water table will be covered with a minimum 150mm of topsoil/organic matter and planted/seeded. Any undisturbed setback areas will also be planted in nodal plantings and seeded with the General Rehabilitation Seed Mix outlined in the planting species list. No tree or shrub planting will occur in the permanent Archaeological Exclusion Areas. Terrestrial nodal plantings on the side slope and within the setback areas shall include a mixture of coniferous and deciduous tree and shrub species to promote species diversity and provide a variety of species to compensate for any substrate deficiencies (see nodal planting detail on this page). Recommended species are outlined in the species planting list. It is recommended that Ash (Fraxinus spp.) species be avoided in rehabilitation plantings due to the invasion of the emerald ash borer. The establishment of nodal planting areas/cells will occur progressively and generally follow the sequence of extraction and side slope/setback grading and seeding. Nodal planting areas will occur in suitable, ecologically strategic locations and are conceptually shown on the drawing. The following planting and maintenance requirements shall be implemented for rehabilitated areas:
   - Any existing trees and shrubs that have started to regrow within the rehab areas are to be maintained as much as possible.
   - Above water table rehabilitated areas shall be seeded with a naturalizing mix of wildflowers and grasses to stabilize slopes and minimize mowing and maintenance (see species planting list)
   - A minimum of 15 cm of suitable topsoil is to be spread throughout the area to be seeded.
   - Within the nodal plantings, trees are to be installed on 3-5m centre spacing, depending on species and planted randomly spaced and staggered to appear more natural.
   - All installed trees shall be a minimum of 1.2m (~4 ft) in height with a sufficiently developed root ball to sustain planting.
   - All tree installations shall include rodent guards that are flush with the ground surface.
   - Within the nodal plantings, understory plantings shall complement the natural vegetation occurring adjacent to the subject lands and shall be spaced according to species anticipated growth rate.
   - All installed shrubs shall consist of potted material at least 30cm tall in 1-3 gallon pots.
   - All planted vegetation is to be native to the local area and selected for hardiness, wind and drought resistance.
   - Any woody plant rood defects (e.g. girdling) shall be corrected prior to installation.
   - All woody plants shall be installed such that the root crown/trunk flare is exposed above the soil surface to ensure proper oxygenation of the rooting zone.
   - All installed woody plants shall be watered (deep soaking) following installation.
   - Woody plant installations shall occur in the Spring (i.e. April or May) or fall (i.e. mid-September to early October) depending on seasonal conditions.
   - The terrestrial habitat areas are to be planted so that seasonal maintenance is minimized once plants have been established and shall be left in a natural manner to fill in and naturalize through succession.
   - Natural succession processes shall be encouraged in keeping with restoration objectives. During the first year, planted areas shall be watered and monitored until established. During the second year, the planted areas shall be inspected twice each year, once in the spring after leaf break and once in the fall prior to leaf drop to ensure any planted vegetation that is in poor condition is fertilized, watered and monitored to improve health and vigour. Within the first three years of installation, any planted vegetation that has failed to establish shall be replaced in the subsequent spring or fall.

Table 3. Species Suitable for the Law Extension Quarry Rehabilitation.

Trees/shrubs: mid- to upper-slopes; tableland	• Trembling Aspen (*Populus tremuloides*) • Black Cherry (*Prunus serotina*) • Sugar Maple (*Acer saccharum*) • Eastern Red Cedar (*Juniperus virginiana*) • Common Hackberry (*Celtis occidentalis*) • Bitternut Hickory (*Carya cordiformis*)	• Eastern Ninebark (*Physocarpus opulifolius*) • Gray Dogwood (*Cornus racemosa*) • Choke Cherry (*Prunus virginiana*) • Alternate-leaved Dogwood (*Cornus alternifolia*) • Inland Serviceberry (*Amelanchier interior*) • Staghorn Sumac (*Rhus hirta*)
Trees/shrubs: lower slopes, riparian	• Eastern White Cedar (*Thuja occidentalis*) • Red Maple (*Acer rubrum*) • White Birch (*Betula papyrifera*) • Black Maple (*Acer nigrum*) • Black Walnut (*Juglans nigra*)	• Red-Osier Dogwood (*Cornus sericea*) • Chokeberry (*Aronia melanocarpa*) • Meadowsweet (*Spiraea alba*) • Nannyberry (*Viburnum lentago*) • Buttonbush (*Cephalanthus occidentalis*)
General rehabilitation seed mix	• New England Aster (*Aster novae-angliae*) • Black Eyed Susan (*Rudbeckia hirta*) • Sand Dropseed (*Sporobolus cryptandrus*) • Canada Wild Rye (*Elymus canadensis*) • Canada Goldenrod (*Solidago canadensis*)	• Wild Bergamot (*Monarda fistulosa*) • Smooth Blue Aster (*Aster laevis*) • Little Bluestem (*Andropogon scoparius*) • Indian Grass (*Sorghastrum nutans*)
Herbaceous: aquatic	• Softstem Bulrush (*Schoenoplectus tabernaemontani*) • Broad-leaved Arrowhead (*Sagittaria latifolia*) • Green-fruited Burreed (*Sparganium emersum*)	• Dark-green Bulrush (*Scirpus atrovirens*) • Common Wooly Bulrush (*Scirpus cyperinus*)

4. Permanent Exclusion Archaeological Sites
   The areas identified as Permanent Exclusion Archaeological Sites and associated protection buffers shall not be extracted and no alteration or soil disturbance shall occur in these areas (see Archaeology notes on Page 3). Once agricultural activities in these areas cease to occur, the area will be seeded with the General Rehabilitation Seed Mix and left to naturalize. All rehabilitation activities in these areas shall be in accordance with the required long-term Archaeological protection measures.

5. Rehabilitated Landform
   The proposed rehabilitation includes an opportunity to enhance the biological diversity of the local landscape by providing features that will attract migratory waterfowl and terrestrial and aquatic habitat features that will be of value to locally resident wildlife. Rehabilitation of this site involves the creation of 48 ha of lake and 25 ha of terrestrial landform comprised of above water overburden side slopes, exposed quarry face and setback areas. A minimum of 1.5 ha of the non-aquatic rehabilitated area will be rehabilitated to forest cover through nodal tree and shrub plantings as shown conceptually on this plan. Nodal plantings should be concentrated in the north portion of the Licenced areaThe permanent Exclusion Archaeology sites will result in the creation of three islands located within the quarry lake. The final quarry landform will be in accordance with the drawing as shown on this page.

E. Drainage

1. Final surface drainage will follow the rehabilitated contours as shown and be directed towards the post-extraction pond.

F. Final Rehabilitation

1. No buildings or structures associated with aggregate operations will remain on site.
2. There will be no internal roads remaining on the site.
3. The water level of the proposed lake (±174m a.s.l.) and the post-extraction ground water table, are as shown on pages 1, 4 and 5 of 5 as per hydrogeological/ hydrological assessments.

Legal Description

Part of Lots 6 & 7, Concession 2 and
Part of Road Allowance Between Lots 5 & 6, Concession 2
(geographic Township of Wainfleet)
Township of Wainfleet
Region of Niagara

Legend

- Boundary of Area to be Licensed
- Existing Licensed Boundary — LAW QUARRY - LICENCE #4464
- Contour with Elevation — METRES ABOVE SEA LEVEL
- Existing Fence — 1.2m POST & WIRE FARM FENCE UNLESS OTHERWISE NOTED
- Building/Structure — LOCATION AND USE FOR BUILDINGS ON-SITE AND WITHIN 120m OF SITE
- Field Access
- Existing Vegetation — APPROXIMATE LOCATION
- Permanent Exclusion Archaeological Sites — (SEE NOTE M "ARCHAEOLOGY" ON PAGE 3 OF 5)
- Cross Sections — SEE PAGE 5 OF 5 FOR EXISTING AND REHABILITATED CROSS SECTIONS
- Limit of Extraction — ALL SETBACKS ARE DRAWN TO SCALE AND SHOW LABELED DISTANCES
- Additional Lands Owned by Applicant
- Proposed Contour — METRES ABOVE SEA LEVEL (m A.S.L.)
- Proposed Elevation — REHABILITATED ELEVATION
- Nodal Planting Areas — LOCATION APPROXIMATE
- Post Extraction Lake
- Shallow Shoreline Area — (SEE DETAIL ON THIS PAGE)
- Terrestrial Habitat Creation Areas — (SEE NOTE M "NATURAL ENVIRONMENT" ON PAGE 3 OF 5)

Site Plan Amendments

No.	Date	Description	By

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
200 - 540 BINGEMANS CENTRE DR. KITCHENER, ON, N2B 3X9 | P: 519.576.3650 F: 519.576.0121 | WWW.MHBCPLAN.COM

NDMNRF Approval Stamp

MHBC Stamp

CAITLIN M. PORTER — REGISTERED PROFESSIONAL PLANNER — MEMBER, CANADIAN INSTITUTE OF PLANNERS — MEMBER, ONTARIO PROFESSIONAL PLANNERS INSTITUTE

north

Applicant

Waterford

Waterford Sand & Gravel Limited
70 Ewart Avenue
Brantford, Ontario
N3T 5M1
Tel: (519) 752-1300

Applicant's Signature
Ed Lamb
VP/GM Construction Materials

Project

Law Quarry Extension

Part of Lots 6 & 7, Concession 2
Part of Road Allowance Between Lots 5 & 6, Concession 2
(Geographic Township of Wainfleet) Township of Wainfleet, Regional Municipality of Niagara

ARA Licence Reference No.

Pre-approval review:

For Submission to NDMNRF - June 2022

Plan Scale **1:2,500 (Arch D)**

SCALE
50 0 50 100
METRES

Plot Scale	1:2.5 [1mm = 2.5 units] MODEL		
Drawn By	D.G.S.	File No.	0956B
Checked By	C.P.		

File Name

REHABILITATION PLAN

Drawing No.

4 OF 5

K:\0956C-WATERFORD SAND AND GRAVEL LIMITED-LAW QUARRY EXTENSION\A\REHAPLAN 4OF5 JUNE2022.DWG